



FINAL

Dyment's Creek Historic Waste Sites

2025 Annual Monitoring Report

Submitted to:

City of Barrie, Environmental Risk Management and Compliance

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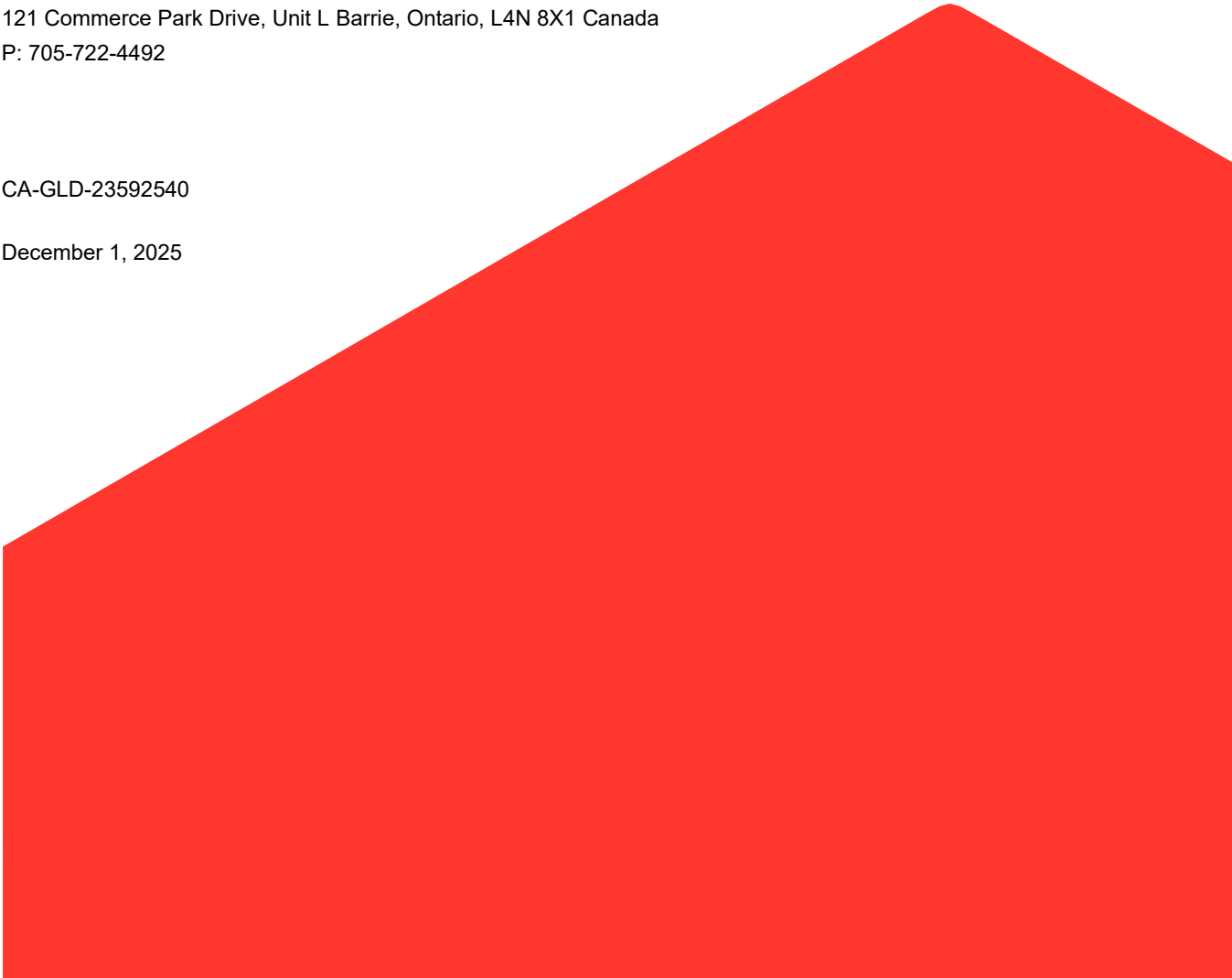
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Executive Summary

WSP Canada Inc. (WSP) was retained by the City of Barrie (City), to carry out the 2025 Annual Monitoring Program for seven Historic Waste Sites located within the City of Barrie along Bunker's and Dymont's Creeks, located between Anne Street and Bradford Street, approximately 300 to 400 metres (m) west of Kempenfelt Bay. This report describes the results of monitoring conducted between January 27 and September 5, 2025 for the three waste disposal sites referred to as Sites 4, 5 and 6 located along Dymont's Creek (see **Figures 1 and 2**). Sites 1, 2, 3, and 7 (Bunker's Creek) are discussed in a separate report. This work program is intended to constitute an assessment relative to the impacts associated with the landfills, and any potential changes from previous years. This program also fulfils the requirement to report on the operation and monitoring of the landfill gas controls installed at Site 6, monitored under Environmental Compliance Approval (ECA) No. 3118-BD5KTE, dated June 14, 2019, amended June 7, 2023.

The waste sites are largely continuous on both sides of Dymont's Creek and are herein referred to as the "Dymont's Creek Landfills". The sites are bounded by Anne Street to the west, Bradford Street to the east, John Street to the north, and Brock Street to the south. Available information including historic air photo analysis and written records indicates that the waste extends north of the creek in the area of Site 4. Waste is reported to extend onto private properties in the area of Sites 4 and 6. Limits of waste fill in these areas are largely based on historical aerial photography and mapping interpretation and have been accepted by the Ministry of Environment, Conservation and Parks (MECP).

Parameters associated with impacts to water quality from municipal solid waste typically include elevated concentrations of chloride, sodium, metals including iron, manganese and phosphorous, nitrogen compounds including ammonia and low concentrations of chlorinated volatile organic compounds (VOC) from products co-disposed in the waste. The City implements a program to monitor the environmental conditions relative to surface water quality in Bunker's and Dymont's Creek and relative to the potential for explosive levels of soil-gas (i.e., the methane in landfill gas, LFG). The Provincial Water Quality Objectives (PWQO) are used to assess surface water compliance. Standards for LFG are based on the Lower Explosive Limit (LEL) of methane in air (i.e., 5%); a concentration of 1% methane is used as an action level for monitors located outside of the waste limits.

A sheetpile cut-off wall and passive LFG venting system was constructed at Site 6 in 2020 to prevent LFG from migrating from City-owned lands. The operation of the venting system is regulated under ECA No. 3118-BD5KTE, as amended. Monitoring of the vents and wells beyond the cut-off wall is undertaken to confirm the system is operating as expected. There were no complaints received by the City relating to the operation of this system in 2025.

The following scope of work was implemented for the 2025 monitoring program.

- Surface water quality samples were collected at the five established surface water monitoring locations on September 3, 2025;
- Analysis of the surface water samples for major ions and indicators, metals, VOC and petroleum hydrocarbon fractions F1 to F4 (PHC F1 to F4);
- Measurement of water levels and landfill gas monitoring in January 2025 (frozen ground conditions) and September 2025 at select locations; and,
- The Gas Venting Poles were monitored under the revised ECA Air in January and September 2025.

The primary findings based on the 2025 monitoring program results are as follow:

- Surface water quality remains stable in comparison to historical data. Surface water is the ultimate receptor for potential groundwater impacts from the historical waste sites. Sheen and discoloration of the water and banks was observed within the areas next to several the sampling locations. However, based on the analytical results obtained during this investigation during the 2025 sampling event, it is concluded that the historic waste sites are not significantly adversely affecting surface water quality of Dymont's Creek; and,
- Methane concentrations in wells surrounding Site 4, Site 5 and outside the passive barrier system installed at Site 6 were less than 1% (by volume). The results of the available data are similar to historical observations. Based on the concentration of methane in the gas probes outside of the cut-off wall at Site 6 it is concluded that the LFG control measures at Site 6 are effective at controlling off-site migration of LFG from waste on the City-owned property to the adjacent residential areas.

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ECA Air No. 3118-BD5KTE

1.0 INTRODUCTION

WSP Canada Inc. (WSP) was retained by the City of Barrie (City), to carry out the 2025 Annual Monitoring Program for seven Historical Waste Sites located within the City of Barrie along Bunker's and Dymment's Creeks, located between Anne Street and Bradford Street, approximately 300 to 400 metres (m) west of Kempenfelt Bay. This report describes the results of monitoring conducted between January 27 and September 5, 2025 for the three waste disposal sites referred to as Sites 4, 5 and 6 located along Dymment's Creek (see **Figures 1 and 2**). Sites 1, 2, 3, and 7 (Bunker's Creek) are discussed in a separate report. This work program is intended to constitute an assessment relative to the impacts associated with the landfills on the quality of Dymment's Creek and adjacent soil gas concentrations, and any potential changes from previous years. This program also fulfills the requirement to report on the operation and monitoring of the landfill gas controls installed at Site 6, monitored under Environmental Compliance Approval (ECA) No. 3118-BD5KTE, dated June 14, 2019, amended June 7, 2023.

Between 2011 and 2013, Golder Associates Ltd. (Golder) conducted an assessment of nine Historical Waste Sites within the City, following the requirements of the Ministry of the Environment, Conservation and Parks (Ministry, MECP or precursors) D-4 Studies and of the Environmental Site Assessment process. The nine sites were part of an identified list of waste sites in Ontario, developed by the Ministry on the basis of information largely collected in a 1979 study (Ministry of the Environment, 1979), supplemented with information available up to 1994 when the Ministry finalized the Waste Inventory. The locations of these closed waste sites were identified based on generalized street descriptions and were reported to be operated from 1956 to 1964, pre-dating the Ministry's Environmental Protection Act (1973). As these sites were largely "unorganized" (i.e., none of them were approved under a Ministry process) their exact locations and character were not known.

Following the initial studies, a total of seven waste sites were identified, four located along Bunker's Creek and three located along Dymment's Creek. These sites are located on lands currently used as parkland, residential, commercial, and industrial land use.

The areas of waste fill have been identified and impact on the environment assessed on the basis of groundwater, surface water and soil gas standards. Whereas the sites largely contain inert fill, waste fill was identified at most of the landfills; key indicators of the impact of the waste fill were identified. Impacts to water quality from municipal solid waste typically include elevated concentrations of chloride, sodium, metals including iron, manganese and phosphorous, nitrogen compounds including ammonia and low concentrations of chlorinated volatile organic compounds (VOC) from products co-disposed in the waste. The Provincial Water Quality Objectives (PWQO) are used to assess surface water compliance.

Standards for methane in LFG are based on the Lower Explosive Limit (LEL) of methane in air (i.e., 5%) and the MECP guidance document "*D-4-1 Assessing Methane Hazards from Landfill Sites*" (July 2021). A concentration of 1% methane is used in this program as an action level for gas probes located outside of the waste limits.

2.0 BACKGROUND

2.1 Historic Waste Site Investigations

Three of the nine waste disposal sites identified in the Ministry Waste Disposal Site Inventory within the City of Barrie are included in the Dymont's Creek area:

- Site 4 - Sanford Street and Brock Street: Located on the east side of Sanford Street, north of Brock Street – closed in 1961 – Ministry Site No. X 4104;
- Site 5 - Innisfil Street and Brock Street: Located between Innisfil Street and Sanford Street, north of Brock Street (known as Brock Park) – closed in 1962 – Ministry Site No. X 4105; and
- Site 6 - John Street and Innisfil Street: Located southwest of the intersection of Innisfil Street and John Street – closed in 1963 – Ministry Site No. X 4106.

The findings of the earlier investigations estimated the approximate areal extent of waste fill as illustrated on **Figure 2**. It is noted that the delineation of waste fill extent was limited to investigation of the portions of sites accessible to the City (i.e., City owned lands). Access to the southern portion of Site 6, including south of 15 Frederick Street located on the south side of Frederick Street nearest the dead-end, was limited due to forest cover. Access to Site 4 was limited to the publicly owned adjacent road allowances.

The waste fill sites are largely continuous on both sides of Dymont's Creek (and herein referred to as the "Dymont's Creek Landfills"), and are bounded by Anne Street to the west, Bradford Street to the east, John Street to the north, and Brock Street to the south. In the area of Site 4, the available information indicates that the waste extends north of the creek and onto the private properties and south to the middle of the property occupied by an apartment building (111 Sanford Street). The waste at Site 6 reportedly extends to the western limit of 113 John Street, but not as far as the building foundation and it is reported that waste may extend onto the southern portions of some properties in the area including 15 Frederick Street.

The material within the Dymont's Creek Landfills consists of coarse soil fill overlying thin layers of waste material. The identified waste consisted primarily of solid materials (e.g., glass, plastic, bricks and metal) considered to be relatively inert however, putrescible materials including animal hides were encountered in boreholes MW-D3, E2-6 (a previously drilled borehole located west of GP-D12), and GP-D5 in Sites 5 and 6. These waste materials were odorous and also contained black organic material. Industrial fabric was encountered at one location (borehole E2-6, west of GP-D12). The overall thickness of the waste ranges from 0.05 metres (m) at several locations to a maximum of 4.37 m. The maximum depth of waste extends to 7.87 m below ground surface (bgs), on the north side of Dymont's Creek, in the southwest portion of Site 6. With the exception of the area near borehole GP-D13 (Site 6), there is a minimum of 1.0 m of cover fill above the top of the waste and direct human contact with the identified waste material is not considered likely. The area in the vicinity of GP-D13 is heavily forested and not accessible to the public.

Landfill gas is generated by the decay of organic material typically contained in municipal waste and consists largely of methane and carbon dioxide. Landfill gas (as defined by the presence of elevated methane concentrations) is not present outside of Site 5, nor in the monitored areas surrounding Site 4, within the City-owned rights-of-way. This is based on the absence of, or trace concentrations (up to 0.3%) of, methane at locations GP-D15, GP-D16, GP-D17, GPD19, GP-D7, former GP-D25 (subsequently abandoned) and former GP-D28 (abandoned). Confirmation of the presence and extent of LFG on Site 4 would require additional investigations on private property. Methane monitoring at a well (labelled MW-A) installed for a D-4 study at 168 Bradford Street, immediately northeast of Site 4 indicated no LFG was present in 2018. No monitoring information has been provided for this well since that time.

Site 6 Investigations and Remedial Measures

The historical investigations of the Site 6 area, and subsequent monitoring, indicated that there is no detectable methane north of Site 6 in the John Street, Frederick Street and Robert Street Right of Way (outside of waste limits), at locations GP-D20 and GP-D23R (GP-D22 and GP-D24 were decommissioned in 2023, as acknowledged by the MECP, and had no historically detected methane concentrations). Elevated concentrations of methane are regularly detected in the waste fill within Site 6, specifically at GP-D3 and GP-D13. As these wells are located within waste, it is expected that they will continue to exhibit elevated methane concentrations and are monitored as part of this program due to their inclusion in the Environmental Compliance Approval for Air (ECA Air), described below. For other gas probes located within waste, it was previously recommended that monitoring was no longer required for the purposes of this program.

The extent of LFG migration, relative to some private residences in the area of Frederick Street, is not known as waste is interpreted to extend onto these private properties. The potential presence of methane was communicated by the City to the residents in the area, indicating for them to conduct their own studies if any concerns were identified. A summary of correspondence and reports related to 113 John Street, 15 Frederick Street, and 111 Sanford Street is provided in the report entitled, "D4 Study and Environmental Assessment, Dymont's Creek Landfills, City of Barrie"¹. In order to address the risk that methane/LFG from waste on City lands may migrate off-site, the City constructed a passive venting system between October 2019 and June 2020 along the northern and northeastern perimeter of the City-owned Site 6 property. Design and construction of the Barrier and Passive Venting System was approved through ECA Air No. 3118-BD5KTE, dated June 14, 2019 and amended on June 7, 2023 (**Appendix E**).

The passive venting system consists of a 202 m long steel sheet-pile cut-off wall at the limits of City owned lands at the north and east sides of Site 6 (see **Figure 2**). The sheet pile depths range from 1 m to 2.8 m bgs, just below the estimated deepest level of the water table. A shallow (approximately 1.2 m deep) sand-filled vent trench is located 2 m inside (landfill side) of the cut-off wall; a 150-millimetre (mm) diameter vent pipe is located within the trench, connected to a series of vertical gas venting poles (GVP1 to GVP3), which passively release LFG within the trench. The vent poles consist of a 6 m high hollow and tapered galvanized steel pole fitted with a 100 mm diameter wind turbine at the top founded on a concrete pier. The design for this system is outlined in the Passive Landfill Gas Barrier / Venting System Report (Golder 2020).

¹ Golder Associates Ltd., 2013. D4 Study and Environmental Assessment, Dymont's Creek Landfills, City of Barrie. Report prepared for the City of Barrie dated April 2013.

3.0 SCOPE AND FIELD INVESTIGATION METHODS

3.1 Monitoring Program

The City implements a monitoring program to monitor surface water quality in Dymont’s Creek and the potential for explosive concentrations of methane in the soil-gas. The 2025 monitoring program locations are listed below. Surface water samples are collected annually, in the fall. Based on the presence of trichloroethylene (TCE) at SWD2 in September 2020, additional surface water sampling events were completed in 2021 to 2023.

Landfill gas monitoring is completed semi-annually including once under frozen ground conditions. Monitoring of LFG at wells located within the waste fill is not required unless pertinent to the assessment of specific property use.

The program was modified in 2020 to incorporate additional voluntary sampling of soil-gas monitors; the gas venting pole (GVP) sampling was added to address Condition 2.2 of ECA No. 3118-BD5KTE. Over the last four years, monitoring of the landfill gas passive venting system has shown that the measured levels of all contaminants have been consistently low and that the modelled concentrations of all the measured contaminants have also been consistently less than 1% of their respective O.Reg. 419/05 air quality limits at the point of impingement (POI) locations. This indicates that the system is operating in compliance with the requirements under O.Reg. 419/05 and the ECA, as amended.

This report reflects the reduced sampling requirements.

Table 1: 2025 Sampling Locations

Perimeter Landfill Gas Probes (Outside of the Waste Fill)
GP-D7, GP-D15, GP-D16, GP-D17, GP-D19, GP-D20, GP-D21, GP-D23R, GP-D26, and GP-D27
Landfill Gas Probes in Waste
GP-D1, GP-D2, GP-D3, GP-D8, GP-D13, and GP-D14
Gas Venting Poles (GVP)
GVP1, GVP2 and GVP3
Surface Water Sampling Locations
SWD1, SWD2, SWD3, SWD4, SWD5

Note: Shaded wells included to assess performance of the LFG controls at Site 6, as per ECA No. 3118-BD5KTE, as amended.

The following scope of work was implemented for the 2025 monitoring program.

- Surface water quality samples were collected at the five established surface water monitoring locations on September 3, 2025;
- Analysis of the surface water samples for major ions and indicators, metals, VOC and petroleum hydrocarbon fractions F1 to F4 (PHC F1 to F4);
- Measurement of water levels and landfill gas monitoring in January 2025 (frozen ground conditions) and September 2025 at select locations; and,
- The Gas Venting Poles were monitored under the revised ECA Air in January and September 2025.

3.2 Surface Water Sampling

Five surface water samples (SWD1 through SWD5) along Dymont's Creek were collected on September 3, 2025 (see **Figure 2** for sampling locations). Sheen and discolouration of the water and banks was observed within the areas next to several the sampling locations, as noted below. Sheen and staining of soils and still water of water bodies adjacent to landfills is commonly observed but way also be naturally derived. Odours from the sediment in these water bodies is commonly associated with decaying organic material, which may be the adjacent waste or natural organics accumulated within the stream sediments.

- At SWD3, located in the westernmost part of Site 6, sheen and staining were noted as shown on Photo 1. An odour was also detected when the stream sediment was disturbed.



Photo 1: Surface Water Sampling Location, SWD3 (Upstream Location)

- At SWD5, located adjacent to the centre of Site 6, staining/discolouration along the north bank was noted.



Photo 2: Surface Water Sampling Location, SWD5

- At SWD1, located near the eastern end of Site 4, staining/seeps were identified adjacent to the south bank.



Photo 3: West of Surface Water Sampling Location SWD1 (downstream location)

Samples were collected from downstream (SWD1) to upstream (SWD3) locations. To prevent spillage of preservatives and ensure collection of a representative sample, a clean, dry amber glass jar was used to collect each sample from the middle of the water column and was subsequently poured into laboratory supplied sampling containers. At the time of sampling, the surface water samples were placed in coolers with ice and subsequently submitted to the commercial analytical laboratory under chain-of-custody procedures. Each surface water sample was submitted for laboratory analysis of PHC F1 – F4, VOC, metals, major ions and indicators. **Table 2** below provides a summary of the measured field parameters for the surface water samples submitted for laboratory analysis.

Table 2: Summary of Analyzed Field Parameters – Dyment’s Creek Landfills – September 3, 2025

Sample I.D.	Location Relative to Closed Landfills	Field pH	Field Temp. (°C)	Field Cond. (µS/cm)	ORP (mV)	DO (mg/L)	Flow
SWD1	Downstream	7.45	17.1	1262	-55	6.6	0.04 to 0.11 m/sec
SWD2	Between Sites 5 and 6	7.4	19.3	1218	-68	6.0	0.04 to 0.19 m/sec

Sample I.D.	Location Relative to Closed Landfills	Field pH	Field Temp. (°C)	Field Cond. (µS/cm)	ORP (mV)	DO (mg/L)	Flow
SWD3	Upstream	7.1	18.9	1127	-62	5.7	0.04 to 0.09 m/sec
SWD4	Site 5	7.4	17.4	1273	-66	5.6	0.05 to 0.13 m/sec
SWD5	Site 6	7.5	19.0	1245	12	5.9	0.01 to 0.06 m/sec

Notes:

µS/cm = micro Siemens per centimetre
 ORP = Oxidation-reduction potential
 mV = Millivolts

3.3 Analytical Program

WSP retained the services of SGS Canada Inc., (SGS) of Lakefield, Ontario for analysis of the surface water samples. SGS is accredited by Canadian Association for Laboratory Accreditation Inc. (CALA program). Analytical methods are reported by the laboratories on the Laboratory Certificates of Analysis provided in **Appendix C**.

3.4 Quality Assurance/Quality Control

Relative Percent Difference (RPD) is calculated where results for both the original and duplicate samples are at concentrations of greater than five times the laboratory reportable detection limits (RDL). Field duplicate surface water samples with calculated RPD values greater than 50% are considered questionable.

The standard analytical methods and procedures used, as well as internal laboratory method blanks, duplicates and surrogate recoveries for organic analyses are also provided on the laboratory Certificates of Analysis provided in **Appendix C**.

The laboratory maintains in-house quality assurance/quality control (QA/QC) programs to govern sample analysis. Standard QA/QC protocols include the analysis of method blanks, matrix spikes and 10% replicates for each sample batch. In addition to the quality control employed by the laboratories, the following QA/QC samples were also submitted during the work program:

- One surface water field duplicate sample (DUP #1, a duplicate of SWD4) was submitted for analysis of analyzed parameters during the work program;
- One blind field blank sample was submitted for analysis of analyzed parameters; and,
- One trip blank sample was submitted for analysis of VOC and PHC F1 only.

3.5 Landfill Gas Sampling

A portable, high-volume pump (10 L/min) was used to purge three times the volume of each gas probe prior to sampling; the wells were outfitted with a valve and cap to prevent atmospheric influence. Readings including the relative concentrations of carbon dioxide (CO₂), methane (CH₄), and oxygen (O₂) were obtained from the gas probes using a calibrated GEM 2000 or GEM 5000 landfill gas monitor.

The 2025 LFG Sampling program is provided in **Table 1** above. **Table 6** provides a summary of LFG readings in the gas probes and **Figure 5** provides a summary of methane gas concentrations in plan view.

3.6 Standards for LFG

Standards for methane in LFG are based on the Lower Explosive Limit (LEL) of methane in air (i.e., 5%). The MECP guidance document "*D-4-1 Assessing Methane Hazards from Landfill Sites*" (July 2021) indicates that where studies are available that demonstrate that methane is not present in the landfilled waste at a concentration greater than 20% LEL (i.e., 1% methane in air), it is inferred that methane from that landfill is not present on adjacent properties at a higher concentration. Accordingly, an action level of 1% methane at wells outside of the waste is used to identify areas requiring further assessment.

4.0 GROUNDWATER AND SURFACE WATER RESULTS

4.1 Groundwater Elevations and Flow

A summary of groundwater elevations obtained from the monitoring wells and gas probes is provided in **Table B-1 (Appendix B)**. Groundwater elevations ranged from 221.03 m above sea level (asl) (at GP-D17) to 223.82 m asl (at GP-D20) in January 2025 (GP-D7, historically the lowest water table, was dry) and from 220.07 m asl (at GP-D7) to 223.68 m asl (at GP-D20) in September 2025, which are relatively consistent with the data from previous years. In general, and as expected, water levels were lower during the Fall event than in the winter event. At four locations (GP-D2, GP-D3, GP-D14, and GP-D26), water levels appear to be declining over time.

Figure 3 illustrates the groundwater flow direction based on water levels obtained in January 2025. Groundwater elevations are consistent with those in the Fall sampling event, with the exception of G-D26, which was much lower than in January. This elevation will be confirmed in 2026; however, is expected to be anomalous. Groundwater flow is interpreted to be easterly overall, but flows locally to the topographic low formed by Dymen's Creek. At Site 4, shallow groundwater flow is interpreted to be toward Dymen's Creek however, there are a limited number of monitoring locations in this area and a component of groundwater may flow north-easterly and potentially east to adjacent properties before discharging to Dymen's Creek northeast of monitoring well MWD7. At Sites 5 and 6, shallow groundwater is interpreted to be toward Dymen's Creek. Groundwater originating from within the waste fill areas would not likely impact adjacent properties outside the estimated waste limits, as groundwater is interpreted to flow away from these properties.

4.2 Analytical Results

Laboratory Certificates of Analysis for surface water are provided in **Appendix C**. The analytical results for surface water samples were compared to the respective PWQO for surface water and are summarized in **Tables 7 and 8**, following the text of the report.

Surface water sampling locations for which the analytical results exceed the various standards used for comparison are provided on **Figure 4**. Un-ionized ammonia concentrations are shown on **Figure 4** for informational purposes, as this parameter represents a potential impact to aquatic organisms.

4.2.1 VOC, Metals, Major Ions, PHC

Surface water quality in samples collected from five locations along Dymen's Creek (see **Figure 2**) met the PWQO for the analyzed parameters, with the following exceptions:

- **Iron (PWQO 300 µg/L) at all sampling locations**, ranging in concentration from 794 µg/L (SWD5 – between John and Innisfil Streets, Site 6) to 1,360 µg/L (SWD1 – the downstream location); and,
- **Total phosphorus (Interim PWQO 0.030 mg/L) at all sampling locations**, ranging in concentration from 0.051 mg/L (SWD4 – west of Sanford Street, in Site 5) to 0.089 mg/L (SWD5 – between John and Innisfil Streets, Site 6), greater than the interim PWQO.

It is noted that iron concentrations in Dymen's Creek upstream of the waste sites exceeded the PWQO during the 2025 sampling event. The results were generally consistent with those from previous years. Higher concentrations of iron are observed at both the upstream sampling location SWD3 (1,000 µg/L) and the downstream sampling location SWD1 (1,360 µg/L), indicating that the landfills are not appreciably impacting the quality of the creek.

Phosphorus concentrations were first analyzed and reported in 2023; the results for that year were above the interim PWQO (0.030 (mg/L) at all sampling locations. The results of samples collected in 2025 remain above the PWQO. Total phosphorus

downstream of the waste fill (SWD1 0.063 mg/L) was relatively similar to the upstream sample (SWD3 – 0.062 mg/L). The results indicate that the historic waste sites do not substantively contribute phosphorous to Dymment's Creek. Sources of phosphorous in urban runoff include decomposing plant materials, soil particles and fertilizer.

Ammonia, commonly generated from municipal solid waste, was present at low concentrations, ranging from 0.2 mg/L to 0.5 mg/L, consistent with previous results (concentrations ranging between 0.07 mg/L to 0.86 mg/L between 2012 and 2024).

Un-ionized ammonia, calculated based on total ammonia, field pH and temperature was below the PWQO of 0.02 mg/L at all locations. Results ranged from 0.001 mg/L (SWD3) to 0.004 mg/L (SWD1). A review of historic total ammonia concentrations indicates that there has been no substantial changes over time.

The reported concentrations of TCE in 2025 were all below the PWQO of 20 µg/L. The highest concentration, 4.5 µg/L, was detected at SWD4 (between Innisfil and Sanford Streets). This is down from the maximum concentration detected in 2023 of 19.6 µg/L. Concentrations declined downstream of this to 3.1 µg/L at SWD1 (near Bradford Street).

In 2023, the City requested that WSP complete additional sampling and assessment to determine if the TCE originated within from the historic waste sites². Based on groundwater flow directions and the presence and concentrations of TCE in upgradient monitoring wells (notably CB10-1, see **Figure 3**), it was determined that the source of TCE in Dymment's Creek in the area of Site 6 is not from the waste and is more likely a part of the North Plume and is not discussed herein.

Surface water is the ultimate receptor for groundwater discharging from the waste sites. Based on the 2025 results, it is concluded that the waste fill is not adversely affecting the surface water quality of Dymment's Creek. No further action beyond continued sampling and assessment is considered necessary based on the 2025 results.

4.2.2 Indicator Parameters

Relative comparisons can be made regarding general water quality for parameters such as electrical conductivity (1,460 to 1,670 µS/cm) and chloride (350 to 380 mg/L), consistent across all sampling locations. These parameter concentrations are likely indicative of higher baseflow from road salt applied along the adjacent roadways in the winter.

The concentrations of the indicator parameters are similar in all surface water samples. This supports the conclusion that the waste fill sites are not adversely impacting the quality Dymment's Creek.

4.2.3 Quality Assurance/Quality Control

A blind field duplicate surface water sample was collected during the 2025 sampling program from SWD4. The RPDs for metals, inorganics, and VOC, where calculable, were within the allowable ranges. Concentrations of PHC parameters were less than the laboratory RDL and RPD values could therefore not be calculated.

Concentrations of analyzed parameters in the field blank sample were less than their respective laboratory detection limits, except select low level metal and inorganic parameters (typically within 5 times the Reportable Detection Level (RDL), where variability is highest) in the field blanks prepared in 2025, which is not unexpected as the blank water is not de-ionized.

Concentrations of analyzed parameters in the trip blank samples were less than their respective laboratory detection limits. The laboratory indicated that they found no discrepancies or any errors in the data reported. The field sampling protocols were

² WSP Canada Inc., 2023. Surface Water and Groundwater Investigation in the Vicinity of Dymment's Creek, Barrie, Ontario. Draft technical memorandum provided to the City of Barrie dated May 31, 2023.

followed and there were no exceedances of the PWQO for these parameters. Based on the detected results, the results of the blank sample analyses are considered acceptable.

Surrogate standard recoveries outside the range, typically, of 50 to 130% are indicative of questionable results for the tested parameters. All analysis were within the criteria and are considered acceptable.

Matrix spike recoveries outside the typical range for individual parameters are indicative of questionable results for the tested parameters. The reported matrix spike recoveries are within the acceptable range.

Based on the above, the associated analytical results are considered to be representative and reproducible.

5.0 LANDFILL GAS RESULTS

Figure 5 provides a summary plan-view of the methane gas concentrations at monitored landfill gas probe locations at the Dyment’s Creek Landfills measured in January 2025 (under frozen ground conditions). In some cases, the gas probe screens were nearly submerged (i.e., at GP-D1, GP-D13, and GP-D14), which reduces the ability of the probe to accurately represent soil gas concentrations. Due to the high water levels in these areas, migration of LFG that may be present would be limited as this high groundwater table would act as a natural barrier.

Table 3 below provides a summary of 2025 methane gas concentrations. Historical LFG monitoring results are provided on Table 6 following the text of the report.

Methane gas concentrations above the LEL of 5% in air represent a potential safety hazard at adjacent buildings, as the gas can potentially accumulate within enclosed spaces and result in conditions where open flame or a spark could cause an explosion. As per MECP guidance, a methane concentration of 1% is used herein as an action level to identify results which require further assessment.

The maximum concentration of methane detected in the monitored probes outside of the waste limits in 2025 was 0.1%, below the action level of 1%; most results were non-detect. Data is also included for gas probes located immediately outside of the cut-off wall (i.e., GP-D8, D20 and D23R), all non-detect; monitoring of these locations relative to the LFG control system is further discussed in Section 6.0.

Table 3: Summary of 2025 Methane Concentrations – Dyment’s Creek Landfills

Location	Screen Interval (mbgs)	Screen Installation Description	Date	Depth to Groundwater (mbgs)	Methane Concentration (% by volume)	% Screen Saturation
Site 4						
GP-D7	0.76 - 2.29	Sand and gravel	27-Jan-25	2.13	0.0	24%
			5-Sep-25	2.04	0.0	38%
GP-D26	1.07 – 4.12	Sand, trace to some gravel, trace silt (FILL), overlying sand	27-Jan-25	3.07	0.0	7%
			5-Sep-25	3.90	0.0	42%
GP-D27	0.91 – 3.96	Sand, some gravel, trace silt (FILL) to sand and gravel, some silt, trace asphalt debris (FILL), overlying sand	27-Jan-25	2.64	0.0	39%
			5-Sep-25	2.51	0.2	43%
Site 5						
GP-D15	0.61 – 2.14	Surficial cover overlying sand	27-Jan-25	Dry	0.1	0%
			3-Sep-25	Dry	0.0	0%
GP-D16	1.22 – 2.74	Fine Sand, trace gravel	27-Jan-25	2.59	0.0	10%
			5-Sep-25	2.35	0.0	26%
GP-D17	0.99 – 2.51	Sand, some gravel, trace silt, (FILL) overlying sand, some silt	27-Jan-25	2.21	0.0	20%
			3-Sep-25	2.11	0.0	27%

Location	Screen Interval (mbsgs)	Screen Installation Description	Date	Depth to Groundwater (mbsgs)	Methane Concentration (% by volume)	% Screen Saturation
GP-D19	1.22 – 2.74	Sand	27-Jan-25	Dry	0.0	0%
			3-Sep-25	Dry	0.0	0%
Site 6						
GP-D1	1.53 – 3.05	Waste	27-Jan-25	1.63	0.9	93%
			5-Sep-25	1.81	0.3	82%
GP-D2	1.52 – 3.05	Construction debris (asphalt) and sand fill	27-Jan-25	2.72	0.0	22%
			5-Sep-25	2.51	0.0	36%
GP-D3**	0.31 – 1.83	Surficial cover overlying waste	27-Jan-25	1.12	15.2	47%
			5-Sep-25	1.03	0.8	53%
GP-D8	1.53 – 3.05	Sand fill overlying waste	27-Jan-25	1.91	0.0	75%
			5-Sep-25	2.07	0.0	64%
GP-D13**	0.46 – 1.98	Waste	27-Jan-25	0.67	20.4	86%
			5-Sep-25	0.56	36.3	93%
GP-D14	1.52 – 3.05	Silty sand to fine sand (FILL)	27-Jan-25	1.97	0.1	71%
			5-Sep-25	1.73	0.0	87%
GP-D20	1.37 – 4.42	Sand, trace silt, trace organics (FILL), overlying sand	27-Jan-25	3.43	0.0	32%
			5-Sep-25	3.57	0.0	28%
GP-D21	1.22 – 4.27	Sand, trace gravel, trace silt, trace rootlets (FILL), overlying sand	27-Jan-25	3.54	0.0	24%
			5-Sep-25	3.54	0.0	24%
GP-D23R	1.37 - 4.42	Sand, some gravel, trace silt, trace asphalt debris (FILL), overlying sand	27-Jan-25	3.35	0.0	35%
			5-Sep-25	3.15	0.0	42%
Notes:						
** Headspace methane concentration is greater than 5% by volume, the lower explosive limit of methane.						

Elevated concentrations of methane were not detected, or were detected at trace levels, at the gas probes located adjacent to Sites 4, 5 and 6. This is consistent with recent historical results for these locations.

Methane was not detected at the three monitoring locations outside of the cutoff wall at Site 6 (i.e., GP-D8, GP-D20, GP-D21, and GP-D23R). The action level of 1% was not reached at any of these wells.

Elevated concentrations of methane (i.e., greater than 5%) continued to be detected at the two probes (GP-D3 and GP-D13) located in waste on the east side of Site 6, south of the cutoff wall.

6.0 PASSIVE VENTING SYSTEM MONITORING

This section satisfies the requirements outlined in Condition 2.2 of the ECA No. 3118-BD5KTE, which requires the annual report to include:

- the frequency of monitoring adopted;
- the concentration of contaminants discharging in the air;
- the wind speeds and wind directions recorded at the time of monitoring; and
- the results of dispersion calculations, using one of the approved dispersion models listed in Section 6 of O. Reg 419/05, indicating the maximum point of impingement concentrations of contaminants in the gas discharging to air.

The amendment to the ECA (see **Appendix E**) was approved on June 7, 2023 to reduce the monitoring and reporting requirements as originally approved under Item 2.0 of the ECA. The landfill gas barrier and passive venting monitoring and reporting program was approved by the Ministry's District Manager on February 24, 2020 in accordance with Condition 2.1 of the ECA.

Condition 2.3 of the ECA allows the City, upon the submission of the third Annual Report and with approval of the District Manager, to amend the monitoring and reporting requirements under the ECA. The 2022 Annual Monitoring Report in March 2023 was the third Annual Report and accordingly the City requested amendments to the monitoring and reporting requirements as originally approved under Condition 2.1 of the ECA.

Based on the MECP's review of the City's request, the requirements for annual re-modelling of the air quality under Condition 2.2 of the ECA was removed and the monitoring and reporting requirements were updated as follows:

Probe Location	Frequency	Parameter
Probes located within Waste: GP-D1; GP-D2; GP-D3; GP-D8; GP-D13; GP-D14	Semi- Annual Sampling (one frozen ground)	Methane Carbon Dioxide Oxygen Ground Water level
Probes located outside of Waste: GP-D20; GP-D21; GP-D23	Semi- Annual Sampling (one frozen ground)	Methane Carbon Dioxide Oxygen Ground Water level
Passive Gas Venting System: GVP1; GVP2; GVP3	Semi- Annual Sampling (one frozen ground)	Methane Carbon Dioxide Oxygen

There were no complaints received by the City relating to the operation of this system in 2025. No repairs or maintenance of the system were undertaken.

6.1 Gas Monitoring Well Results

Performance of the passive venting and cut-off wall LFG control measures installed at Site 6 is, in part, assessed through monitoring of the gas probes located immediately outside of the cut-off wall (i.e., GP-D8, D20 and D23). Results from these locations in the winter of 2020, prior to construction of the LFG control measures, indicated there was no methane present at any of these locations. This is similarly the case for the recorded methane concentrations following construction of the LFG control measures, including the winter (January) and fall (September) of 2025 at all three probes. The results indicate that there is no off-site migration of methane in soil-gas from the landfill on City-owned lands in Site 6.

Landfill gas concentrations measured within the waste at Site 6 were consistent with historical data. Elevated concentrations of methane (i.e., greater than 5% LEL) are only noted at GP-D3 (15.2% and 0.8%) and GP-D13 (20.4% and 36.3%) in January and September 2025, respectively. These concentrations are consistent with previous readings and typical methane concentrations within waste materials of this age. The effectiveness of the control measures (i.e., the passive venting and cut-off wall) or off-site impacts at Site 6 are discussed below.

6.2 Passive Gas Vent System Monitoring Results

A semi-annual monitoring frequency is required at the three gas venting poles (GVP1 to GVP3); one of the monitoring rounds is completed under frozen ground conditions (January). As part of the gas vent monitoring completed at the Site in 2025, methane (%LEL and %CH₄), carbon dioxide (% volume) and oxygen (% volume) were recorded.

A summary of the venting pole monitoring is provided in **Table 4** below. The methane, carbon dioxide and oxygen readings were recorded using a calibrated GEM 5000. The flow rates of landfill gas venting upward within the vent system poles were not measured in 2025 as it is no longer required as of the June 2023 amendment to ECA No. 3118-BD5KTE. The methane readings measured in the GVP were between 0.0 % to 0.3% by volume. The maximum reading of 0.3% was reported at GVP2 on September 5, 2025.

Table 4: Summary of 2025 Gas Venting Pole Monitoring

Location	Date	CH ₄ (% volume)	CO ₂ (% volume)	O ₂ (% volume)
GVP1	28-Jan-25	0.1	0.9	21.4
	5-Sept-25	0.0	3.5	17.5
GVP2	28-Jan-25	0.0	0.3	22.5
	5-Sept-25	0.3	4.5	16.2
GVP3	28-Jan-25	0.0	0.1	22.8
	5-Sept-25	0.0	3.5	18.0

6.3 Wind Speed and Direction

Meteorological data was taken from Environment Canada for the Barrie-Oro station (Station Number 6117700, available: climate.weatheroffice.gc.ca/climateData/canada_e.html; accessed: October 30, 2025). This station is located approximately 20 kilometres (km) north of the Site. This weather station is considered to be adequate to represent Site weather conditions during the sampling periods. A summary of the weather conditions (temperature, wind direction and average wind speed) during the semi-annual sampling events is provided in **Table 5** below.

Table 5: Summary of 2025 Weather Conditions during Gas Venting Pole Monitoring

Date	Time	Temperature (°C)	Barometric Pressure (kPa)	Wind Speed (km/h)	Wind Direction (°)
January 28	9:00am	-16.1	97.22	7	352
	10:00am	-14.6	97.26	0	-
	11:00am	-14.6	97.27	7	171
September 5	11:00am	17.7	97.01	25	196
	12:00pm	18.5	96.94	26	188
	1:00pm	19.0	96.92	27	186

6.4 Concentrations of Contaminants Discharging to Air

An Emission Summary and Dispersion Modelling (ESDM) report (Golder, 2019) was originally prepared in 2019 as part of an application for an Environmental Compliance Approval (ECA) for emissions to air under Section 9 of the Environmental Protection Act. Condition 2.2 of the ECA states that the emission calculations and dispersion modelling used to support this ESDM are to be updated annually using the results of the monitoring completed in the previous calendar year, using one of the approved dispersion models listed in Section 6 of O. Reg. 419/05. Three years of monitoring of the landfill gas passive venting system have shown that the measured levels of all contaminants have been low and consistently less than 1% of their respective O.Reg. 419/05 air quality limits at the point of impingement location. As a result, this indicates that the system is operating in compliance with the requirements under O.Reg. 419/05 and the ECA. Condition 2.0 of the ECA was thereby amended by the District Manager to remove the requirements for on-going modelling of the air quality under condition 2.2 of the ECA and to reduce the landfill gas monitoring and reporting requirements for the gas venting poles to Methane, Carbon Dioxide and Oxygen only. For this reason, no VOC sampling results are presented in this report and modelling of these emissions was not completed as it is no longer required under the ECA conditions.

7.0 DISCUSSION AND SUMMARY

7.1 Surface Water Quality

Ammonia, a common municipal solid waste indicator, was present at low concentrations within the stream samples, consistent with previous results. The calculated un-ionized ammonia was below the PWQO of 0.02 mg/L at all locations.

Elevated concentrations of phosphorus, above the PWQO of 0.03 mg/L in the upstream and downstream samples are not significantly different.

Elevated concentrations of iron, above the PWQO of 300 µg/L, are present in all samples. The concentrations of iron at both the upstream sampling location SWD3 (1,000 µg/L) and the downstream sampling location SWD1 (1,360 µg/L) are similar and are higher than the intervening samples, suggesting that the landfills are not appreciably impacting the quality of the creek.

The other metal parameters reported for the stream samples tend to fluctuate over time; however, their concentrations are below the PWQO. The relative trends do not indicate actions required beyond ongoing sampling and assessment described herein.

The reported concentrations of TCE in 2025 were all below the PWQO of 20 µg/L. The highest concentration, 4.5 µg/L, was detected at SWD4 (between Innisfil and Sanford Streets), which is lower than the recent maximum concentration detected in 2023 of 19.6 µg/L. The source of TCE in Dymont's Creek in the area of Site 6 is not considered to be from the waste.

Surface water is the ultimate receptor for groundwater discharging from the waste sites. Based on the 2025 results, it is concluded that the waste fill is not adversely affecting the surface water quality of Dymont's Creek. Staining/sheen and odour noted at some locations within the landfills should be re-evaluated in 2026. Should the observed conditions continue or increase, more detailed sampling (e.g., stream water or sediment conductivity) could be considered to determine if there are point source inputs

7.2 Off-Site Landfill Gas

Methane was not detected at the monitoring wells/gas probes in the vicinity of Site 4. LFG concentrations within the privately owned portions of Site 4 have not been established

Elevated methane (i.e., above 1%) is not present within gas probes located adjacent to Site 5. The results of the available data are similar to historical observations.

Elevated methane (i.e., above 1%) is not present within gas probes located adjacent to Site 6. The results of the available data are similar to historical observations. The LFG control measures at Site 6 are considered to be appropriately managing impacts from waste on City property.

The waste has been in place at these landfill sites for over 50 years and therefore LFG generation is expected to decline slowly. Provided that other controlling conditions at or near the waste fill areas, for example water table elevation, permeability of the soil cover, etc. do not change substantively, off-site methane concentrations are expected to remain within the range of recent results. Should future development be considered in the areas where elevated methane is present (i.e., within the waste fill area), additional investigations would be required.

7.3 Site 6 Landfill Gas Controls

Elevated methane concentrations (i.e., greater than 5% by volume) continue to be measured in 2025 in gas probes/wells located within the waste at Site 6, consistent with typical methane concentrations within waste materials of this age. Elevated methane concentrations are typically present within waste, even in sites more than 25 years old. No methane was detected at

the probes outside of the cut-off wall (i.e., at GP-D8, GP-D20, GP-D21, and GP-D23R). Monitoring at the three gas venting poles (GVP1 to GVP3) in January and September 2025 indicated methane concentrations of between 0.0 % to 0.3% by volume indicating that methane from the waste is not migrating beyond the cut-off wall. It is concluded that the LFG control measures at Site 6 are effective at controlling off-site migration of LFG from waste on the City-owned property to the adjacent residential areas.

7.4 Summary

- Surface water quality remains stable in comparison to historical data. Surface water is the ultimate receptor for potential groundwater impacts from the historical waste sites. Sheen and discolouration of the water and banks was observed within the areas next to several the sampling locations. However, based on the analytical results obtained during this investigation during the 2025 sampling event, it is concluded that the historic waste sites are not significantly adversely affecting surface water quality of Dymont's Creek; and,
- Methane concentrations in wells surrounding Site 4, Site 5 and outside the passive barrier system installed at Site 6 were less than 1% (by volume). The results of the available data are similar to historical observations. Based on the concentration of methane in the gas probes outside of the cut-off wall at Site 6 it is concluded that the LFG control measures at Site 6 are effective at controlling off-site migration of LFG from waste on the City-owned property to the adjacent residential areas.

8.0 LIMITATIONS

This report was prepared for the exclusive use of the City of Barrie and has been prepared as part of environmental due diligence activities and is not intended to be utilized as supporting documentation for a Record of Site Condition under Ontario Regulation 153/04.

WSP's professional services for this assignment addressed only the geo-environmental (chemical and soil gas) aspects of the subsurface conditions at this site. The geotechnical (physical) aspects, including engineering recommendations for the design and construction of building foundations, pavements, underground servicing and the like are outside the terms of reference for this report and have not been investigated or addressed.

This report is based on data and information collected during the subsurface environmental investigations conducted by WSP and is based solely on-site conditions encountered at the time of the field work (i.e., 2025), as described in this report.

In evaluating the site, WSP has relied in good faith on information provided by others and evaluated only conditions at a limited number of test locations. Only limited chemical analyses of soil samples were carried out. It should be noted that the results of an investigation of this nature should, in no way, be construed as a warranty that the Sites are free from any and all contamination from past or current practices.

We accept no responsibility for any deficiency, misstatements or inaccuracies contained in this report as a result of omission, misinterpretations or fraudulent acts of the persons interviewed. WSP accepts no responsibility for any reduction in property value, either real or perceived, as a result of the reporting of factual information herein.

This assessment was carried out using existing historical information as available from various agencies and no assurance is made regarding the accuracy or completeness of this information.

If additional information is obtained during future work at the sites, including excavations, borings, or other studies, and/or if conditions exposed during construction are different from those encountered in this assessment, WSP should be requested to re-evaluate the conclusions presented in this report and provide amendments as required.

9.0 REFERENCES

The following references were reviewed for the purposes of preparing this report:

- Ministry of Environment, Conservation and Parks, 2021. D-4-1 Assessing Methane Hazards from Landfill Sites. Dated May 18, 2016, amended July 13, 2021.
- Ministry of Environment and Energy, 1994. *Provincial Water Quality Objectives*, dated July 1994.
- WSP Canada Inc., 2024. *Dymont's Creek Landfill - 2024 Annual Monitoring Program Report*. Report prepared for the City of Barrie, dated December 15, 2024.

Signature Page

WSP Canada Inc.



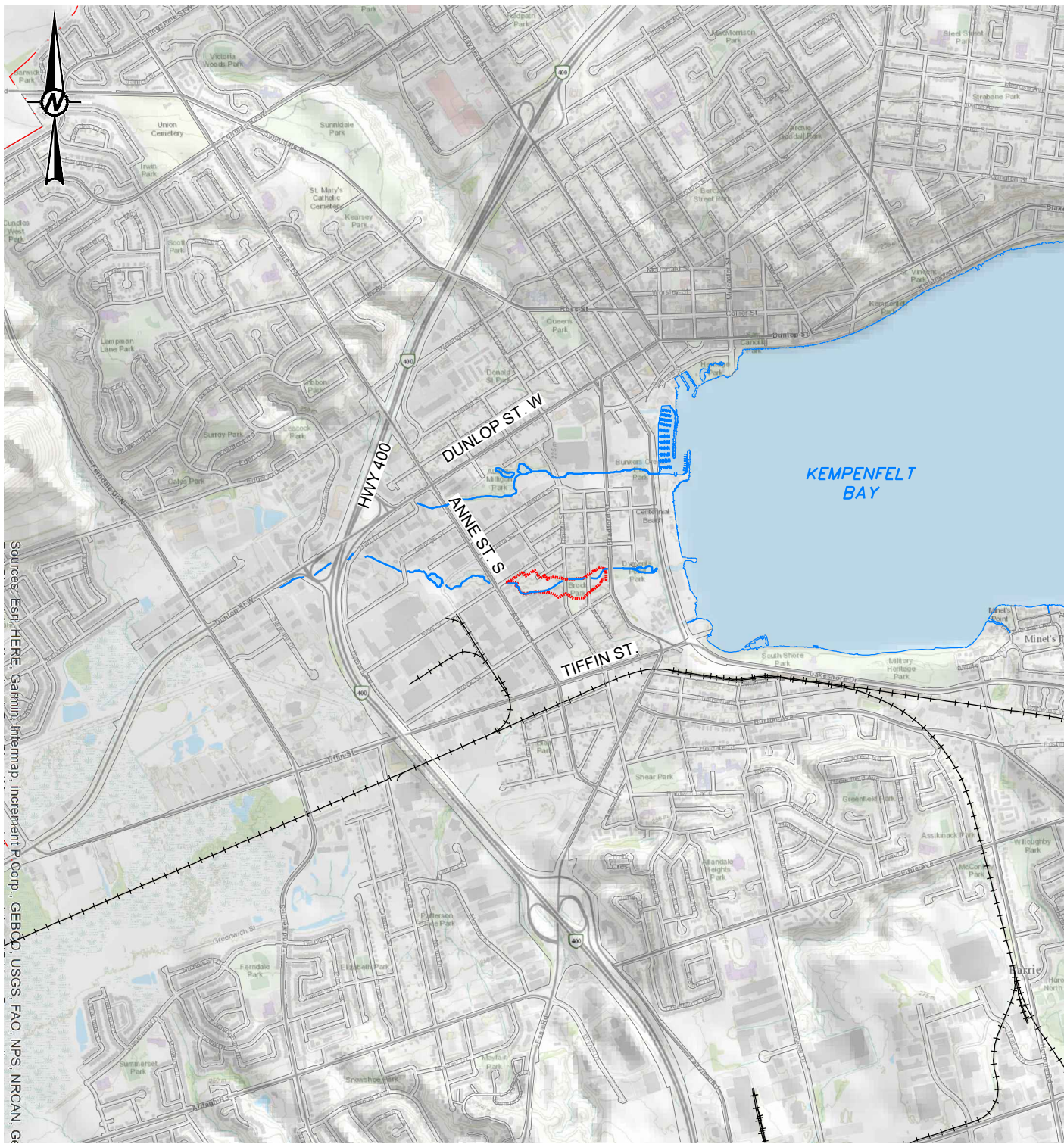
Christi Groves, B.Sc.(Hons)
Principal, Senior Env. Scientist

CLG/PJD/kdv



Paul Dewaele, P.Eng.
Senior Geo-Env. Engineer, Northern Geo-Environmental

Figures



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GEBCO, Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GEBCO

 D4 Assessment Area

NOTES:


1. Datum is NAD UTM 83 Zone 17
2. Mapping Based on County of Simcoe Municipal Base
3. 500 m Offset D4 Assessment as per City of Barrie 2009 Official Plan



CLIENT
CITY OF BARRIE

PROJECT
DYMENT'S CREEK HISTORICAL LANDFILL
2025 ANNUAL MONITORING REPORT

CONSULTANT

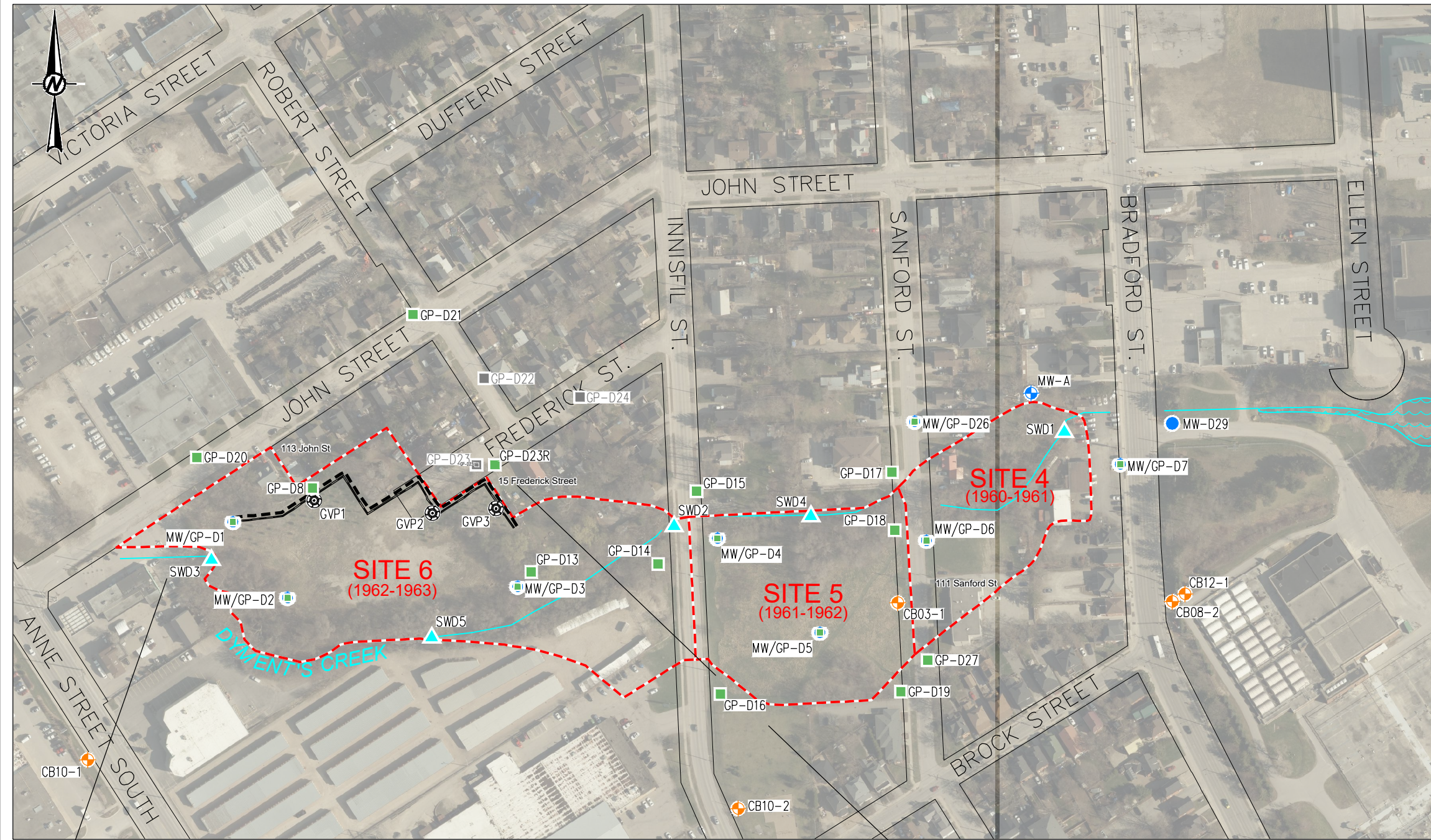


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APPROVED	CLG

TITLE
REGIONAL LOCATION MAP

PROJECT NO.	CONTROL	REV.	FIGURE
23592540	0006	----	1

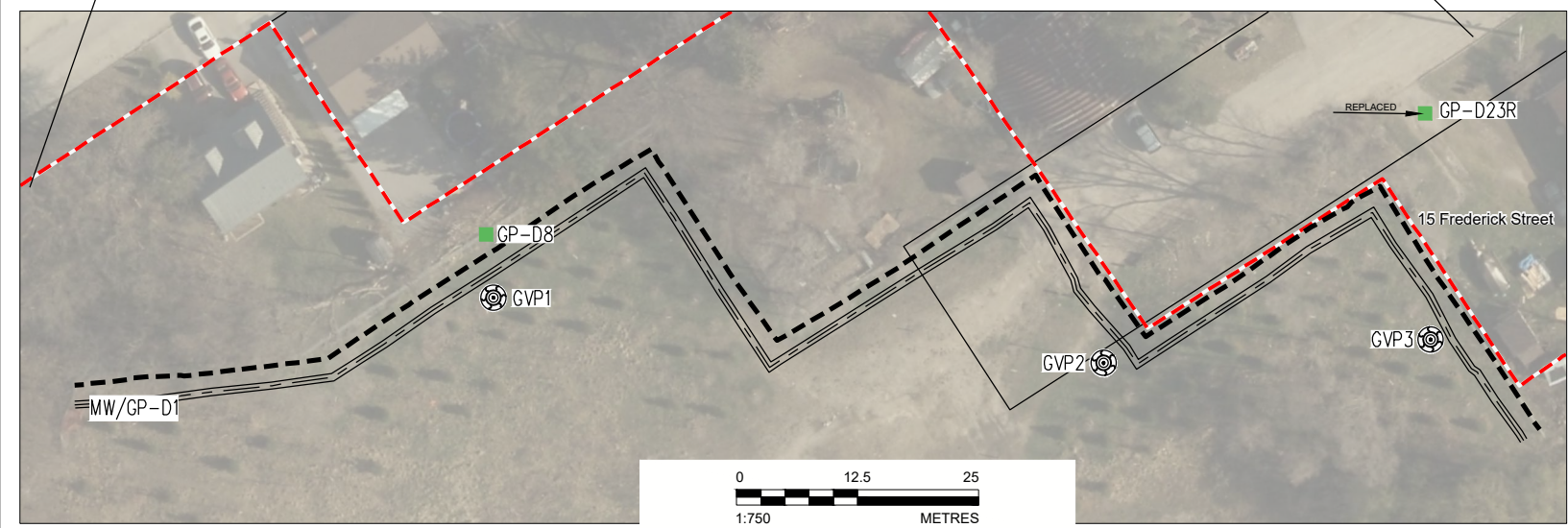
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LEGEND:

	Estimated Waste Limit
	Alignment of Sheet Pile Wall
	Gas Vent Trench
	Gas Probe
	Monitoring Well
	Monitoring Well / Gas Probe
	Surface Water Sampling Location
	Monitoring Well Completed by Others
	City of Barrie Monitoring Well
	Gas Venting Pole
	Decommissioned Gas Probe

CLOSE-UP OF SITE 6 LANDFILL GAS VENTING SYSTEM



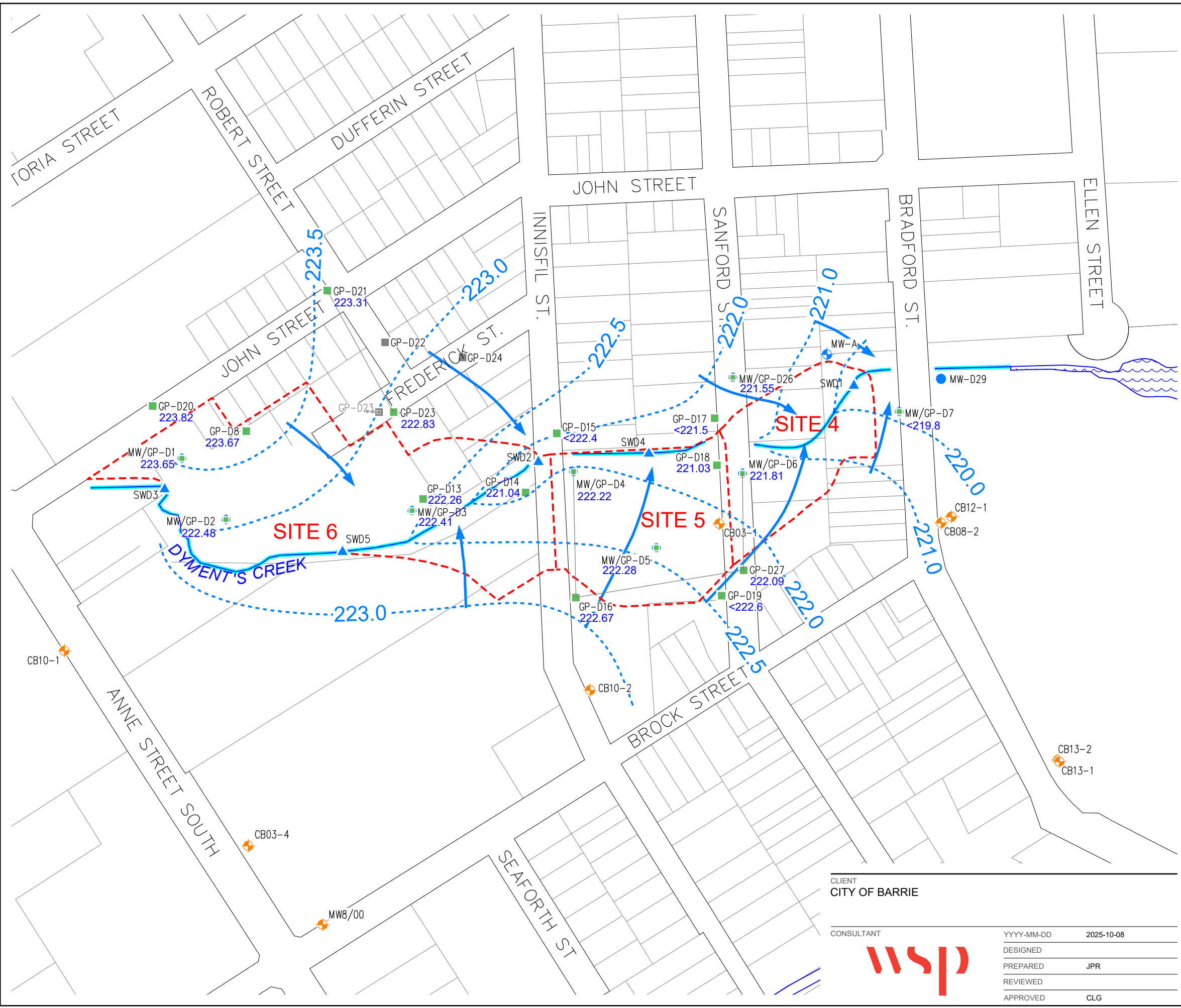
NOTES:

1. Datum is NAD83 Zone 17
2. All Mapped Boundaries, Limits, and Interpolated Features are Approximate
3. CAD Base Digital 1:2000 Municipal Mapping Courtesy City of Barrie
4. Image City of Barrie 2022, Site Features are Approximate to Geodetic Alignment
5. Site 6 Operational from 1962-1963, Site 5 Operational from 1961-1962, and Site 4 Operational from 1960-1961
6. Monitors GP-D22 & GP-D24 Decommissioned 2024; GP-D23 replaced with GP-D23R (10 m east of original location)

CLIENT CITY OF BARRIE	PROJECT DYMENT'S CREEK HISTORICAL LANDFILL 2025 ANNUAL MONITORING REPORT																		
CONSULTANT 	TITLE SAMPLING LOCATION MAP																		
<table border="0"> <tr> <td>YYYY-MM-DD</td> <td>2025-10-08</td> </tr> <tr> <td>DESIGNED</td> <td></td> </tr> <tr> <td>PREPARED</td> <td>JPR</td> </tr> <tr> <td>REVIEWED</td> <td></td> </tr> <tr> <td>APPROVED</td> <td>CLG</td> </tr> </table>	YYYY-MM-DD	2025-10-08	DESIGNED		PREPARED	JPR	REVIEWED		APPROVED	CLG	<table border="0"> <tr> <td>PROJECT NO.</td> <td>CONTROL</td> <td>REV.</td> <td>FIGURE</td> </tr> <tr> <td>23592540</td> <td>0006</td> <td>---</td> <td>2</td> </tr> </table>	PROJECT NO.	CONTROL	REV.	FIGURE	23592540	0006	---	2
YYYY-MM-DD	2025-10-08																		
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PROJECT NO.	CONTROL	REV.	FIGURE																
23592540	0006	---	2																

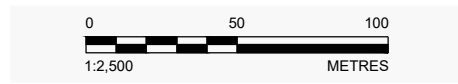
25 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANS B

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LEGEND:

- - - - - Estimated Waste Limit
- ▲ Surface Water Station
- Decommissioned Gas Probe
- Gas Probe
- Monitoring Well / Gas Probe
- Monitoring Well Completed by Others
- City of Barrie Monitoring Well
- - - - - Interpolated Equipotential Line
- Interpolated Groundwater Flow Direction
- 222.62 Shallow Static Water Elevation (masl)



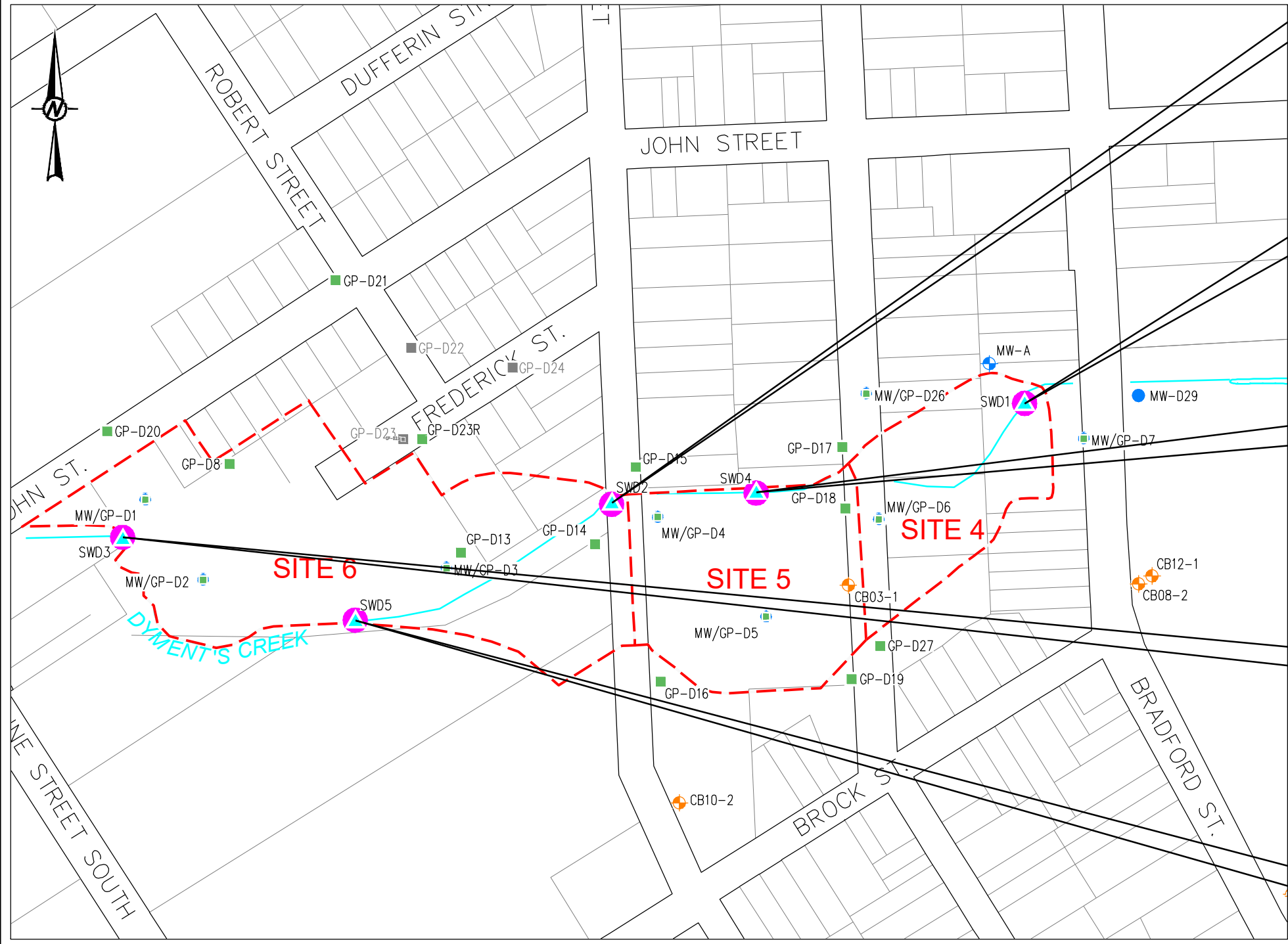
- NOTES:**
1. Datum is NAD83 Zone 17
 2. All Mapped Boundaries, Limits, and Features are Approximate
 3. CAD Base Digital 1:2000 Municipal Mapping Courtesy City of Barrie
 4. Shallow Static Water Elevations Taken January 27-28, 2025

CLIENT CITY OF BARRIE	
CONSULTANT	
YYYY-MM-DD	2025-10-08
DESIGNED	
PREPARED	JPR
REVIEWED	
APPROVED	CLG

PROJECT DYMENT'S CREEK HISTORICAL LANDFILL 2025 ANNUAL MONITORING REPORT			
TITLE GROUNDWATER ELEVATIONS JANUARY 2025			
PROJECT NO. 23592540	CONTROL 0006	REV. ---	FIGURE 3

25 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM A3/B

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		SWD2										
Parameter	Units	PWQO	Results									
			May-21	Sep-21	Apr-22	Sep-22	Nov-22	Apr-23	Aug-23	Oct-23	Sep-24	Sep-25
Metals												
Copper	µg/L	5	1.9/1.3	1.2	1.9/2.1	2.0	-	4.2	2.8	2.3	1.0	1.0
Volatile Organic Compounds												
Trichloroethylene	µg/L	20	0.48/0.51	1.5	0.46/0.46	41	0.43/0.42	0.5	<0.5	19.6	0.70	0.60
Polynuclear Aromatic Hydrocarbons												
Fluoranthene	µg/L	0.0008	<0.010/<0.010	<0.010	<0.050	<0.050	-	<0.1	<0.1	<0.1	<0.1	-
Landfill Tracer Parameters												
Iron	µg/L	300	1200/1200	690	1100/1100	1100	-	1870	864	1400	893	890
Phosphorus (Total)	mg/L	0.030	-	-	-	-	-	0.045	0.060	0.039	0.057	-
Unionized Ammonia	mg/L	0.02	0.010/0.009	0.015	0.004	0.007	-	0.002	0.007	0.007	0.005	0.003

		SWD1										
Parameter	Units	PWQO	Results									
			May-21	Sep-21	Apr-22	Sep-22	Nov-22	Apr-23	Aug-23	Oct-23	Sep-24	Sep-25
Metals												
Copper	µg/L	5	1.4	1.4	1.9	1.5	-	2.2	2.8	2.4	1.0	2.0
Tungsten	µg/L	30	<1	<1	<1.0	<1.0	-	0.14	0.12	0.13	<0.2	0.2
Volatile Organic Compounds												
Trichloroethylene	µg/L	20	3.6	4.5	8.1	6.2	-	2.9	3.9	6.5	3.5	3.1
Landfill Tracer Parameters												
Iron	µg/L	300	1300	780	1200	980	-	1550	867	1370	907	1360
Phosphorus (Total)	mg/L	0.030	-	-	-	-	-	0.044	0.053	0.036	0.063	-
Unionized Ammonia	mg/L	0.02	0.014	0.019	0.006	0.008	-	0.004	0.006	0.008	0.005	0.004

		SWD4									
Parameter	Units	PWQO	Results								
			Apr-22	Sep-22	18-Nov-22	29-Nov-22	Apr-23	Aug-23	Oct-23	Sep-24	Sep-25
Metals											
Copper	µg/L	5	2.0	1.3	-	-	2.1	2.8	1.8	1.0	<1.0/1.0
Mercury - Dissolved	µg/L	0.2	-	<0.10	-	-	<0.01	<0.01	<0.01	<0.01	<0.01/<1.0
Volatile Organic Compounds											
Trichloroethylene	µg/L	20	10	5.8	2.9	2.0	2.8	5.6	10.1	4.9	4.2/4.5
Landfill Tracer Parameters											
Iron	µg/L	300	1100	1000	-	-	1250	852	1210	929	1030/1040
Phosphorus (Total)	mg/L	0.030	-	-	-	-	-	0.042	0.048	0.034	0.051/0.055
Unionized Ammonia	mg/L	0.02	0.006	0.007	-	-	0.003	0.008	0.007	0.005	0.002/0.003

		SWD3										
Parameter	Units	PWQO	Results									
			May-21	Sep-21	Apr-22	Sep-22	Nov-22	Apr-23	Aug-23	Oct-23	Sep-24	Sep-25
Metals												
Copper	µg/L	5	1.4	1.2	2.6	2.5	-	7.7	4.3	2.7	<1.0	4.0
Mercury - Dissolved	µg/L	0.2	<0.1	<0.1	-	<0.10	-	<0.01	<0.01	<0.01	<0.01	<0.01
Tungsten	µg/L	30	<1	<1	<1.0	<1.0	-	0.10	0.19	0.19	<0.2	<0.2
Zirconium	µg/L	4	<1	<1	<1.0	<1.0	-	-	-	-	<2	<2
Volatile Organic Compounds												
Trichloroethylene	µg/L	20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.5	<0.5	<0.5	<0.5	<0.5
Landfill Tracer Parameters												
Iron	µg/L	300	810	750	1600	1200	-	861	2400	1310	620	1000
Phosphorus (Total)	mg/L	0.030	-	-	-	-	-	-	0.080	0.063	0.033	0.062
Unionized Ammonia	mg/L	0.02	0.003	0.008	0.005	0.005	-	<0.001	0.015	0.005	0.004	0.001

		SWD5									
Parameter	Units	PWQO	Results								
			Apr-22	Sep-22	18-Nov-22	29-Nov-22	Apr-23	Aug-23	Oct-23	Sep-24	Sep-25
Metals											
Aluminum	µg/L	75	6	8	-	-	10/10	8	5/6	5/6	7
Cadmium	µg/L	0.2	<0.090	<0.090	-	-	0.013/0.009	0.010	0.017/0.024	0.029/0.030	0.008
Copper	µg/L	5	2.5	2.0	-	-	1.6/1.3	3.0	3.4/2.3	2.0/1.0	1.0
Lead	µg/L	5	<0.30	0.39	-	-	0.24/0.24	0.29	1.31/1.29	1.50/1.85	0.29
Enc	µg/L	30	7.5	6.4	-	-	11-Jun	9	10/10	5/6	3
Volatile Organic Compounds											
Trichloroethylene	µg/L	20	0.54	0.49	0.39/0.42	0.49	<0.5/<0.5	<0.5	0.6/0.7	0.5/0.7	0.5/0.7
Landfill Tracer Parameters											
Iron	µg/L	300	800	960	-	-	1080/870	752	1470/1500	919/885	794
Phosphorus (Total)	mg/L	0.030	-	-	-	-	-	0.040	0.063/0.054	0.040/0.043	0.089
Unionized Ammonia	mg/L	0.02	0.003	0.005	-	-	<0.001/0.015	0.004	0.006/0.006	0.002/0.002	0.002

LEGEND:

- - - - - Estimated Waste Limit
- Gas Probe
- Decommissioned Gas Probe
- Monitoring Well
- Monitoring Well / Gas Probe
- Monitoring Well Completed by Others
- City of Barrie Monitoring Well
- ▲ Surface Water Sampling Location
- <PWQO
- >PWQO
- 501 Exceedance of PWQO

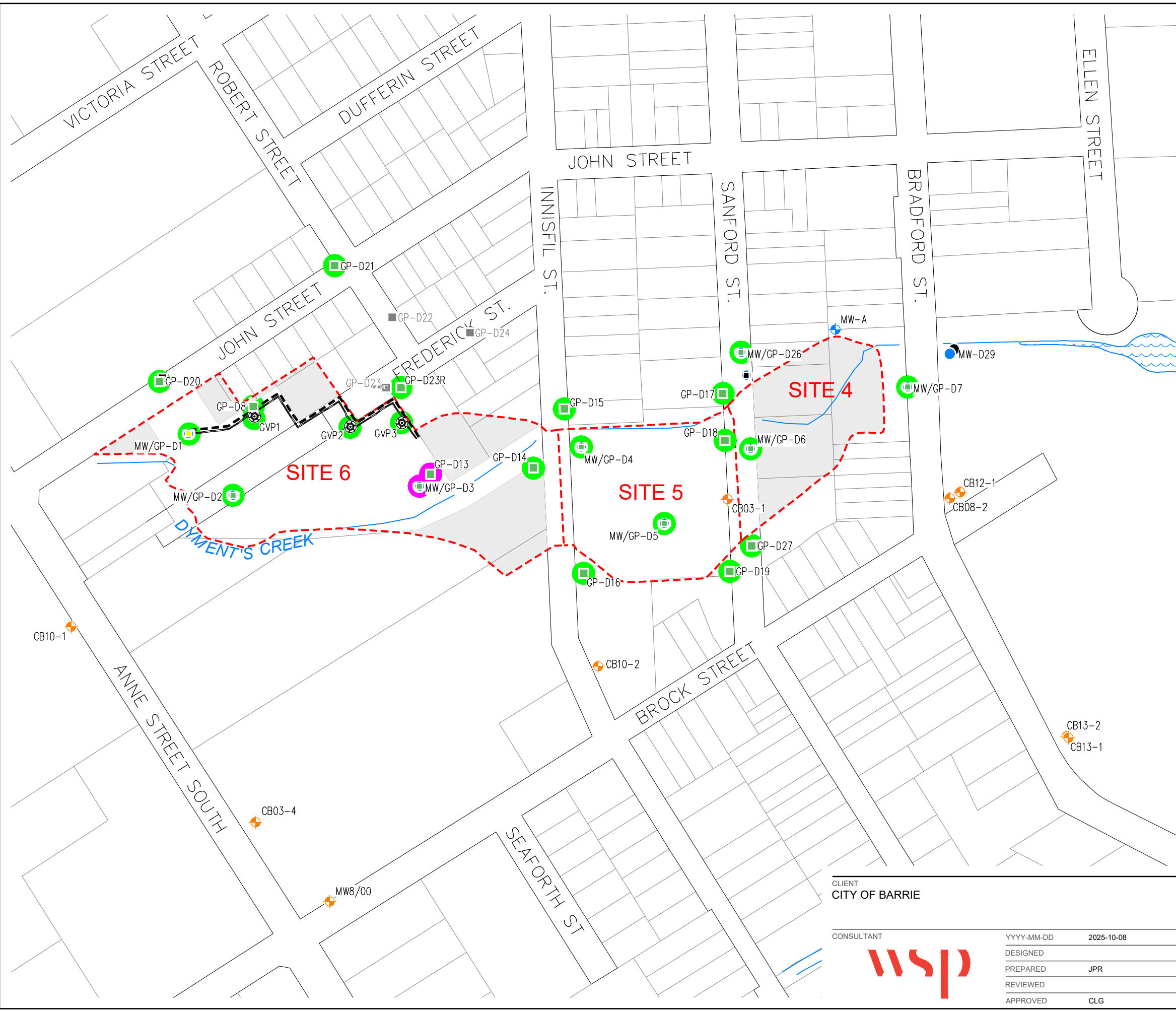


- NOTES:**
- Datum is NAD83 Zone 17
 - All Mapped Boundaries, Limits, and Interpolated Features are Approximate
 - CAD Base Digital 1:2000 Municipal Mapping Courtesy City of Barrie
 - PWQO = Provincial Water Quality Objectives, July 1994
 - Flagged Location Exceedance relative to Sampling 2025

CLIENT CITY OF BARRIE	PROJECT DYMENT'S CREEK HISTORICAL LANDFILL 2025 ANNUAL MONITORING REPORT
CONSULTANT 	TITLE SURFACE WATER RESULTS
DESIGNED YYYY-MM-DD 2025-10-08	PROJECT NO. 23592540
PREPARED JPR	CONTROL 0006
REVIEWED	REV. ----
APPROVED CLG	FIGURE 4

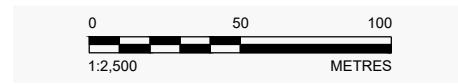
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM A3/B3 TO A4/B4

Path: \\uspp-pkwan-net\CA\CAM\SS0\CTX_Data\GIS\City_of_Barrie\Hdrc_Landfill09_PROD\3592540\0_PROD\0006_Dyments_Annual_2025 | File Name: 23592540_0006\GIS_0006.swg | Laid Out By: jld_jingler | Date: 2025-10-08 | Time: 2:28:07 PM | Printed By: jld_jingler | Date: 2025-11-19 | Time: 4:07:22 PM



LEGEND:

- - - - - Estimated Waste Limit
- - - - - Alignment of Sheet Pile Wall
- Gas Vent Trench
- Gas Probe (Typical Screen Saturation <50%)
- Decommissioned Gas Probe
- Gas Probe (Typical Screen Saturation 50% - 90%)
- Gas Probe (Typical Screen Saturation >90%)
- Monitoring Well
- Monitoring Well / Gas Probe (Typical Screen Saturation <50%)
- Monitoring Well / Gas Probe (Typical Screen Saturation 50% - 90%)
- Monitoring Well / Gas Probe (Typical Screen Saturation >90%)
- ⊕ Monitoring Well Completed by Others
- ⊕ City of Barrie Monitoring Well
- Gas Venting Pole
- <1% Methane Gas Concentration
- 1% - 4.9% Methane Gas Concentration
- >5.0% Methane Gas Concentration
- Methane Gas Concentration Not Monitored
- Privately Owned Property Within Estimated Landfill Limits



- NOTES:**
1. Datum is NAD83 Zone 17
 2. All Mapped Boundaries, Limits, and Features are Approximate
 3. CAD Base Digital 1:2000 Municipal Mapping Courtesy City of Barrie
 4. Monitors GP-D22 & GP-D24 Decommissioned 2024;
 5. GP-D23 replaced with GP-D23R (10 m east of original location)
 6. Readings Represent Highest Reading(s) Sampling Events 2025

CLIENT CITY OF BARRIE	PROJECT DYMENT'S CREEK HISTORICAL LANDFILL 2025 ANNUAL MONITORING REPORT	TITLE METHANE GAS CONCENTRATIONS	
CONSULTANT 	YYYY-MM-DD 2025-10-08	DESIGNED	
	PREPARED JPR	REVIEWED	
	APPROVED CLG	PROJECT NO. 23592540	CONTROL 0006
		REV. ---	FIGURE 5

28 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANS B

Tables

Table 6
Landfill Gas Concentrations (% methane by volume)
Dymnet's Creek Landfills

				Landfill Gas Readings - GEM 2000			
Well ID	Water (mbgs)	Site	Sample Date	CH4 (%)	CO2 (%)	O2 (%)	Bal. (%)
GP-D1		Site 6	28-Jun-12	0.0	0.0	17.8	82.2
GP-D1	1.86	Site 6	17-Sep-12	No Reading Taken			
GP-D1		Site 6	18-Oct-12	0.4	4.8	11.3	83.5
GP-D1	1.67	Site 6	03-Dec-12	0.0	2.2	16.4	81.4
GP-D1	1.65	Site 6	18-Dec-12	0.5	1.3	17.9	80.3
GP-D1	1.46	Site 6	04-Apr-13	0.0	2.1	12.7	85.2
GP-D1	1.64	Site 6	20-Jun-13	0.0	2.1	17.6	80.3
GP-D1	1.68	Site 6	22-Aug-13	0.1	5.8	12.9	81.2
GP-D1	1.71	Site 6	11-Oct-13	0.1	0.9	20.1	79.0
GP-D1	1.68	Site 6	13-Dec-13	0.1	1.0	22.3	76.6
GP-D1	1.76	Site 6	12-Feb-14	0.0	1.6	21.1	77.3
GP-D1	1.62	Site 6	27-Nov-14	0.0	1.1	20.6	78.3
GP-D1	1.62	Site 6	11-Mar-15	0.1	1.1	21.1	77.7
GP-D1	1.83	Site 6	21-Sep-15	0.0	4.7	17.0	78.3
GP-D1	1.57	Site 6	14-Dec-15	1.1	1.6	18.5	78.8
GP-D1	1.31	Site 6	28-Feb-17	0.0	0.1	22.0	77.9
GP-D1	1.42	Site 6	23-Feb-18	0.0	0.1	22.0	77.9
GP-D1	1.88	Site 6	29-Aug-19	0.0	2.4	17.6	80.0
GP-D1	1.61	Site 6	09-Mar-20	0.0	1.2	18.2	80.6
GP-D1	2.37	Site 6	11-Sep-20	0.0	1.6	19.9	78.5
GP-D1	1.65	Site 6	03-Feb-21	0.1	0.8	20.8	78.3
GP-D1	1.70	Site 6	17-Sep-21	0.0	1.0	20.8	78.2
GP-D1	1.66	Site 6	25-Jan-22	0.0	0.2	22.3	77.5
GP-D1	1.80	Site 6	28-Sep-22	0.0	2.3	19.7	78.0
GP-D1	1.51	Site 6	23-Feb-23	0.0	0.4	21.8	77.8
GP-D1	1.79	Site 6	29-Aug-23	0.0	1.9	19.3	78.8
GP-D1	1.59	Site 6	22-Feb-24	0.0	0.0	21.5	78.5
GP-D1	1.81	Site 6	19-Sep-24	0.1	0.3	20.2	79.4
GP-D1	1.63	Site 6	27-Jan-25	0.9	0.4	21.4	77.3
GP-D1	1.81	Site 6	05-Sep-25	0.3	0.4	20.6	78.8
GP-D2		Site 6	15-Jun-12	9.2	-	-	-
GP-D2		Site 6	28-Jun-12	6.6	5.9	11.2	76.4
GP-D2	2.62	Site 6	17-Sep-12	No Reading Taken			
GP-D2		Site 6	18-Oct-12	10.4	12.0	8.8	68.8
GP-D2	2.42	Site 6	03-Dec-12	15.8	14.1	4.9	65.2
GP-D2	2.36	Site 6	18-Dec-12	18.6	15.5	2.2	63.7
GP-D2	2.16	Site 6	04-Apr-13	16.8	12.7	1.4	69.1
GP-D2	2.43	Site 6	20-Jun-13	19.6	13.5	1.4	65.5
GP-D2	2.62	Site 6	22-Aug-13	16.8	6.3	2.1	64.7
GP-D2	2.48	Site 6	11-Oct-13	20.6	16.7	3.0	59.7
GP-D2	2.42	Site 6	13-Dec-13	13.6	10.8	11.0	64.6
GP-D2	2.54	Site 6	12-Feb-14	17.0	13.8	4.7	64.5
GP-D2	2.37	Site 6	27-Nov-14	21.0	15.7	4.5	58.8
GP-D2	2.37	Site 6	11-Mar-15	16.7	14.3	1.1	67.9
GP-D2	2.55	Site 6	21-Sep-15	15.4	18.8	2.3	63.5
GP-D2	2.21	Site 6	14-Dec-15	19.2	16.3	1.2	63.3
GP-D2	1.95	Site 6	14-Mar-16	22.3	13.5	0.6	63.6
GP-D2	2.63	Site 6	06-Sep-16	1.2	11.7	7.1	80.0
GP-D2	2.06	Site 6	28-Feb-17	9.0	13.7	0.7	76.6
GP-D2	2.07	Site 6	23-Feb-18	8.5	14.8	10.6	75.2
GP-D2	2.42	Site 6	09-Mar-20	0.0	12.3	2.6	85.1
GP-D2	2.42	Site 6	03-Feb-21	3.3	13.5	1.4	81.8
GP-D2	2.40	Site 6	17-Sep-21	0.0	14.5	3.8	81.7
GP-D2	2.47	Site 6	25-Jan-22	3.7	7.9	9.7	78.7
GP-D2	2.57	Site 6	28-Sep-22	0.0	13.1	6.8	80.1
GP-D2	2.22	Site 6	23-Feb-23	0.4	10.7	4.5	84.4
GP-D2	2.55	Site 6	29-Aug-23	0.0	9.1	10.7	80.2
GP-D2	2.31	Site 6	22-Feb-24	0.0	0.0	20.7	79.3
GP-D2	2.79	Site 6	19-Sep-24	0.0	10.8	9.8	79.3
GP-D2	2.72	Site 6	27-Jan-25	0.0	9.3	9.1	81.9
GP-D2	2.51	Site 6	05-Sep-25	0.0	4.6	16.2	79.2

Table 6
Landfill Gas Concentrations (% methane by volume)
Dymnet's Creek Landfills

				Landfill Gas Readings - GEM 2000			
Well ID	Water (mbgs)	Site	Sample Date	CH4 (%)	CO2 (%)	O2 (%)	Bal. (%)
GP-D3	0.81	Site 6	21-Mar-12	65.2	11.0	4.0	19.7
GP-D3		Site 6	22-Mar-12	57.3	12.0	4.1	26.6
GP-D3		Site 6	28-Jun-12	23.1	15.7	5.7	54.3
GP-D3	1.20	Site 6	17-Sep-12	No Reading Taken			
GP-D3		Site 6	18-Oct-12	35.1	19.0	6.9	30.0
GP-D3	0.81	Site 6	03-Dec-12	29.4	11.1	12.4	47.1
GP-D3	0.91	Site 6	18-Dec-12	11.5	5.3	17.1	66.1
GP-D3	0.74	Site 6	04-Apr-13	18.2	3.6	15.5	62.7
GP-D3	0.98	Site 6	20-Jun-13	17.8	9.7	10.3	62.2
GP-D3	1.23	Site 6	22-Aug-13	43.8	24.7	2.7	29.2
GP-D3	0.94	Site 6	11-Oct-13	25.2	11.5	13.3	49.9
GP-D3	0.97	Site 6	13-Dec-13	10.8	5.5	19.6	64.1
GP-D3	1.03	Site 6	12-Feb-14	50.7	16.9	2.8	29.6
GP-D3		Site 6	27-Nov-14	Well Damaged- No Reading Taken			
GP-D3		Site 6	11-Mar-15	Well Damaged- No Reading Taken			
GP-D3		Site 6	21-Sep-15	Well Damaged- No Reading Taken			
GP-D3	0.79	Site 6	14-Dec-15	19.4	7.9	15.1	57.6
GP-D3	0.38	Site 6	14-Mar-16	5.0	1.1	21.4	72.6
GP-D3	1.83	Site 6	06-Sep-16	18.4	17.3	7.1	57.2
GP-D3	0.62	Site 6	28-Feb-17	0.3	0.4	21.8	77.5
GP-D3	0.45	Site 6	23-Feb-18	0.0	0.1	22.0	77.9
GP-D3	0.79	Site 6	09-Mar-20	13.9	4.2	15.3	66.6
GP-D3	0.93	Site 6	11-Sep-20	8.1	6.5	15.1	70.3
GP-D3	0.83	Site 6	03-Feb-21	34.3	9.8	11.2	44.7
GP-D3	0.41	Site 6	17-Sep-21	12.5	6.9	15.8	64.8
GP-D3	0.80	Site 6	25-Jan-22	0.0	0.3	21.9	77.8
GP-D3	0.89	Site 6	28-Sep-22	17.7	14.7	7.6	60.0
GP-D3	0.72	Site 6	23-Feb-23	3.6	1.3	21.2	73.9
GP-D3	0.97	Site 6	29-Aug-23	28.1	12.4	10.7	48.8
GP-D3	0.72	Site 6	22-Feb-24	13.0	3.2	17.7	66.1
GP-D3	1.09	Site 6	19-Sep-24	3.0	7.2	14.4	75.4
GP-D3	1.12	Site 6	27-Jan-25	15.2	5.1	15.3	63.6
GP-D3	1.03	Site 6	05-Sep-25	0.8	4.4	16.0	78.8
GP-D4		Site 5	28-Jun-12	17.3	5.1	14.4	62.8
GP-D4	1.16	Site 5	17-Sep-12	No Reading Taken			
GP-D4		Site 5	18-Oct-12	2.6	1.3	20.3	75.8
GP-D4	0.59	Site 5	03-Dec-12	0.0	0.1	21.3	78.6
GP-D4	0.64	Site 5	18-Dec-12	0.0	0.1	21.4	78.5
GP-D4	0.46	Site 5	04-Apr-13	3.2	0.3	19.5	76.9
GP-D4	0.92	Site 5	20-Jun-13	1.4	0.3	19.2	79.1
GP-D4	1.09	Site 5	22-Aug-13	2.3	0.9	20.2	76.5
GP-D4	0.68	Site 5	11-Oct-13	0.1	0.0	21.5	78.4
GP-D4	0.80	Site 5	13-Dec-13	0.0	0.3	21.8	77.9
GP-D4	0.91	Site 5	12-Feb-14	0.0	0.3	22.1	77.6
GP-D4	0.55	Site 5	27-Nov-14	6.5	1.5	19.8	72.2
GP-D4	0.55	Site 5	11-Mar-15	0.0	0.1	22.4	77.5
GP-D4	1.01	Site 5	21-Sep-15	3.1	0.8	20.7	75.4
GP-D4	0.74	Site 5	14-Dec-15	0.1	0.0	20.9	79.0
GP-D4	0.29	Site 5	14-Mar-16	0.0	0.1	22.7	77.2
GP-D4	1.22	Site 5	06-Sep-16	6.1	2.8	17.3	73.8
GP-D4	0.33	Site 5	27-Feb-17	0.4	0.1	21.5	78.0
GP-D4	0.37	Site 5	23-Feb-18	0.0	0.1	21.9	78.0
GP-D4	1.11	Site 5	27-Jan-25	0.0	0.1	22.5	77.3
GP-D5	1.06	Site 5	21-Mar-12	0.4	3.5	16.6	79.5
GP-D5		Site 5	22-Mar-12	0.3	3.6	16.2	79.8
GP-D5		Site 5	28-Jun-12	0.0	0.4	18.3	81.3
GP-D5	1.70	Site 5	17-Sep-12	No Reading Taken			
GP-D5		Site 5	18-Oct-12	0.0	9.9	9.7	80.4
GP-D5	1.24	Site 5	03-Dec-12	0.0	4.3	16.9	78.8
GP-D5	1.12	Site 5	18-Dec-12	0.0	4.6	15.8	79.6
GP-D5	0.73	Site 5	04-Apr-13	0.0	4.7	17.4	77.9
GP-D5	1.22	Site 5	20-Jun-13	0.0	3.9	15.8	80.3
GP-D5	1.55	Site 5	22-Aug-13	0.1	5.1	15.3	79.5
GP-D5	1.50	Site 5	11-Oct-13	0.0	5.7	14.6	79.9
GP-D5	1.15	Site 5	13-Dec-13	0.0	6.6	19.0	74.4
GP-D5	1.38	Site 5	12-Feb-14	0.0	10.7	6.3	83.0
GP-D5	1.10	Site 5	27-Nov-14	0.0	6.9	15.4	77.7
GP-D5	1.10	Site 5	11-Mar-15	0.0	8.7	10.5	80.8
GP-D5	1.57	Site 5	21-Sep-15	0.0	9.9	11.1	79.0
GP-D5	1.34	Site 5	14-Dec-15	0.1	7.1	13.1	79.7
GP-D5	0.71	Site 5	14-Mar-16	0.0	4.4	18.6	77.0
GP-D5	1.70	Site 5	06-Sep-16	0.0	10.0	10.6	79.4
GP-D5	0.70	Site 5	27-Feb-17	0.0	2.9	19.3	77.8
GP-D5	1.01	Site 5	23-Feb-18	0.0	0.0	22.0	78.0
GP-D5	1.71	Site 5	27-Jan-25	0.0	1.8	20.7	77.4

Table 6
Landfill Gas Concentrations (% methane by volume)
Dymment's Creek Landfills

				Landfill Gas Readings - GEM 2000			
Well ID	Water (mbgs)	Site	Sample Date	CH4 (%)	CO2 (%)	O2 (%)	Bal. (%)
GP-D6		Site 4	21-Mar-12	0.0	0.2	17.5	82.5
GP-D6		Site 4	22-Mar-12	0.0	0.3	16.9	82.8
GP-D6	0.86	Site 4	28-Jun-12	0.0	0.6	15.7	83.6
GP-D6	1.01	Site 4	17-Sep-12	No Reading Taken			
GP-D6		Site 4	18-Oct-12	0.0	0.1	20.6	79.3
GP-D6	1.52	Site 4	03-Dec-12	0.0	0.1	21.1	78.8
GP-D6	1.02	Site 4	18-Dec-12	0.0	0.1	20.6	79.3
GP-D6	0.75	Site 4	04-Apr-13	0.0	0.1	20.3	79.6
GP-D6	1.00	Site 4	20-Jun-13	0.0	0.4	15.1	84.5
GP-D6	1.39	Site 4	22-Aug-13	0.1	1.9	16.5	81.5
GP-D6	0.39	Site 4	11-Oct-13	0.1	0.3	21.0	78.6
GP-D6	1.22	Site 4	13-Dec-13	0.0	0.4	21.2	78.4
GP-D6	1.64	Site 4	12-Feb-14	0.0	0.6	21.8	77.6
GP-D6	0.81	Site 4	27-Nov-14	0.0	0.2	21.9	77.9
GP-D6	0.81	Site 4	11-Mar-15	0.0	0.1	22.3	77.6
GP-D6	1.07	Site 4	21-Sep-15	0.0	1.0	18.1	80.9
GP-D6	1.17	Site 4	14-Dec-15	0.0	0.2	19.8	80.0
GP-D6	0.31	Site 4	14-Mar-16	0.0	0.1	22.7	77.2
GP-D6	1.42	Site 4	06-Sep-16	0.0	2.0	16.6	81.4
GP-D6	0.44	Site 4	28-Feb-17	0.0	0.0	22.2	77.8
GP-D6	1.24	Site 4	08-Sep-17	0.0	0.6	19.8	79.6
GP-D6	0.39	Site 4	23-Feb-18	0.0	0.0	21.9	78.1
GP-D6	1.61	Site 4	27-Jan-25	0.0	0.1	22.6	77.3
GP-D7		Site 4	15-Jun-12	0.0	-	-	-
GP-D7		Site 4	28-Jun-12	0.0	0.8	14.2	85.0
GP-D7	1.88	Site 4	17-Sep-12	No Reading Taken			
GP-D7		Site 4	18-Oct-12	0.0	0.3	20.1	79.6
GP-D7	1.85	Site 4	03-Dec-12	0.0	1.1	16.7	82.2
GP-D7	1.85	Site 4	18-Dec-12	0.0	1.2	16.5	82.3
GP-D7	1.70	Site 4	04-Apr-13	0.0	0.4	19.2	80.4
GP-D7	1.75	Site 4	20-Jun-13	0.0	0.7	14.0	85.3
GP-D7	1.92	Site 4	22-Aug-13	0.0	2.6	13.7	83.6
GP-D7	1.85	Site 4	11-Oct-13	0.0	1.1	17.6	81.2
GP-D7	1.85	Site 4	13-Dec-13	0.0	0.7	20.8	78.5
GP-D7	1.94	Site 4	13-Feb-14	0.0	1.5	19.2	79.3
GP-D7	1.87	Site 4	27-Nov-14	0.0	1.5	16.9	81.6
GP-D7	1.87	Site 4	11-Mar-15	0.0	0.6	21.3	78.1
GP-D7	2.09	Site 4	21-Sep-15	0.0	3.9	12.4	83.7
GP-D7	2.04	Site 4	14-Dec-15	0.0	2.0	15.0	83.0
GP-D7	1.76	Site 4	28-Feb-17	0.0	0.5	17.4	82.1
GP-D7	2.02	Site 4	08-Sep-17	0.0	3.0	13.3	83.7
GP-D7	1.87	Site 4	23-Feb-18	0.7	0.4	20.9	78.0
GP-D7	2.02	Site 4	04-Sep-18	0.0	3.4	12.7	83.9
GP-D7	1.80	Site 4	01-Apr-19	0.0	0.0	20.8	79.2
GP-D7	2.03	Site 4	29-Aug-19	1.0	0.2	19.5	79.3
GP-D7	1.78	Site 4	14-Feb-20	0.0	0.0	20.6	79.4
GP-D7	2.06	Site 4	11-Sep-20	0.0	1.7	16.0	82.3
GP-D7	2.05	Site 4	03-Feb-21	0.0	0.7	18.0	81.3
GP-D7	2.03	Site 4	20-Sep-21	0.0	2.0	15.4	82.6
GP-D7	1.94	Site 4	25-Jan-22	0.0	0.5	20.3	79.2
GP-D7	1.87	Site 4	28-Sep-22	0.1	0.1	21.7	78.1
GP-D7	1.86	Site 4	20-Mar-23	0.0	0.4	18.7	80.9
GP-D7	1.98	Site 4	30-Aug-23	0.0	1.5	17.2	81.3
GP-D7	1.89	Site 4	22-Feb-24	0.0	0.0	21.0	79.0
GP-D7	2.00	Site 4	19-Sep-24	0.0	1.8	15.5	82.7
GP-D7	2.13	Site 4	27-Jan-25	0.0	0.5	21.2	78.4
GP-D7	2.04	Site 4	05-Sep-25	0.0	0.1	21.6	78.3

Table 6
Landfill Gas Concentrations (% methane by volume)
Dymment's Creek Landfills

Well ID	Water (mbgs)	Site	Sample Date	Landfill Gas Readings - GEM 2000			
				CH4 (%)	CO2 (%)	O2 (%)	Bal. (%)
GP-D8		Site 6	15-Jun-12	0.0	-	-	-
GP-D8		Site 6	28-Jun-12	0.0	0.0	18.1	81.9
GP-D8		Site 6	18-Oct-12	0.2	0.8	20.3	78.8
GP-D8	1.99	Site 6	03-Dec-12	0.2	0.5	20.8	78.5
GP-D8	1.96	Site 6	18-Dec-12	0.0	0.5	21.0	78.5
GP-D8	1.79	Site 6	04-Apr-13	0.0	0.3	20.3	79.4
GP-D8	1.91	Site 6	20-Jun-13	0.1	0.5	19.3	80.1
GP-D8	2.11	Site 6	22-Aug-13	0.0	0.9	20.2	78.9
GP-D8	2.04	Site 6	11-Oct-13	0.1	0.5	21.0	78.4
GP-D8	1.96	Site 6	13-Dec-13	0.0	0.5	20.8	78.7
GP-D8	2.10	Site 6	12-Feb-14	0.0	0.8	22.6	76.6
GP-D8	1.76	Site 6	27-Nov-14	0.0	0.8	21.0	78.2
GP-D8	1.76	Site 6	11-Mar-15	0.0	0.9	21.8	77.3
GP-D8	2.14	Site 6	21-Sep-15	0.0	1.4	20.8	77.8
GP-D8	1.93	Site 6	14-Dec-15	0.2	0.6	20.5	78.7
GP-D8	1.66	Site 6	14-Mar-16	0.1	0.3	22.2	77.4
GP-D8	2.18	Site 6	06-Sep-16	0.1	1.1	19.0	79.8
GP-D8	1.57	Site 6	28-Feb-17	0.0	0.4	21.6	78.0
GP-D8	2.00	Site 6	08-Sep-17	0.1	0.8	20.6	78.5
GP-D8	1.39	Site 6	23-Feb-18	0.0	0.1	22.0	77.9
GP-D8	2.92	Site 6	04-Sep-18	0.0	0.8	20.2	79.0
GP-D8	1.78	Site 6	01-Apr-19	0.0	0.6	19.7	79.6
GP-D8	2.18	Site 6	29-Aug-19	0.0	0.4	19.7	79.9
GP-D8	1.80	Site 6	14-Feb-20	0.0	0.3	20.1	79.6
GP-D8	2.03	Site 6	11-Sep-20	0.0	1.9	19.8	78.3
GP-D8	1.94	Site 6	03-Feb-21	0.0	0.5	20.6	78.9
GP-D8	1.96	Site 6	17-Sep-21	0.0	0.3	21.7	78.0
GP-D8	1.94	Site 6	25-Jan-22	0.0	0.3	22.3	77.4
GP-D8	2.10	Site 6	28-Sep-22	0.0	1.2	20.3	78.5
GP-D8	1.82	Site 6	20-Mar-23	0.0	0.4	21.0	78.6
GP-D8	2.05	Site 6	29-Aug-23	0.0	1.4	19.9	78.7
GP-D8	1.89	Site 6	22-Feb-24	0.0	0.0	21.1	78.9
GP-D8	2.07	Site 6	19-Sep-24	0.0	1.5	19.4	79.0
GP-D8	1.91	Site 6	27-Jan-25	0.0	0.4	21.8	77.8
GP-D8	2.07	Site 6	05-Sep-25	0.0	0.9	20.2	78.9
GP-D13	0.37	Site 6	03-Dec-12	20.4	7.4	15.7	56.5
GP-D13	0.39	Site 6	18-Dec-12	20.8	7.2	15.7	56.3
GP-D13	0.26	Site 6	04-Apr-13	5.1	1.4	19.5	74.4
GP-D13	0.42	Site 6	20-Jun-13	24.0	5.6	14.1	57.4
GP-D13	0.68	Site 6	22-Aug-13	16.8	5.9	16.1	58.2
GP-D13	0.43	Site 6	11-Oct-13	20.6	8.3	15.2	53.6
GP-D13	0.44	Site 6	13-Dec-13	42.5	12.7	15.8	29.0
GP-D13	0.45	Site 6	12-Feb-14	28.5	7.9	14.9	48.7
GP-D13	0.35	Site 6	27-Nov-14	15.0	4.7	17.8	62.5
GP-D13	0.35	Site 6	11-Mar-15	27.6	6.6	14.6	51.2
GP-D13	0.62	Site 6	21-Sep-15	20.2	8.5	16.6	54.7
GP-D13	0.30	Site 6	14-Dec-15	46.8	14.7	7.5	31.0
GP-D13	0.16	Site 6	14-Mar-16	26.7	6.6	14.8	51.9
GP-D13	0.70	Site 6	06-Sep-16	29.3	9.9	11.5	49.2
GP-D13	0.18	Site 6	28-Feb-17	12.0	3.0	18.7	66.3
GP-D13	0.54	Site 6	08-Sep-17	41.6	13.2	8.1	35.1
GP-D13	0.10	Site 6	23-Feb-18	0.0	0.1	22.0	77.9
GP-D13	0.59	Site 6	04-Sep-18	35.2	9.1	11.2	44.5
GP-D13	0.53	Site 6	01-Apr-19	0.0	0.0	20.8	79.2
GP-D13	0.72	Site 6	29-Aug-19	15.2	3.7	16.4	64.7
GP-D13	0.43	Site 6	14-Feb-20	14.6	2.8	13.2	69.4
GP-D13	0.35	Site 6	03-Feb-21	10.0	1.9	19.6	68.5
GP-D13	not measured	Site 6	17-Sep-21	10.3	2.4	19.0	68.3
GP-D13	0.34	Site 6	06-Oct-21	22.2	10.7	9.3	57.8
GP-D13	0.41	Site 6	25-Jan-22	4.8	1.2	21.1	72.9
GP-D13	0.59	Site 6	28-Sep-22	8.4	2.5	19.7	69.4
GP-D13	0.30	Site 6	20-Mar-23	5.3	1.3	20.9	72.5
GP-D13	0.59	Site 6	29-Aug-23	15.0	2.9	16.9	65.2
GP-D13	0.30	Site 6	22-Feb-24	69.8	8.9	4.4	16.9
GP-D13	0.37	Site 6	29-Mar-24	7.0	1.5	20.1	71.4
GP-D13	0.66	Site 6	19-Sep-24	15.8	3.9	16.9	63.4
GP-D13	0.67	Site 6	27-Jan-25	20.4	3.3	16.4	58.1
GP-D13	0.58	Site 6	05-Sep-25	36.3	8.9	11.1	43.7

Table 6
Landfill Gas Concentrations (% methane by volume)
Dymment's Creek Landfills

				Landfill Gas Readings - GEM 2000			
Well ID	Water (mbgs)	Site	Sample Date	CH4 (%)	CO2 (%)	O2 (%)	Bal. (%)
GP-D14		Site 6	15-Jun-12	0.5	-	-	-
GP-D14		Site 6	15-Jun-12	3.4	-	-	-
GP-D14		Site 6	28-Jun-12	0.2	0.0	18.5	81.3
GP-D14	1.70	Site 6	17-Sep-12	No Reading Taken			
GP-D14		Site 6	18-Oct-12	0.0	0.0	21.3	78.7
GP-D14	1.49	Site 6	03-Dec-12	0.0	0.1	21.3	78.6
GP-D14	1.53	Site 6	18-Dec-12	0.0	0.1	21.2	78.7
GP-D14	1.32	Site 6	04-Apr-13	0.0	0.0	21.0	79.0
GP-D14	1.66	Site 6	20-Jun-13	0.2	0.3	19.4	80.1
GP-D14	1.75	Site 6	22-Aug-13	0.1	0.2	20.8	78.9
GP-D14	1.62	Site 6	11-Oct-13	0.1	0.0	21.4	78.5
GP-D14	1.62	Site 6	13-Dec-13	0.0	1.7	22.1	76.2
GP-D14	1.65	Site 6	12-Feb-14	0.0	0.6	20.8	78.6
GP-D14	1.36	Site 6	27-Nov-14	0.2	0.6	21.6	77.6
GP-D14	1.36	Site 6	11-Mar-15	0.0	1.6	20.9	77.5
GP-D14	1.75	Site 6	21-Sep-15	0.0	4.8	17.2	78.0
GP-D14	1.63	Site 6	14-Dec-15	0.4	2.0	18.7	78.9
GP-D14	1.11	Site 6	14-Mar-16	1.2	0.6	22.3	76.9
GP-D14	1.77	Site 6	06-Sep-16	6.9	15.7	5.3	72.1
GP-D14	1.64	Site 6	25-Nov-16	0.5	0.3	20.2	79.0
GP-D14	1.30	Site 6	27-Feb-17	1.6	1.0	21.3	76.1
GP-D14	1.69	Site 6	08-Sep-17	3.3	10.4	11.3	75.0
GP-D14	1.16	Site 6	23-Feb-18	0.1	0.1	21.8	78.0
GP-D14	1.70	Site 6	04-Sep-18	1.3	7.5	12.6	78.6
GP-D14	1.55	Site 6	01-Apr-19	0.2	0.3	20.1	79.4
GP-D14	1.74	Site 6	29-Aug-19	0.0	5.4	15.4	79.2
GP-D14	1.56	Site 6	14-Feb-20	0.1	0.1	19.7	80.1
GP-D14	1.71	Site 6	11-Sep-20	0.3	4.9	16.9	77.9
GP-D14	1.59	Site 6	03-Feb-21	0.8	3.4	18.7	77.1
GP-D14	1.41	Site 6	17-Sep-21	0.2	5.6	14.5	79.7
GP-D14	1.70	Site 6	25-Jan-22	0.0	0.4	21.5	78.1
GP-D14	1.69	Site 6	28-Sep-22	0.0	4.5	17.8	77.7
GP-D14	1.52	Site 6	20-Mar-23	0.0	0.1	22.0	77.9
GP-D14	1.78	Site 6	29-Aug-23	0.2	0.4	20.5	78.9
GP-D14	1.60	Site 6	22-Feb-24	0.0	0.0	21.1	78.9
GP-D14	1.77	Site 6	19-Sep-24	0.0	4.4	17.3	78.3
GP-D14	1.97	Site 6	27-Jan-25	0.1	0.2	22.5	77.2
GP-D14	1.73	Site 6	05-Sep-25	0.0	0.1	21.4	78.5
GP-D15	1.98	Site 5	03-Dec-12	0.0	1.6	19.8	78.6
GP-D15	1.99	Site 5	18-Dec-12	0.0	1.9	19.8	78.3
GP-D15	1.89	Site 5	04-Apr-13	0.0	1.2	19.8	79.0
GP-D15	1.99	Site 5	20-Jun-13	0.0	1.1	19.7	79.1
GP-D15	2.15	Site 5	22-Aug-13	0.1	3.4	18.0	78.4
GP-D15	2.07	Site 5	11-Oct-13	0.1	0.6	20.9	78.4
GP-D15	2.00	Site 5	13-Dec-13	0.0	2.6	22.0	75.4
GP-D15	2.10	Site 5	12-Feb-14	0.0	1.9	21.9	76.2
GP-D15	1.87	Site 5	27-Nov-14	0.0	2.2	19.7	78.1
GP-D15	1.87	Site 5	11-Mar-15	0.0	1.5	21.3	77.2
GP-D15	2.17	Site 5	21-Sep-15	0.0	4.4	18.0	77.6
GP-D15	1.92	Site 5	14-Dec-15	0.0	2.2	18.9	78.9
GP-D15	1.79	Site 5	27-Feb-17	0.0	1.0	21.1	77.9
GP-D15	1.97	Site 5	08-Sep-17	0.0	2.9	18.5	78.6
GP-D15	1.90	Site 5	23-Feb-18	0.0	0.1	22.0	77.9
GP-D15	2.01	Site 5	04-Sep-18	0.0	3.9	17.1	79.0
GP-D15	1.86	Site 5	01-Apr-19	0.0	0.2	20.4	79.4
GP-D15	2.01	Site 5	29-Aug-19	0.0	3.2	17.0	79.8
GP-D15	1.88	Site 5	14-Feb-20	0.0	0.0	20.8	79.2
GP-D15	2.14	Site 5	03-Feb-21	0.0	1.5	20.4	78.1
GP-D15	2.14	Site 5	17-Sep-21	0.0	4.0	16.8	79.2
GP-D15	2.14	Site 5	25-Jan-22	0.0	0.3	20.0	79.7
GP-D15	2.14	Site 5	28-Sep-22	0.0	4.4	17.3	78.3
GP-D15	2.14	Site 5	24-Feb-23	0.0	0.8	20.7	78.5
GP-D15	2.14	Site 5	29-Aug-23	0.0	3.9	17.8	78.3
GP-D15	2.14	Site 5	22-Feb-24	0.0	0.0	20.9	79.1
GP-D15	2.14	Site 5	24-Sep-24	0.3	3.1	18.2	78.4
GP-D15	2.14	Site 5	27-Jan-25	0.1	1.1	21.4	77.4
GP-D15	2.14	Site 5	03-Sep-25	0.0	1.7	19.4	78.9

Table 6
Landfill Gas Concentrations (% methane by volume)
Dymment's Creek Landfills

				Landfill Gas Readings - GEM 2000			
Well ID	Water (mbgs)	Site	Sample Date	CH4 (%)	CO2 (%)	O2 (%)	Bal. (%)
GP-D16	2.70	Site 5	28-Jun-12	0.0	0.2	18.4	81.4
GP-D16	2.40	Site 5	17-Sep-12	No Reading Taken			
GP-D16	2.70	Site 5	18-Oct-12	0.0	2.8	18.2	79.0
GP-D16	2.34	Site 5	03-Dec-12	0.0	2.5	19.1	78.4
GP-D16	2.33	Site 5	18-Dec-12	0.0	2.3	19.1	78.6
GP-D16	2.18	Site 5	04-Apr-13	0.0	2.7	16.9	80.4
GP-D16	2.19	Site 5	20-Jun-13	0.0	2.7	15.6	81.7
GP-D16	2.39	Site 5	22-Aug-13	0.1	2.2	19.1	78.6
GP-D16	2.38	Site 5	11-Oct-13	0.1	1.7	19.7	78.5
GP-D16	2.33	Site 5	13-Dec-13	0.0	2.9	21.8	75.3
GP-D16	2.45	Site 5	12-Feb-14	0.0	3.9	16.1	80.0
GP-D16	2.31	Site 5	27-Nov-14	0.0	3.4	19.1	77.5
GP-D16	1.87	Site 5	11-Mar-15	0.0	2.2	18.7	79.1
GP-D16	2.43	Site 5	21-Sep-15	0.0	2.9	18.4	78.7
GP-D16	2.41	Site 5	14-Dec-15	0.0	2.1	18.9	79.0
GP-D16	2.05	Site 5	27-Feb-17	0.0	1.4	20.6	78.0
GP-D16	2.24	Site 5	08-Sep-17	0.0	1.6	19.7	78.7
GP-D16	2.28	Site 5	23-Feb-18	0.0	0.0	22.1	77.9
GP-D16	2.40	Site 5	04-Sep-18	0.0	2.2	17.2	80.6
GP-D16	2.30	Site 5	01-Apr-19	0.0	0.0	20.7	79.3
GP-D16	2.41	Site 5	29-Aug-19	0.0	1.2	18.7	80.1
GP-D16	2.27	Site 5	14-Feb-20	0.0	0.1	20.6	79.3
GP-D16	2.31	Site 5	03-Feb-21	0.0	1.5	19.3	79.2
GP-D16	2.24	Site 5	17-Sep-21	0.0	1.7	19.9	78.4
GP-D16	2.26	Site 5	25-Jan-22	0.0	0.9	20.7	78.4
GP-D16	2.43	Site 5	28-Sep-22	0.0	1.9	19.7	78.4
GP-D16	2.15	Site 5	20-Mar-23	0.0	1.6	19.2	79.2
GP-D16	2.25	Site 5	30-Aug-23	0.0	2.3	19.5	78.2
GP-D16	2.17	Site 5	22-Feb-24	0.0	0.0	20.8	79.2
GP-D16	2.26	Site 5	19-Sep-24	0.0	1.3	19.7	79.0
GP-D16	2.59	Site 5	27-Jan-25	0.0	0.1	22.5	77.3
GP-D16	2.35	Site 5	05-Sep-25	0.0	1.0	20.5	78.6
GP-D17	2.08	Site 5	03-Dec-12	0.0	0.5	20.8	78.7
GP-D17	2.08	Site 5	19-Dec-12	0.0	0.5	20.6	78.9
GP-D17	1.97	Site 5	04-Apr-13	0.0	0.1	20.1	79.8
GP-D17	1.83	Site 5	20-Jun-13	0.0	1.1	15.8	83.1
GP-D17	2.21	Site 5	22-Aug-13	0.1	1.6	19.1	79.2
GP-D17	2.12	Site 5	11-Oct-13	0.1	0.8	20.7	78.4
GP-D17	2.04	Site 5	13-Dec-13	0.0	0.7	22.3	77.0
GP-D17	2.16	Site 5	25-Feb-14	0.0	0.7	21.4	77.9
GP-D17	2.04	Site 5	27-Nov-14	0.0	0.8	21.2	78.0
GP-D17	2.04	Site 5	12-Mar-15	0.0	0.7	22.0	77.3
GP-D17	2.23	Site 5	21-Sep-15	0.0	1.2	20.1	78.7
GP-D17	2.08	Site 5	14-Dec-15	0.0	0.5	20.3	79.2
GP-D17	1.81	Site 5	20-Mar-17	0.0	0.4	20.9	78.7
GP-D17	2.15	Site 5	08-Sep-17	0.0	1.1	19.9	79.0
GP-D17	2.05	Site 5	23-Feb-18	0.0	0.0	22.3	77.7
GP-D17	2.26	Site 5	04-Sep-18	0.0	1.4	18.8	79.8
GP-D17	2.00	Site 5	01-Apr-19	0.0	0.0	20.9	79.1
GP-D17	2.30	Site 5	29-Aug-19	0.0	1.3	16.8	81.9
GP-D17	2.04	Site 5	14-Feb-20	0.0	0.0	20.4	79.6
GP-D17	2.21	Site 5	11-Sep-20	0.0	1.0	19.5	79.5
GP-D17	2.21	Site 5	03-Mar-21	0.0	0.0	21.4	78.6
GP-D17	2.15	Site 5	17-Sep-21	0.0	1.2	19.6	79.2
GP-D17	2.12	Site 5	17-Feb-22	0.0	0.0	22.3	77.7
GP-D17	2.17	Site 5	28-Sep-22	0.0	1.1	20.9	78.0
GP-D17	2.05	Site 5	24-Feb-23	0.0	0.3	21.1	78.6
GP-D17	2.32	Site 5	29-Aug-23	0.0	1.2	19.2	79.6
GP-D17	2.22	Site 5	22-Feb-24	0.0	0.0	21.2	78.8
GP-D17	2.10	Site 5	19-Sep-24	0.2	0.0	20.2	79.6
GP-D17	2.21	Site 5	28-Jan-25	0.0	0.4	22.2	77.3
GP-D17	2.11	Site 5	03-Sep-25	0.0	0.1	20.2	79.7

Table 6
Landfill Gas Concentrations (% methane by volume)
Dymment's Creek Landfills

Well ID	Water (mbgs)	Site	Sample Date	Landfill Gas Readings - GEM 2000			
				CH4 (%)	CO2 (%)	O2 (%)	Bal. (%)
GP-D18		Site 5	28-Jun-12	0.0	0.0	18.5	81.5
GP-D18	2.26	Site 5	17-Sep-12	No Reading Taken			
GP-D18		Site 5	18-Oct-12	2.1	2.0	16.8	79.1
GP-D18	2.08	Site 5	03-Dec-12	0.0	0.2	21.0	78.8
GP-D18	2.07	Site 5	18-Dec-12	0.0	0.1	21.0	78.9
GP-D18	1.78	Site 5	04-Apr-13	0.0	0.1	21.0	78.9
GP-D18	2.11	Site 5	20-Jun-13	0.0	0.0	17.6	82.3
GP-D18	1.33	Site 5	22-Aug-13	2.9	0.8	17.7	77.8
GP-D18	2.13	Site 5	11-Oct-13	1.0	1.0	18.9	79.1
GP-D18	2.15	Site 5	13-Dec-13	0.0	2.0	21.3	76.7
GP-D18	2.26	Site 5	12-Feb-14	0.0	0.5	22.5	77.0
GP-D18	1.95	Site 5	27-Nov-14	0.8	1.2	18.0	80.0
GP-D18	1.95	Site 5	19-Mar-15	0.0	0.4	21.8	77.8
GP-D18	2.28	Site 5	21-Sep-15	0.0	0.0	21.5	78.5
GP-D18	2.18	Site 5	14-Dec-15	0.0	0.1	20.7	79.2
GP-D18	1.61	Site 5	14-Mar-16	0.0	0.1	22.5	77.4
GP-D18	2.04	Site 5	06-Sep-16	0.0	1.4	18.0	80.6
GP-D18	1.58	Site 5	28-Feb-17	0.0	0.1	22.3	77.6
GP-D18	1.66	Site 5	23-Feb-18	0.0	0.0	21.9	78.1
GP-D18	2.25	Site 5	11-Sep-20	0.0	1.6	20.0	78.4
GP-D18	2.44	Site 5	27-Jan-25	0.0	0.1	22.7	77.2
GP-D19	2.74	Site 5	15-Jun-12	0.0	-	-	-
GP-D19	2.74	Site 5	28-Jun-12	0.0	0.0	18.8	81.2
GP-D19	2.74	Site 5	18-Oct-12	0.0	1.8	19.2	79.0
GP-D19	2.74	Site 5	03-Dec-12	0.0	1.4	20.0	78.6
GP-D19	2.74	Site 5	18-Dec-12	0.0	1.3	19.8	78.9
GP-D19	2.74	Site 5	04-Apr-13	0.0	2.6	14.0	83.4
GP-D19	2.74	Site 5	20-Jun-13	0.0	1.7	16.3	82.0
GP-D19	2.74	Site 5	22-Aug-13	0.1	1.4	19.7	78.8
GP-D19	2.74	Site 5	11-Oct-13	0.0	1.2	26.3	78.5
GP-D19	2.74	Site 5	13-Dec-13	0.0	1.3	20.1	78.6
GP-D19	2.37	Site 5	12-Feb-14	0.0	2.5	19.8	77.7
GP-D19	2.25	Site 5	27-Nov-14	0.0	2.0	20.3	77.7
GP-D19	2.25	Site 5	11-Mar-15	0.0	1.9	20.5	77.6
GP-D19	2.74	Site 5	21-Sep-15	0.0	2.3	19.5	78.2
GP-D19	2.74	Site 5	14-Dec-15	0.1	1.4	19.8	78.7
GP-D19	2.74	Site 5	28-Feb-17	0.0	1.1	21.3	77.6
GP-D19	2.74	Site 5	08-Sep-17	0.0	1.3	20.0	78.7
GP-D19	2.74	Site 5	23-Feb-18	0.0	0.1	22.0	77.9
GP-D19	2.74	Site 5	04-Sep-18	0.0	2.3	18.6	79.1
GP-D19	2.74	Site 5	01-Apr-19	0.1	0.3	20.2	79.4
GP-D19	2.74	Site 5	29-Aug-19	0.0	1.3	18.0	80.7
GP-D19	2.74	Site 5	14-Feb-20	0.0	0.1	20.7	79.2
GP-D19	2.75	Site 5	11-Sep-20	0.0	2.0	19.9	78.1
GP-D19	2.74	Site 5	03-Feb-21	0.0	0.9	19.9	79.2
GP-D19	2.74	Site 5	17-Sep-21	0.0	1.7	19.9	78.4
GP-D19	2.74	Site 5	25-Jan-22	0.0	0.7	21.8	77.5
GP-D19	2.74	Site 5	28-Sep-22	0.0	1.6	20.6	77.8
GP-D19	2.74	Site 5	24-Feb-23	0.0	0.9	21.6	77.5
GP-D19	2.74	Site 5	30-Aug-23	0.0	1.4	20.3	78.3
GP-D19	2.74	Site 5	22-Feb-24	0.0	0.0	21.0	79.0
GP-D19	2.74	Site 5	19-Sep-24	0.0	1.0	19.5	79.5
GP-D19	2.74	Site 5	27-Jan-25	0.0	0.2	22.6	77.2
GP-D19	2.74	Site 5	03-Sep-25	0.0	0.2	21.2	78.7
GP-D20	3.57	Site 6	22-Aug-13	0.0	1.9	19.0	79.1
GP-D20	3.51	Site 6	11-Oct-13	0.0	1.6	19.4	79.0
GP-D20	3.46	Site 6	13-Dec-13	0.0	0.2	21.7	78.1
GP-D20	3.58	Site 6	12-Feb-14	0.0	0.8	22.5	76.7
GP-D20	3.45	Site 6	27-Nov-14	0.0	0.9	20.9	78.2
GP-D20	3.45	Site 6	12-Mar-15	0.0	0.4	22.8	76.8
GP-D20	3.60	Site 6	21-Sep-15	0.0	1.9	20.1	78.0
GP-D20	3.46	Site 6	14-Dec-15	0.1	0.9	19.9	79.1
GP-D20	3.22	Site 6	27-Feb-17	0.0	0.4	20.4	79.2
GP-D20	3.49	Site 6	08-Sep-17	0.0	1.3	19.7	79.0
GP-D20	3.36	Site 6	23-Feb-18	0.0	0.6	21.2	78.2
GP-D20	3.51	Site 6	04-Sep-18	0.0	1.4	18.7	79.9
GP-D20	3.35	Site 6	01-Apr-19	0.0	0.0	20.8	79.2
GP-D20	3.64	Site 6	29-Aug-19	0.0	1.1	18.6	80.3
GP-D20	3.33	Site 6	14-Feb-20	0.0	0.0	20.6	79.4
GP-D20	3.52	Site 6	11-Sep-20	0.0	1.4	19.9	78.7
GP-D20	3.45	Site 6	03-Feb-21	0.0	0.6	20.4	79.0
GP-D20	3.45	Site 6	17-Sep-21	0.0	1.5	19.3	79.2
GP-D20	3.32	Site 6	25-Jan-22	0.0	0.7	21.1	78.2
GP-D20	3.55	Site 6	28-Sep-22	0.0	1.3	20.4	78.3
GP-D20	3.36	Site 6	20-Mar-23	0.0	0.6	20.2	79.2
GP-D20	3.52	Site 6	29-Aug-23	0.0	1.7	18.9	79.4
GP-D20	3.41	Site 6	22-Feb-24	0.0	0.0	21.4	78.6
GP-D20	3.53	Site 6	19-Sep-24	0.0	1.4	19.8	78.9
GP-D20	3.43	Site 6	27-Jan-25	0.0	0.4	21.0	78.5
GP-D20	3.57	Site 6	05-Sep-25	0.0	0.5	20.2	79.3

Table 6
Landfill Gas Concentrations (% methane by volume)
Dymment's Creek Landfills

				Landfill Gas Readings - GEM 2000			
Well ID	Water (mbgs)	Site	Sample Date	CH4 (%)	CO2 (%)	O2 (%)	Bal. (%)
GP-D21	3.50	Site 6	22-Aug-13	0.0	0.7	20.2	79.0
GP-D21	3.44	Site 6	11-Oct-13	0.0	0.5	21.1	78.4
GP-D21	3.36	Site 6	13-Dec-13	0.0	0.2	22.2	77.6
GP-D21	3.53	Site 6	12-Feb-14	0.0	0.4	22.8	76.8
GP-D21	3.34	Site 6	27-Nov-14	0.0	0.5	21.6	77.9
GP-D21	3.34	Site 6	12-Mar-15	0.0	0.3	22.8	76.9
GP-D21	3.55	Site 6	21-Sep-15	0.0	0.7	21.1	78.2
GP-D21	3.25	Site 6	14-Dec-15	0.1	0.2	20.7	79.0
GP-D21	3.03	Site 6	27-Feb-17	0.0	0.2	21.1	78.7
GP-D21	3.23	Site 6	23-Feb-18	0.0	0.1	22.1	77.8
GP-D21	3.28	Site 6	01-Apr-19	0.0	0.3	20.0	79.7
GP-D21	3.60	Site 6	29-Aug-19	0.0	0.5	19.1	80.4
GP-D21	3.30	Site 6	14-Feb-20	0.0	0.0	20.8	79.2
GP-D21	2.46	Site 6	11-Sep-20	0.0	0.6	20.5	78.9
GP-D21	3.38	Site 6	03-Feb-21	0.0	0.3	20.8	78.9
GP-D21	3.28	Site 6	17-Sep-21	0.0	0.5	20.9	78.6
GP-D21	3.32	Site 6	25-Jan-22	0.0	0.2	21.5	78.3
GP-D21	3.51	Site 6	28-Sep-22	0.0	0.5	21.1	78.4
GP-D21	3.27	Site 6	20-Mar-23	0.0	0.2	21.4	78.4
GP-D21	3.52	Site 6	29-Aug-23	0.0	0.5	20.1	79.4
GP-D21	3.34	Site 6	22-Feb-24	0.0	0.0	21.3	78.7
GP-D21	3.48	Site 6	19-Sep-24	0.0	0.4	20.2	79.4
GP-D21	3.54	Site 6	27-Jan-25	0.0	0.2	22.8	77.0
GP-D21	3.54	Site 6	05-Sep-25	0.0	0.2	20.2	79.6
GP-D22	4.03	Site 6	22-Aug-13	0.0	0.7	20.0	79.3
GP-D22	3.97	Site 6	11-Oct-13	0.0	0.5	20.8	78.7
GP-D22	3.88	Site 6	13-Dec-13	0.0	0.3	22.8	76.9
GP-D22	4.04	Site 6	25-Feb-14	0.0	0.2	22.2	77.6
GP-D22	3.82	Site 6	25-Nov-14	0.0	0.1	21.9	77.8
GP-D22	3.82	Site 6	12-Mar-15	0.0	0.1	21.1	78.8
GP-D22	4.07	Site 6	21-Sep-15	0.0	0.8	21.1	78.1
GP-D22	3.75	Site 6	14-Dec-15	0.1	0.3	20.7	78.9
GP-D22	3.29	Site 6	27-Feb-17	0.0	0.2	21.3	78.5
GP-D22	3.85	Site 6	08-Sep-17	0.0	0.5	20.7	78.8
GP-D22	3.75	Site 6	23-Feb-18	0.0	0.1	22.0	77.9
GP-D22	3.97	Site 6	04-Sep-18	0.1	0.1	20.3	79.5
GP-D22	3.91	Site 6	01-Apr-19	0.0	0.2	20.7	79.1
GP-D22	4.12	Site 6	29-Aug-19	0.0	0.6	18.9	80.5
GP-D22	3.90	Site 6	14-Feb-20	0.0	0.2	20.4	79.4
GP-D22	3.98	Site 6	11-Sep-20	0.0	0.5	20.7	78.8
GP-D22	3.93	Site 6	03-Mar-21	0.0	0.0	21.3	78.7
GP-D22	3.86	Site 6	17-Sep-21	0.0	0.4	20.5	79.1
GP-D22	3.78	Site 6	17-Feb-22	0.0	0.0	22.2	77.8
GP-D22	3.99	Site 6	28-Sep-22	0.0	0.5	21.0	78.5
GP-D22	3.77	Site 6	24-Feb-23	0.0	0.1	19.8	80.1
GP-D22		Site 6	13-Apr-23				Decommissioned
GP-D23	2.88	Site 6	22-Aug-13	0.0	4.4	17.1	78.5
GP-D23	2.79	Site 6	11-Oct-13	0.0	0.3	21.2	78.5
GP-D23	2.71	Site 6	13-Dec-13	0.0	0.3	22.7	77.0
GP-D23	2.89	Site 6	25-Feb-14	0.0	2.3	21.2	76.5
GP-D23	2.71	Site 6	25-Nov-14	0.0	2.9	19.6	77.5
GP-D23	2.71	Site 6	16-Mar-15	0.1	2.3	20.6	77.0
GP-D23	2.90	Site 6	21-Sep-15	0.0	3.7	18.4	77.9
GP-D23	3.62	Site 6	14-Dec-15	0.0	2.7	18.5	78.8
GP-D23	2.59	Site 6	27-Feb-17	0.0	0.6	21.0	78.4
GP-D23	2.72	Site 6	08-Sep-17	0.0	4.5	17.3	78.2
GP-D23	2.56	Site 6	23-Feb-18	0.0	0.1	22.2	77.7
GP-D23	3.02	Site 6	04-Sep-18	0.0	0.4	20.0	79.6
GP-D23	2.92	Site 6	01-Apr-19	0.0	0.1	20.4	79.5
GP-D23	2.96	Site 6	29-Aug-19	0.0	4.4	15.7	79.9
GP-D23	3.93	Site 6	14-Feb-20	0.0	0.0	20.9	79.1
GP-D23	2.93	Site 6	03-Mar-21	0.0	0.0	20.9	79.1
GP-D23	2.68	Site 6	17-Sep-21	0.0	4.2	16.6	79.2
GP-D23	2.75	Site 6	24-Feb-22	0.0	0.6	22.1	77.3
GP-D23	3.01	Site 6	28-Sep-22	0.0	4.8	16.7	78.5
GP-D23	2.70	Site 6	24-Feb-23	0.0	0.3	22.0	77.7
GP-D23		Site 6	13-Apr-23				Decommissioned

Table 6
Landfill Gas Concentrations (% methane by volume)
Dymont's Creek Landfills

				Landfill Gas Readings - GEM 2000			
Well ID	Water (mbgs)	Site	Sample Date	CH4 (%)	CO2 (%)	O2 (%)	Bal. (%)
GP-D23R	3.06	Site 6	22-Dec-23	0.0	0.2	20.1	79.7
GP-D23R	2.99	Site 6	22-Feb-24	0.0	0.0	21.1	78.9
GP-D23R	3.14	Site 6	19-Sep-24	0.0	0.2	20.3	79.1
GP-D23R	3.35	Site 6	27-Jan-25	0.0	0.2	22.8	77.0
GP-D23R	3.15	Site 6	05-Sep-25	0.0	0.1	20.9	78.9
GP-D24	5.14	Site 6	22-Aug-13	0.0	1.0	20.0	79.0
GP-D24	4.07	Site 6	11-Oct-13	0.1	0.5	21.0	78.4
GP-D24	3.98	Site 6	13-Dec-13	0.0	0.3	22.8	76.9
GP-D24		Site 6	12-Feb-14	Well Buried- No Reading Taken			
GP-D24	4.01	Site 6	03-Apr-14	0.0	0.6	21.4	78.0
GP-D24	3.99	Site 6	25-Nov-14	0.0	1.0	21.4	77.7
GP-D24	3.99	Site 6	12-Mar-15	Well Buried- No Reading Taken			
GP-D24	4.18	Site 6	21-Sep-15	0.0	1.3	20.6	78.1
GP-D24	3.28	Site 6	14-Dec-15	0.0	0.6	20.3	79.1
GP-D24	3.76	Site 6	27-Feb-17	0.0	0.4	21.3	78.3
GP-D24	3.90	Site 6	08-Sep-17	0.2	1.2	20.2	78.4
GP-D24	3.87	Site 6	23-Feb-18	0.0	0.1	22.2	77.7
GP-D24	4.13	Site 6	04-Sep-18	0.0	0.9	19.6	79.5
GP-D24	4.11	Site 6	01-Apr-19	0.0	0.0	20.8	79.2
GP-D24	4.22	Site 6	30-Aug-19	0.0	1.2	19.0	79.8
GP-D24	4.12	Site 6	14-Feb-20	0.0	0.0	20.1	79.9
GP-D24	4.09	Site 6	11-Sep-20	0.0	1.0	20.5	78.5
GP-D24	4.04	Site 6	03-Mar-21	0.0	0.0	21.3	78.7
GP-D24	3.99	Site 6	17-Sep-21	0.0	0.9	20.2	78.9
GP-D24	3.92	Site 6	24-Feb-22	0.0	0.1	20.9	79.0
GP-D24	4.03	Site 6	28-Sep-22	0.0	1.1	20.5	78.4
GP-D24	3.87	Site 6	24-Feb-23	0.0	0.0	22.2	77.8
GP-D24	3.87	Site 6	24-Feb-23	0.0	0.0	22.2	77.8
GP-D24		Site 6	13-Apr-23	Decommissioned			
GP-D26	2.81	Site 4	22-Aug-13	0.1	1.0	19.8	79.1
GP-D26	2.77	Site 4	11-Oct-13	0.1	0.6	20.9	78.4
GP-D26	2.67	Site 4	13-Dec-13	0.0	0.4	22.7	76.9
GP-D26	2.80	Site 4	25-Feb-14	0.0	0.5	21.8	77.7
GP-D26	2.68	Site 4	27-Nov-14	0.0	0.6	21.2	78.2
GP-D26	2.68	Site 4	12-Mar-15	0.0	0.3	22.5	77.2
GP-D26	2.88	Site 4	22-Sep-15	0.0	1.2	21.0	77.8
GP-D26	2.72	Site 4	14-Dec-15	0.0	0.3	20.4	79.3
GP-D26	2.41	Site 4	28-Feb-17	0.0	0.2	21.6	78.2
GP-D26	2.79	Site 4	08-Sep-17	0.0	0.8	20.1	79.1
GP-D26	2.70	Site 4	23-Feb-18	0.0	0.3	21.9	77.8
GP-D26	2.90	Site 4	04-Sep-18	0.0	1.0	19.3	79.7
GP-D26	2.82	Site 4	01-Apr-19	0.0	0.2	20.6	79.2
GP-D26	2.95	Site 4	29-Aug-19	0.0	0.8	19.4	79.8
GP-D26	2.80	Site 4	14-Feb-20	0.0	0.0	20.7	79.3
GP-D26	2.86	Site 4	03-Mar-21	0.0	0.0	21.4	78.6
GP-D26	2.79	Site 4	17-Sep-21	0.0	1.1	19.4	79.5
GP-D26	2.77	Site 4	17-Feb-22	0.0	0.3	21.6	78.1
GP-D26	2.85	Site 4	28-Sep-22	0.0	1.0	20.9	78.1
GP-D26	2.69	Site 4	24-Feb-23	0.0	0.1	21.7	78.2
GP-D26	2.95	Site 4	29-Aug-23	0.0	0.9	19.7	79.4
GP-D26	2.69	Site 4	22-Feb-24	0.0	0.0	21.3	78.7
GP-D26	2.84	Site 4	19-Sep-24	0.0	0.5	20.2	79.2
GP-D26	3.07	Site 4	28-Jan-25	0.0	0.3	22.4	77.3
GP-D26	3.90	Site 4	03-Sep-25	0.0	0.4	20.0	79.6

Table 6
Landfill Gas Concentrations (% methane by volume)
Dymment's Creek Landfills

				Landfill Gas Readings - GEM 2000			
Well ID	Water (mbgs)	Site	Sample Date	CH4 (%)	CO2 (%)	O2 (%)	Bal. (%)
GP-D27	2.53	Site 4	22-Aug-13	0.1	4.2	15.3	80.4
GP-D27	2.58	Site 4	11-Oct-13	0.1	1.9	18.7	79.3
GP-D27	2.53	Site 4	13-Dec-13	0.0	3.5	18.1	78.4
GP-D27	2.71	Site 4	25-Feb-14	0.0	2.5	18.3	79.2
GP-D27	2.58	Site 4	25-Nov-14	0.0	5.9	13.7	80.4
GP-D27	2.58	Site 4	12-Mar-15	0.0	3.9	17.2	78.9
GP-D27	2.66	Site 4	21-Sep-15	0.0	6.1	13.3	80.6
GP-D27	2.62	Site 4	14-Dec-15	0.0	1.7	18.1	80.2
GP-D27	2.29	Site 4	28-Feb-17	0.0	3.7	15.3	81.0
GP-D27	2.44	Site 4	08-Sep-17	0.0	3.5	16.4	80.1
GP-D27	2.46	Site 4	23-Feb-18	0.0	0.0	22.4	77.6
GP-D27	2.63	Site 4	04-Sep-18	0.0	4.3	15.1	80.6
GP-D27	2.58	Site 4	01-Apr-19	0.0	0.0	20.8	79.2
GP-D27	2.63	Site 4	29-Aug-19	0.0	4.8	14.1	81.1
GP-D27	2.60	Site 4	14-Feb-20	0.0	0.2	20.5	79.2
GP-D27	2.48	Site 4	03-Mar-21	0.0	0.9	19.3	79.8
GP-D27	2.46	Site 4	17-Sep-21	0.0	6.1	13.1	80.8
GP-D27	2.48	Site 4	17-Feb-22	0.0	1.5	20.5	78.0
GP-D27	2.63	Site 4	28-Sep-22	0.0	5.0	15.2	79.8
GP-D27	2.36	Site 4	24-Feb-23	0.0	0.1	22.1	77.8
GP-D27	2.41	Site 4	29-Aug-23	0.0	3.2	16.0	80.2
GP-D27	2.31	Site 4	22-Feb-24	0.0	0.0	21.4	78.6
GP-D27	2.35	Site 4	19-Sep-24	0.2	0.0	20.7	79.1
GP-D27	2.64	Site 4	28-Jan-25	0.0	0.7	21.5	77.7
GP-D27	2.51	Site 4	03-Sep-25	0.0	0.2	20.8	78.9
GVP-1	na	Site 6	23-Mar-23	0.0	0.7	19.7	79.6
GVP-1	na	Site 6	29-Aug-23	0.0	3.4	17.3	79.3
GVP-1	na	Site 6	29-Mar-24	0.3	0.7	20.4	78.6
GVP-1	na	Site 6	13-Sep-24	0.0	4.5	16.0	79.6
GVP-1	na	Site 6	19-Sep-24	0.0	5.2	15.6	79.2
GVP-1	na	Site 6	28-Jan-25	0.1	0.9	21.4	77.6
GVP-1	na	Site 6	05-Sep-25	0.0	3.5	17.5	79.0
GVP-2	na	Site 6	23-Mar-23	0.1	0.1	21.3	78.5
GVP-2	na	Site 6	29-Aug-23	0.1	2.9	17.5	79.5
GVP-2	na	Site 6	29-Mar-24	0.3	0.4	21.2	78.1
GVP-2	na	Site 6	13-Sep-24	0.2	6.5	13.8	79.5
GVP-2	na	Site 6	19-Sep-24	0.1	0.1	20.9	78.9
GVP-2	na	Site 6	28-Jan-25	0.0	0.3	22.5	77.3
GVP-2	na	Site 6	05-Sep-25	0.3	4.5	16.2	79.3
GVP-3	na	Site 6	23-Mar-23	0.1	0.1	21.6	78.2
GVP-3	na	Site 6	29-Aug-23	0.0	1.0	19.2	79.8
GVP-3	na	Site 6	29-Mar-24	0.3	0.1	21.8	77.9
GVP-3	na	Site 6	13-Sep-24	0.0	0.1	20.4	79.5
GVP-3	na	Site 6	19-Sep-24	0.1	2.0	18.8	79.1
GVP-3	na	Site 6	28-Jan-25	0.0	0.1	22.8	77.1
GVP-3	na	Site 6	05-Sep-25	0.0	3.8	18.0	78.5

Notes:

NM = not measured

bold and shaded indicates a methane concentration above 5%, the lower explosive limit of methane

Table 7
Surface Water Analytical Results
Metals and Inorganics
City of Barrie Historic Waste Dymnt's Creek

Monitoring Well Location				SWD1																					
Sampling Date				08-Nov-12	23-Apr-13	23-Aug-13	11-Dec-13	26-Nov-14	24-Sep-15	07-Sep-16	15-Sep-17	07-Sep-18	05-Sep-19	11-Sep-20	10-May-21	17-Sep-21	11-Apr-22	30-Sep-22	26-Apr-23	30-Aug-23	05-Oct-23	13-Sep-24	03-Sep-25		
Sampling Location				West of Bradford Street																					
Parameter	Units	RDL	PWQO							Field Duplicate of SWD1		Field Duplicate of SWD1											Re-Sampling		
Total Metals																									
Aluminum-dissolved	ug/L	1	75	<4	40	60	7	6	<1	5	<1	<1	<1	<1	<5	5	<5	8	<5	7	9	7	3	4	6
Aluminum (total)	ug/L	1	NO	-	-	90	-	-	220	-	-	-	-	-	100	50	31	36	29	30	76	48	68	30	61
Antimony	ug/L	0.9	20	<3	<0.5	0.2	<0.5	<0.5	<0.5	0.8	0.6	<0.5	<0.5	<0.5	<0.50	<0.5	<0.50	<0.50	<0.50	<0.50	<0.9	<0.9	<0.9	<0.9	<0.9
Arsenic	ug/L	0.2	100	<3	<1	0.4	<1	<1	<1	15	9	<1	<1	<1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.3	0.3	0.4	0.3	0.3
Barium	ug/L	0.08	NO	99	120	161	138	112	162	191	200	162	139	136	130	150	130	120	130	140	138	116	225	150	192
Beryllium	ug/L	0.007	1100	<1	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.007	<0.007	<0.007	<0.007	<0.007
Total Bismuth (Bi)	ug/L	0.01	NO	-	-	-	-	-	-	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	-	-	-	<0.01	<0.01	
Boron	ug/L	2	200	47	30	35	39	53	81	87	81	38	26	27	26	36	41	35	31	31	37	28	38	30	34
Cadmium	ug/L	0.003	0.2	<0.1	<0.1	0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.09	<0.090	<0.090	<0.090	<0.090	0.017	0.028	0.061	0.034	0.024
Chromium	ug/L	0.08	NO	13	3	2.7	6	<1	<1	1	1	<1	<1	<1	<5	<5	<5	<5	<5.0	0.84	0.94	0.99	0.39	0.81	
Cobalt	ug/L	0.004	0.9	<0.5	0.3	0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.5	<0.50	<0.50	<0.50	<0.50	0.222	0.109	0.211	0.125	0.154
Copper	ug/L	1.0	5	2	3	8.6	1.7	<0.5	<0.5	2.3	2.1	<0.5	1.7	1.9	3.7	2.4	1.4	1.4	1.9	1.5	2.2	2.8	2.4	1.0	2.0
Iron	ug/L	7	300	904	1350	1140	1350	740	946	912	1070	795	816	950	816	990	1300	780	1200	980	1550	867	1370	907	1360
Lead	ug/L	0.09	25	1	<1	1.72	0.2	0.5	0.4	<0.1	<0.1	0.4	0.3	0.5	1.3	0.51	<0.50	<0.50	<0.50	<0.50	0.72	0.39	0.91	0.34	0.62
Total Lithium (Li)	ug/L	0.1	NO	-	-	-	-	-	-	-	-	-	-	-	<5	<5	<5.0	<5.0	<5.0	<5.0	2	2.3	3.3	2.1	2.7
Manganese	ug/L	0.01	NO	101	180	131	221	140	130	126	130	123	123	130	110	87	130	75	170	100	159	80.1	261	77.8	141
Molybdenum	ug/L	0.40	40	<2	<5	1.5	0.7	0.7	0.9	7.1	<0.5	0.8	0.7	15	1.9	0.77	1.4	0.79	0.69	1.19	1.08	0.87	0.50	0.80	
Nickel	ug/L	0.10	25	<3	<5	<10	4	<1	<1	<1	<1	<1	<1	<1	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	0.8	0.8	1.1	0.50	0.70
Selenium	ug/L	0.04	100	<4	<1	<1	<1	<1	<1	13	7	<1	<1	<1	<2	<2.0	<2.0	<2.0	<2.0	<2.0	0.15	0.17	0.14	0.11	0.13
Total Silicon (Si)	ug/L	20	NO	-	-	-	-	-	-	-	-	-	-	-	4200	2700	3800	3400	4000	3180	3860	4920	3540	3680	
Silver	ug/L	0.05	1	<0.1	<0.1	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.09	<0.090	<0.090	<0.090	<0.090	<0.05	<0.05	<0.05	<0.05	<0.05
Strontium	ug/L	0.08	NO	639	695	616	659	743	697	812	811	680.000	545	550	540	630	690	610	720	640	620	587	771	537	694
Total Tellurium (Te)	ug/L	0.1	NO	-	-	-	-	-	-	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1	<0.1	<0.1	<0.1
Thallium	ug/L	0.005	0.3	<0.3	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.050	<0.05	<0.050	<0.050	<0.050	<0.050	-	<0.005	<0.005	<0.005	<0.005
Total Tin (Sn)	ug/L	0.06	NO	-	-	-	-	-	-	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	-	-	0.12	0.19
Titanium	ug/L	0.1	NO	<2	<10	<5	<5	<5	<5	<5	<5	<5	<5	8.4	<5.0	5.5	<5.0	<5.0	5.8	4.78	2.06	4.25	1.3	3.2	
Tungsten	ug/L	0.2	30	<10	<5	10	<10	<10	<10	34	<10	<10	<10	<10	<1	<1.0	<1.0	<1.0	<1.0	<1.0	0.14	0.12	0.13	<0.2	0.2
Uranium	ug/L	0.002	5	<2	1	1.25	0.9	1.1	0.6	0.8	0.8	0.7	0.6	0.6	0.61	0.57	0.83	0.62	0.90	0.65	1.04	0.452	0.696	0.563	0.650
Vanadium	ug/L	0.01	6	3	1	0.5	3.9	0.6	<0.5	0.9	0.6	<0.5	0.5	0.5	0.86	0.64	0.64	0.71	0.63	0.81	0.86	0.88	0.85	0.53	0.83
Zinc	ug/L	2	30	19	<10	16	7	9	7	7	6	6	7	16	9.8	6	5	<5.0	8.2	<5.0	9	9	8	4	8
Zirconium	ug/L	2	4	<4	<2	<3	<1	<1	<1	2	<1	<1	<1	<1	<1	<1.0	<1.0	<1.0	<1.0	<1.0	<2	<2	<2	<2	<2
Dissolved Mercury	ug/L	0.01	0.2	<0.1	<0.1	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	-	<0.10	<0.01	<0.01	<0.01	<0.01
Inorganics																									
Electrical Conductivity	uS/cm	2	NO	1070	1460	1140	1610	1580	1690	1870	1950	1660	1430	1430	1300	1500	1700	1200	2000	1500	1620	1280	2000	1220	1590
pH	No unit	0.05	6.5-8.5	8.29	7.94	7.51	7.62	7.57	7.69	7.73	7.71	7.46	7.47	7.54	7.97	8.10	8.23	8.14	8.12	8.02	7.94	8.12	8.16	7.95	7.95
Total Hardness (as CaCO3)	mg/L as CaCO3	0.05	NO	301	337	279	420	301	315	309	311	344	298	300	300	290	330	290	340	310	319	247	355	264	321
Alkalinity (as CaCO3)	mg/L as CaCO3	2	NO	264	276	216	318	282	254	238	235	259	238	249	210	260	280	240	270	230	279	199	273	221	235
Chloride	mg/L	0.04	NO	211	277	264	303	297	375	416	441	397	275	302	260	270	340	240	470	300	410	380	470	320	380
Sulphate	mg/L	0.04	NO	31.7	27	30	30	30	30	45.8	44.3	25.5	28.1	26.4	23	24	29	20	31	21	32	17	23	2	26
Phosphorus (total)	mg/L	0.003	0.030*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.044	0.053	0.036	0.063
Ammonia as N	as N mg/L	0.10	NO	-	0.60	0.18	0.86	0.45	0.48	0.42	0.42	0.40	0.42	0.45	0.28	0.50	0.59	0.42	0.56	0.46	0.60	0.30	0.60	0.30	0.50
Unionized Ammonia (calculated)	mg/L as N	0.005	0.02	-	0.002	0.002	0.001	0.011	0.018	0.009	0.009	0.002	0.006	0.007	0.006	0.016	0.014	0.019	0.006	0.008	0.004	0.006	0.008	0.005	0.004
Calcium	ug/L	10	NO	103000	117000	99300	145000	105000	107000	103000	103000	119000	101000	101000	-	110000	110000	96000	120000	110000	110000	84300	116000	88500	107000
Magnesium	ug/L	1	NO	10700	11000	11200	13600	9280	11400	12300	13000	11300	10900	11400	-	10000	11000	8400	10000	9800	9890	8760	15700	10400	13100
Sodium	ug/L	10	NO	114000	185000	153000	240000	187000	213000	250000	247000	222000	156000	159000	-	180000	210000	130000	290000	200000	219000	163000	295000	145000	227000
Potassium	ug/L	9	NO	3460	3000	3400.00	4430	3380	3500.00	4720	4790	3170	3140	3170	-	3000	3000	2700	3100	2800	2980	3180	3800	2660	3060

Notes:
 1. NO = No objective
 2. mg/L = Milligrams per Litre
 3. RDL = Laboratory Reportable Detection Limit
 4. PWQO = Provincial Water Quality Objectives, July, 1994 (* = Interim guideline only)
 5. Bold type and shaded indicates an exceedance of the PWQO



Table 7
Surface Water Analytical Results
Metals and Inorganics
City of Barrie Historic Waste Dymont's Creek

Monitoring Well Location				SWD3																								
Sampling Date				08-Nov-12	23-Apr-13	23-Aug-13	11-Dec-13	26-Nov-14	26-Nov-14	24-Sep-15	07-Sep-16	15-Sep-17	07-Sep-18	05-Sep-19	11-Sep-20	10-May-21	17-Sep-21	11-Apr-22	30-Sep-22	26-Apr-23	30-Aug-23	05-Oct-23	13-Sep-24	03-Sep-25				
Sampling Location				South of John Street																								
Parameter	Units	RDL	PWQO					Field Duplicate of SWD3																	Re-Sampling			
Total Metals																												
Aluminum-dissolved	ug/L	1	75	<4	50	50	4	10	7	<1	<1	2	14	<5	5	6	10	<5	10	10	5	6	6	7				
Aluminum (total)	ug/L	1	NO	-	-	90	-	-	-	336	-	-	-	52	60	35	31	42	110	60	126	120	40	31				
Antimony	ug/L	0.9	20	<3	<0.5	0.3	<0.5	<2.5	<2.5	<0.5	0.6	<0.5	<0.5	<0.50	<0.5	<0.50	<0.50	<0.50	<0.50	<0.9	<0.9	<0.9	<0.9	<0.9				
Arsenic	ug/L	0.2	100	<3	<1	0.4	<1	<5	<5	<1	3	<1	<1	<1	<1.0	<1.0	<1.0	<1.0	<1.0	0.3	0.4	0.4	0.3	0.3				
Barium	ug/L	0.08	NO	98	110	135	152	102	114	147	190	139	158	140	150	130	120	130	140	124	149	224	131	196				
Beryllium	ug/L	0.007	1100	<1	<0.5	<0.1	<0.5	<2.5	<2.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.40	<0.40	<0.40	<0.40	<0.40	<0.007	0.007	<0.007	<0.007	<0.007				
Total Bismuth (Bi)	ug/L	0.01	NO	-	-	-	-	-	-	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	-	-	-	<0.01	<0.01				
Boron	ug/L	2	200	39	30	33	39	<50	52	103	98	32	30	28	35	39	35	29	31	31	32	35	27	31				
Cadmium	ug/L	0.003	0.2	<0.1	<0.1	0.1	<0.1	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.10	<0.09	<0.090	<0.090	<0.090	<0.090	0.015	0.03	0.013	0.006	0.004				
Chromium	ug/L	0.08	NO	12	3	2.7	3	<5	<5	<1	1	<1	<1	<5	<5	<5	<5	<5	<5	0.63	1.11	0.97	0.45	0.5				
Cobalt	ug/L	0.004	0.9	<0.5	0.3	0.1	<0.5	<2.5	<2.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.5	<0.50	<0.50	<0.50	<0.50	0.171	0.198	0.198	0.095	0.124				
Copper	ug/L	1.0	5	2	3	8	1.8	<2.5	<2.5	<0.5	3.7	<0.5	2.2	3.0000	2.6	1.4	1.2	2.6	2.5	7.7	4.3	2.7	<1	4.0				
Iron	ug/L	7	300	453	750	855	1020	961	1950	509	829	709	948	1400	870	810	750	1600	1200	861	2400	1310	620	1000				
Lead	ug/L	0.09	25	1	<1	1.48	0.4	0.7	1.8	0.2	<0.1	0.7	0.9	<0.50	0.51	<0.50	<0.50	<0.50	1.3	0.47	0.93	1.17	0.25	0.3				
Total Lithium (Li)	ug/L	0.1	NO	-	-	-	-	-	-	-	-	-	-	-	<5	<5	<5.0	<5.0	<5.0	1.7	4.1	3.1	1.9	3.3				
Manganese	ug/L	0.01	NO	63	130	69	216	143	259	64	97	76	137	79	67	110	57	150	100	122	102	162	53.8	70.7				
Molybdenum	ug/L	0.40	40	<2	<5	1.4	<0.5	<2.5	<2.5	0.7	<0.5	0.6	0.7	0.6	1.6	1.7	0.67	0.59	0.63	0.76	1.06	0.82	0.40	0.70				
Nickel	ug/L	0.10	25	<3	<5	<10	3	<5	<5	<1	<1	<1	<1	<1	1.1	<1.0	<1.0	<1.0	<1.0	0.7	0.9	1.2	0.50	0.70				
Selenium	ug/L	0.04	100	<4	<1	<1	<1	<5	<5	<1	2	<1	<1	<2	<2.0	<2.0	<2.0	<2.0	<2.0	0.15	0.21	0.19	0.11	0.12				
Total Silicon (Si)	ug/L	20	NO	-	-	-	-	-	-	-	-	-	-	-	4800	2500	3700	3300	3800	2700	4280	4500	3060	3760				
Silver	ug/L	0.05	1	<0.1	<0.1	<0.02	<0.1	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.10	<0.09	<0.090	<0.090	<0.090	<0.090	<0.05	<0.05	<0.05	<0.05	<0.05				
Strontium	ug/L	0.08	NO	652	732	595	764	722	756	723	941	649	665	570	650	770	630	700	700	629	808	525	690					
Total Tellurium (Te)	ug/L	0.1	NO	-	-	-	-	-	-	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.005	<0.005	<0.005	<0.005				
Thallium	ug/L	0.005	0.3	<0.3	<0.1	<0.05	<0.1	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.050	<0.05	<0.050	<0.050	<0.050	<0.050	-	<0.005	<0.005	<0.005	<0.005				
Total Tin (Sn)	ug/L	0.06	NO	-	-	-	-	-	-	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	-	-	-	0.08	0.13				
Titanium	ug/L	0.1	NO	<2	<10	15	<5	<25	<25	<5	<5	<5	<5	5.2	5.9	6.2	<5.0	<5.0	9.1	2.96	7.46	5.97	1.9	1.3				
Tungsten	ug/L	0.2	30	<10	<5	40	<10	<0.050	<10	<0.050	<10	<10	<10	<1	<1.0	<1.0	<1.0	<1.0	<1.0	0.10	0.19	0.19	<0.2	<0.2				
Uranium	ug/L	0.002	5	<2	1	1.25	0.8	1.1	1.2	0.7	0.9	0.7	0.8	0.62	0.65	0.88	0.6	0.88	0.74	1.16	0.444	0.918	0.607	0.675				
Vanadium	ug/L	0.01	6	3	1	0.6	3.3	<2.5	<2.5	<0.5	0.7	0.6	1	0.75	0.95	0.73	0.69	0.63	1.1	0.78	1.19	1.38	0.58	0.79				
Zinc	ug/L	2	30	17	<10	15	8	<25	<25	<5	13	6	26	6.2	6.5	<5.0	<5.0	7.8	10	10	19	9	6	7				
Zirconium	ug/L	2	4	<4	<2	<3	<1	<5	<5	<1	7	<1	<1	<1	<1.0	<1.0	<1.0	<1.0	<1.0	-	<2	<2	<2	<2				
Dissolved Mercury	ug/L	0.01	0.2	<0.1	<0.1	<0.02	3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	-	<0.10	<0.01	<0.01	<0.01	<0.01	<0.01				
Inorganics																												
Electrical Conductivity	uS/cm	2	NO	1030	1420	1020	1400	1750	1730	1610	1790	1540	1350	1300	1400	1600	1200	1900	1500	1600	1330	1870	1120	1460				
pH	No unit	0.05	6.5-8.5	8.33	8.05	7.6	7.68	7.57	7.43	7.72	7.66	7.5	7.41	8.01	8.11	8.20	8.16	8.10	8.08	8.19	7.65	8.14	7.97	7.78				
Total Hardness (as CaCO3)	mg/L as CaCO3	0.05	NO	290	326	258	401	280	312	289	317	298	329	300	290	320	280	340	300	305	258	351	249	300				
Alkalinity (as CaCO3)	mg/L as CaCO3	2	NO	255	269	212	325	270	292	238	246	257	228	210	260	280	230	280	230	244	207	271	224	218				
Chloride	mg/L	0.04	NO	200	269	244	268	355	308	393	414	335	249	270	250	320	230	440	310	430	350	420	270	350				
Sulphate	mg/L	0.04	NO	35.6	28	30	30	30	30	30	48.1	28.5	30	23	24	30	20	29	21	32	18	24	20	27				
Phosphorus (total)	mg/L	0.003	0.030*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.080	0.063	0.033	0.062				
Ammonia as N	as N mg/L	0.10	NO	-	0.12	0.1	0.31	0.3	0.69	0.15	0.12	0.15	0.37	0.35	0.31	0.14	0.15	0.38	0.21	<0.1	0.40	0.30	0.20	0.20				
Unionized Ammonia (calculated)	mg/L as N	0.005	0.02	-	<0.001	0.009	0.001	0.006	0.013	0.007	0.002	0.002	0.010	0.010	0.013	0.003	0.008	0.005	0.005	<0.001	0.015	0.005	0.004	0.001				
Calcium	ug/L	10	NO	99000	114000	88600	139000	97300	109000	97600	105000	103000	112000	-	100000	120000	92000	120000	110000	107000	88100	113000	82900	98400				
Magnesium	ug/L	1	NO	10400	10000	10100	13000	8790	9460	11000	13200	9800	12200	-	12000	11000	8500	10000	10000	9600	9330	16600	10100	13200				
Sodium	ug/L	10	NO	108000	184000	128000	207000	216000	210000	207000	237000	182000	163000	-	170000	210000	140000	270000	200000	222000	186000	269000	126000	202000				
Potassium	ug/L	9	NO	4040	3000	3200	3770	5420	5460	3530	5170	2760	3740	-	2900	3000	2700	2900	2900	2880	3430	3900	2540	3060				

Notes:
 1. NO = No objective
 2. mg/L = Milligrams per Litre
 3. RDL = Laboratory Reportable Detection Limit
 4. PWQO = Provincial Water Quality Objectives, July, 1994 (* = interim guideline only)
 5. Bold type and shaded indicates an exceedance of the PWQO



Table 7
Surface Water Analytical Results
Metals and Inorganics
City of Barrie Historic Waste Dymnt's Creek

Monitoring Well Location				SWD4																					
Sampling Date				23-Aug-13	11-Dec-13	26-Nov-14	24-Sep-15	07-Sep-16	15-Sep-17	07-Sep-18	05-Sep-19	11-Sep-20	10-May-21	17-Sep-21	11-Apr-22	30-Sep-22	26-Apr-23	30-Aug-23	05-Oct-23	13-Sep-24	03-Sep-25 10:15	03-Sep-25 00:00			
Sampling Location				Between Innisfil and Sanford Streets																					
Parameter	Units	RDL	PWQO			Field Duplicate of SWD4																Re-Sampling		Field Duplicate of SW4	
Total Metals																									
Aluminum-dissolved	ug/L	1	75	50	4	3	7	<1	<1	<1	<1	<5	6	<5	8	<5	6	15	10	6	5	6	7		
Aluminum (total)	ug/L	1	NO	80	-	-	-	324	-	-	-	320	50	93	37	32	41	37	48	34	25	25	26		
Antimony	ug/L	0.9	20	0.2	<0.5	<0.5	<0.5	<0.5	1	<0.5	<0.5	<0.50	<0.5	<0.50	<0.50	<0.50	<0.50	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9		
Arsenic	ug/L	0.2	100	0.4	<1	<1	<1	<1	5	<1	<1	<1	<1.0	<1.0	<1.0	<1.0	<1.0	0.3	0.2	0.4	0.3	0.3	0.3		
Barium	ug/L	0.08	NO	160,000	156,000	149,000	110,000	176,000	203,000	161	145	130	150	140	120	130	130	131	118	225	150	184	188		
Beryllium	ug/L	0.007	1100	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.40	<0.40	<0.40	<0.40	<0.40	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007		
Total Bismuth (Bi)	ug/L	0.01	NO	-	-	-	-	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	-	-	<0.01	<0.01	<0.01			
Boron	ug/L	2	200	35	43	40,000	54,000	95,000	103,000	37	28	27	37	38	35	30	31	33	29	38	31	31	31		
Cadmium	ug/L	0.003	0.2	0.08	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.22000	<0.09	<0.090	<0.090	<0.090	<0.090	0.010	0.023	0.012	0.012	0.006	0.01		
Chromium	ug/L	0.08	NO	9	4	4	1	<1	2	<1	<1	<5	<5	<5	<5	<5.0	0.62	0.78	0.91	0.38	0.38	0.46			
Cobalt	ug/L	0.004	0.9	0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.5	<0.50	<0.50	<0.50	0.175	0.110	0.167	0.123	0.115	0.119			
Copper	ug/L	1.0	5	9.3	1.8	1.5	<0.5	<0.5	7.2	<0.5	1.9	7.3	1.7	2.3	1.5	2.0	1.3	2.1	2.8	1.8	1.0	<1	1.0		
Iron	ug/L	7	300	1050	1340	1340	704	1360	1810	1160	816	1700	960	1700	710	1100	1000	1250	852	1210	929	1030	1040		
Lead	ug/L	0.09	25	1.43	<0.1	0.1	0.4	1.2	2	0.7	0.4	3.4	<0.50	0.66	<0.50	<0.50	<0.50	0.20	0.31	0.49	0.26	0.24	0.27		
Total Lithium (Li)	ug/L	0.1	NO	-	-	-	-	-	-	-	-	<5	<5	<5.0	<5.0	<5.0	1.9	2.3	3.4	2.3	2.7	2.8			
Manganese	ug/L	0.01	NO	126	242	238	139	203	183	138	139	160,000	86	150	73	170	110	142	79.4	257	92	125	126		
Molybdenum	ug/L	0.40	40	2.4	0.6	0.7	0.8	0.7	<0.5	0.8	0.8	22	1.3	0.68	0.75	0.76	0.64	0.79	1.02	0.89	0.50	0.70	0.80		
Nickel	ug/L	0.10	25	<10	3	3	<1	<1	1	<1	1.3	<1.0	<1.0	<1.0	<1.0	<1.0	0.6	0.8	1.0	0.60	0.60	0.70			
Selenium	ug/L	0.04	100	<1	<1	<1	<1	<1	3	<1	<1	<2	<2.0	<2.0	<2.0	<2.0	0.15	0.19	0.13	0.13	0.12	0.12			
Total Silicon (Si)	ug/L	20	NO	-	-	-	-	-	-	-	-	4100	2900	3800	3300	3900	2920	3880	4780	3500	3500	3540			
Silver	ug/L	0.05	1	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.09	<0.090	<0.090	<0.090	<0.090	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Strontium	ug/L	0.08	NO	643	767	752	764	698	892	683,000	593,000	560,000	640	750	630	740	660	609	594	781	573	694	695		
Total Tellurium (Te)	ug/L	0.1	NO	-	-	-	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1	<0.1	<0.1	<0.1			
Thallium	ug/L	0.005	0.3	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.050	<0.05	<0.050	<0.050	<0.050	<0.050	-	<0.005	<0.005	<0.005	<0.005	<0.005		
Total Tin (Sn)	ug/L	0.06	NO	-	-	-	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	-	-	0.11	0.11	0.16	0.19			
Titanium	ug/L	0.1	NO	<5	<5	<5	<5	<5	7	<5	<5	21	7.9	9.6	<5.0	5.2	2.07	1.79	1.67	1.20	1.00	1.20			
Tungsten	ug/L	0.2	30	10	<10	<10	<10	<10	<10	<10	<10	<1	<1.0	<1.0	<1.0	<1.0	0.10	0.13	0.14	<0.2	<0.2	<0.2			
Uranium	ug/L	0.002	5	0.89	0.8	0.9	1.1	0.6	0.8	0.7	0.6	0.63	0.58	0.87	0.62	0.94	0.70	1.05	0.472	0.734	0.602	0.666	0.666		
Vanadium	ug/L	0.01	6	0.5	3.3	2.5	<0.7	0.5	1.2	0.5	0.6	1.6	<0.72	0.92	0.74	0.68	0.74	0.70	0.87	0.84	0.59	0.71	0.71		
Zinc	ug/L	2	30	14	6	<5	9	10,000	29,000	10,000	8,000	25,000	6.3	8.4	<5.0	8.6	7.0	6	9	5	3	4	5		
Zirconium	ug/L	2	4	<3	<1	<1	1	<1	<1	<1	<1	<1	<1.0	<1.0	<1.0	<1.0	<1.0	-	<2	<2	<2	<2	<2		
Dissolved Mercury	ug/L	0.01	0.2	<0.02	0.2	0.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	-	<0.10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
Inorganics																									
Electrical Conductivity	uS/cm	2	NO	1120	1420	1570	1680	1700	1880	1660	1410	1300	1500	1700	1200	2000	1500	1620	1340	2010	1200	1670	1560		
pH	No unit	0.05	6.5-8.5	7.55	7.63	7.68	7.55	7.64	7.62	7.44	7.50	7.99	8.08	8.16	8.14	8.11	8.19	8.16	8.25	8.09	7.94	7.91	7.85		
Total Hardness (as CaCO3)	mg/L as CaCO3	0.05	NO	275	412	409	300	314	330	335	318	300	300	330	290	340	290	312	250	352	273	310	314		
Alkalinity (as CaCO3)	mg/L as CaCO3	2	NO	229	326	325	268	266	240	267	254	200	260	290	240	280	120	261	204	273	225	251	225		
Chloride	mg/L	0.04	NO	242	318	328	304	490	433	391	276	260	280	340	240	470	310	410	390	460	300	380	350		
Sulphate	mg/L	0.04	NO	30	40	30	30	30	45.7	27.2	27.6	24	24	28	20	31	33	17	22	19	26	27			
Phosphorus (total)	mg/L	0.003	0.030*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.042	0.048	0.034	0.051	0.055		
Ammonia as N	as N mg/L	0.10	NO	0.14	0.66	0.88	0.40	0.34	0.34	0.37	0.37	0.34	0.44	0.60	0.32	0.69	0.40	0.40	0.30	0.50	0.30	0.30	0.40		
Unionized Ammonia (calculated)	mg/L as N	0.005	0.02	0.003	0.002	0.002	0.008	0.015	0.007	0.003	0.006	0.008	0.015	0.013	0.015	0.006	0.007	0.003	0.008	0.007	0.005	0.002	0.003		
Calcium	ug/L	10	NO	99100	143000	142000	105000	107000	110000	117000	108000	-	110000	120000	98000	120000	110000	109000	85500	115000	91800	103000	105000		
Magnesium	ug/L	1	NO	11200	13400	13100	9220	11400	13400	10600	11600	-	10000	12000	8800	10000	9600	9600	8940	15700	10700	12800	12800		
Sodium	ug/L	10	NO	151000	230000	229000	192000	213000	250000	216000	167000	-	180000	210000	140000	300000	200000	221000	169000	300000	149000	223000	226000		
Potassium	ug/L	9	NO	3500	4290	4170	4500	3550	5080	3100	3370	-	3000	3000	2800	3100	2800	2870	3230	3850	2760	3030	3050		

Notes:
1. NO = No objective
2. mg/L = Milligrams per Litre
3. RDL = Laboratory Reportable Detection Limit
4. PWQO = Provincial Water Quality Objectives, July, 1994 (* = interim guideline only)
5. Bold type and shaded indicates an exceedance of the PWQO



Table 7
Surface Water Analytical Results
Metals and Inorganics
City of Barrie Historic Waste Dymont's Creek

Monitoring Well Location				SWD5																				FIELD BLANK				
Sampling Date				23-Aug-13	11-Dec-13	26-Nov-14	24-Sep-15	07-Sep-16	15-Sep-17	07-Sep-18	05-Sep-19	11-Sep-20	10-May-21	17-Sep-21	17-Sep-21	11-Apr-22	30-Sep-22	26-Apr-23	26-Apr-23	30-Aug-23	05-Oct-23	05-Oct-23	13-Sep-24	13-Sep-24	03-Sep-25	03-Sep-25		
Sampling Location				Between John and Innisfil Streets																								
Parameter	Units	RDL	PWQO												Field Duplicate of SWD5						Field Duplicate of SWD5		Re-Sampling	Field Duplicate of SWD5		Field Duplicate of SWD5		
Total Metals																												
Aluminum-dissolved	ug/L	1	75	210	5	10	<1	<1	4	<1	8	6	5	10	10	6	8	10	10	8	5	6	5	6	5	7	1	
Aluminum (total)	ug/L	1	NO	510	-	-	238	-	-	-	40	4.9	23	49	49	36	64	46	50	48	117	117	73	71	27	<1		
Antimony	ug/L	0.9	20	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Arsenic	ug/L	0.2	100	0.8	<1	<1	<1	4	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Barium	ug/L	0.08	NO	180.000	157.000	110.000	157.000	189.000	167	145	120	160	130	120	130	140	129	125	109	222	223	144	139	178	0.49			
Beryllium	ug/L	0.007	1100	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	
Total Bismuth (Bi)	ug/L	0.01	NO	-	-	-	-	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Boron	ug/L	2	200	35	43	55	83	81	38	27	26	35	36	37	37	29	31	33	31	28	36	36	29	28	29	<2		
Cadmium	ug/L	0.003	0.2	0.46	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.09	<0.090	<0.090	<0.090	<0.090	<0.090	0.013	0.009	0.010	0.017	0.024	0.029	0.030	0.008	<0.003		
Chromium	ug/L	0.08	NO	4.8	4	2	<1	<1	<1	<1	<5	<5	<5	<5	<5	<5.0	<5.0	0.65	0.58	0.82	0.98	1.01	0.57	0.37	0.13			
Cobalt	ug/L	0.004	0.9	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.178	0.175	0.110	0.200	0.205	0.142	0.130	0.120	<0.004		
Copper	ug/L	1.0	5	25.6	2.4	<0.5	<0.5	3	<0.5	1.8	2	2.5	1.6	1.6	1.4	2.5	2.0	1.6	1.3	3.0	3.4	2.3	2.0	1.0	1.0	<1		
Iron	ug/L	7	300	4420	1340	617	678	878	858	871	670	810	1100	670	670	800	960	1080	870	752	1470	1500	919	885	794	<7		
Lead	ug/L	0.09	25	1.05	0.6	0.5	0.4	<0.1	0.4	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.59	0.24	0.24	0.29	1.31	1.29	1.50	1.85	0.29	0.15		
Total Lithium (Li)	ug/L	0.1	NO	-	-	-	-	-	-	-	<5	<5	<5.0	<5.0	<5.0	<5.0	<5.0	1.9	1.7	2.3	3.4	3.4	2.2	2.8	<1			
Manganese	ug/L	0.01	NO	383	215	124	99	102	88	119	68.000	62	110	61	61	140	92	125	123	61.6	218	221	79.7	76.4	73	0.04		
Molybdenum	ug/L	0.40	40	1.5	0.6	0.9	1	<0.5	0.8	0.8	0.7	1.2	0.62	0.79	0.80	0.67	0.74	0.67	1.02	0.80	0.91	0.50	0.50	0.80	<0.4			
Nickel	ug/L	0.10	25	<10	3	<1	<1	<1	<1	<1	<1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.6	0.7	0.8	1.3	1.1	0.60	0.60	<0.1			
Selenium	ug/L	0.04	100	<1	<1	<1	<1	2	<1	<1	<2	<2.0	<2.0	<2.0	<2.0	<2.0	0.15	0.16	0.18	0.14	0.13	0.10	0.11	0.13	<0.04			
Total Silicon (Si)	ug/L	20	NO	-	-	-	-	-	-	-	4700	2700	3900	4000	3300	3900	2800	2770	3630	4550	4560	3350	3220	3350	<20			
Silver	ug/L	0.05	1	0.04	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.09	<0.090	<0.090	<0.090	<0.090	<0.090	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Strontium	ug/L	0.08	NO	641	754	776	718	869	726.000	593.000	550.000	630	760	660	720	680	612	588	784	784	555	526	646	0.24				
Total Tellurium (Te)	ug/L	0.1	NO	-	-	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		
Thallium	ug/L	0.005	0.3	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.050	<0.05	<0.050	<0.050	<0.050	<0.050	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		
Total Tin (Sn)	ug/L	0.06	NO	-	-	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	-	-	-	-	0.17	0.14	<0.06			
Titanium	ug/L	0.1	NO	26	<5	<5	<5	<5	<5	<5	<5.0	<5.0	5.1	<5.0	<5.0	5.8	2.26	2.7	2.13	5.80	5.93	3.70	3.50	1.10	<0.1			
Tungsten	ug/L	0.2	30	10	<10	<10	<10	<10	<10	<10	<1	<1.0	<1.0	<1.0	<1.0	<1.0	0.11	0.10	0.12	0.20	0.18	<0.2	<0.2	<0.2	<0.2			
Uranium	ug/L	0.002	5	0.93	0.8	1.2	0.7	0.8	0.8	0.7	0.63	0.55	0.84	0.64	0.66	0.90	0.71	1.11	1.16	0.483	0.896	0.861	0.61	0.599	0.653	<0.002		
Vanadium	ug/L	0.01	6	2.2	3.2	<0.8	<0.5	0.6	<0.5	0.7	0.7	0.71	0.7	0.88	0.89	0.66	0.93	0.72	0.76	0.88	1.37	1.34	0.76	0.74	0.72	<0.01		
Zinc	ug/L	2	30	59	7	8	6	38	6.0	7.0	<5.0	6.5	<5.0	5.6	<5.0	7.5	6.4	6	11	9	10	10	5	6	5	<2		
Zirconium	ug/L	2	4	<3	<1	<1	<1	<1	<1	<1	<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	<1.0	<1.0	<1.0		
Dissolved Mercury	ug/L	0.01	0.2	<0.02	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	-	<0.10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Inorganics																												
Electrical Conductivity	uS/cm	2	NO	1060	1550	1660	1590	1790	1620	1420	1300	1500	1700	1200	1200	2000	1500	1600	1590	1260	1910	1920	1170	1170	1510	18		
pH	No unit	0.05	6.5-8.5	7.47	7.71	7.68	7.70	7.64	7.56	7.49	7.98	8.09	8.23	8.16	8.10	8.16	8.04	8.12	8.13	7.76	8.11	8.07	7.94	8.17	7.90	6.21		
Total Hardness (as CaCO3)	mg/L as CaCO3	0.05	NO	296	412	296	300	304	343	307	300	300	330	280	280	320	290	308	307	245	344	346	263	255	287	<0.05		
Alkalinity (as CaCO3)	mg/L as CaCO3	2	NO	219	319	279	249	250	257	240	200	260	280	230	230	270	240	257	247	192	269	267	214	212	224	7		
Chloride	mg/L	0.04	NO	218	311	326	372	421	358	270	260	260	340	220	230	470	300	450	410	390	430	430	300	360	360	3.8		
Sulphate	mg/L	0.04	NO	30	40	30	30	46.1	28.1	27.0	23	24	29	21	21	32	23	32	35	17	24	25	20	20	28	<0.2		
Phosphorus (total)	mg/L	0.003	0.030*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.040	0.063	0.064	0.040	0.043	0.089	<0.003		
Ammonia as N	as N mg/L	0.10	NO	0.07	0.48	0.26	0.21	0.22	0.24	0.41	0.22	0.27	0.30	0.18	0.16	0.21	0.21	0.10	0.50	0.10	0.40	0.40	0.20	0.20	<0.1			
Unionized Ammonia (calculated)	mg/L as N	0.005	0.02	0.005	0.001	0.005	0.011	0.004	0.002	0.005	0.006	0.011	0.008	0.008	0.007	0.003	0.005	<0.001	0.015	0.004	0.006	0.006	0.002	0.002	0.002	<0.001		
Calcium	ug/L	10	NO	106000	144000	104000	102000	101000	119000	104000	-	110000	120000	98000	100000	120000	110000	108000	107000	83700	111000	112000	88100	85500	95000	<10		
Magnesium	ug/L	1	NO	11600	12900	9110	11200	12600	11100	11600	-	11000	11000	9100	8900	10000	9900	9490	9530	8830	16200	16200	10300	10100	12200	3		
Sodium	ug/L	10	NO	139000	226000																							

Table 8
Surface Water Analytical Results
VOC and Petroleum Hydrocarbons
City of Barrie Historic Waste Sites Dymont's Creek

Surface Water Location				SWD3																				PHC Re-Analysis		Re-Analysis					
Sampling Date				08-Nov-12	23-Apr-13	23-Aug-13	11-Dec-13	26-Nov-14	24-Sep-15	07-Sep-16	15-Sep-17	07-Sep-18	05-Sep-19	11-Sep-20	10-May-21	17-Sep-21	11-Apr-22	30-Sep-22	18-Nov-22	26-Apr-23	30-Aug-23	30-Aug-23	05-Oct-23	13-Sep-24	03-Sep-25						
Sampling Location				South of John Street																											
Parameter	Units	RD L	PWQO						Field Duplicate of SWD3																						
VOC																															
Acetone	µg/L	30	NO	<1.0	<50	< 30	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10		
Benzene	µg/L	0.5	100	0.20	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.68	<0.20	<0.20	0.23	<0.17	<0.17	<0.20	< 0.5	< 0.5	1.0	-	< 0.5	< 0.5	< 0.5	< 0.5		
Bromodichloromethane	µg/L	0.5	200	<0.20	<0.3	< 2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Bromoforn	µg/L	0.5	80	<0.10	<0.4	< 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Bromomethane	µg/L	0.5	0.9	<0.20	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Carbon Tetrachloride	µg/L	0.2	NO	<0.20	<0.2	< 0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Chlorobenzene	µg/L	0.5	15	<0.10	<0.2	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Chloroethane	µg/L	1.0	NO	<0.20	<0.2	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Chloroform	µg/L	0.5	NO	<0.20	<0.5	< 1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.20	<0.31	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chloromethane	µg/L	3.0	700	<0.40	<0.2	-	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Dibromochloromethane	µg/L	0.5	40	<0.10	<0.3	< 2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichlorobenzene	µg/L	0.5	2.5	<0.10	<0.4	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	µg/L	0.5	2.5	<0.10	<0.4	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,4-Dichlorobenzene	µg/L	0.5	4	<0.10	<0.4	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dichlorodifluoromethane	µg/L	2	NO	<0.20	<0.5	< 2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<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-Dichloroethane	µg/L	0.5	200	<0.30	<0.4	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichloroethane	µg/L	0.5	100	<0.20	<0.2	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	µg/L	0.5	40	<0.30	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
cis-1,2-Dichloroethylene	µg/L	0.5	200	<0.20	<0.4	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
trans-1,2-Dichloroethylene	µg/L	0.5	200	<0.20	<0.4	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloropropane	µg/L	0.5	0.7	<0.20	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Dichloropropane (Cis + Trans)	µg/L	0.5	NO	<0.30	<0.4	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Ethylbenzene	µg/L	0.5	8	0.11	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylene Dibromide	µg/L	0.2	5	<0.10	<0.2	< 0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
n-Hexane	µg/L	1	NO	<0.20	<5	< 5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methylene Chloride	µg/L	0.5	100	<0.30	<0.4	< 5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl Isobutyl Ketone	µg/L	20	NO	<1.0	<10	< 20	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl Ethyl Ketone	µg/L	20	400	<1.0	<10	< 20	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Methyl tert-butyl ether	µg/L	2	200	<0.20	<10	< 2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Styrene	µg/L	0.5	4	<0.10	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,1,2-Tetrachloroethane	µg/L	0.5	20	<0.10	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane	µg/L	0.5	70	<0.10	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethylene	µg/L	0.5	50	<0.20	<0.3	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.20	<0.20	<0.20	<0.2													

Table 8
Surface Water Analytical Results
VOC and Petroleum Hydrocarbons
City of Barrie Historic Waste Sites Dymont's Creek

Surface Water Location				FIELD BLANK	TRIP BLANK
Sampling Date				03-Sep-25	29-Aug-25
Sampling Location					
Parameter	Units	RDL	PWQO		
VOC					
Acetone	µg/L	30	NO	< 30	< 30
Benzene	µg/L	0.5	100	< 0.5	< 0.5
Bromodichloromethane	µg/L	0.5	200	< 0.5	< 0.5
Bromoform	µg/L	0.5	80	< 0.5	< 0.5
Bromomethane	µg/L	0.5	0.9	< 0.5	< 0.5
Carbon Tetrachloride	µg/L	0.2	NO	< 0.2	< 0.2
Chlorobenzene	µg/L	0.5	15	< 0.5	< 0.5
Chloroethane	µg/L	1.0	NO	-	-
Chloroform	µg/L	0.5	NO	< 0.5	< 0.5
Chloromethane	µg/L	3.0	700	-	-
Dibromochloromethane	µg/L	0.5	40	< 0.5	< 0.5
1,2-Dichlorobenzene	µg/L	0.5	2.5	< 0.5	< 0.5
1,3-Dichlorobenzene	µg/L	0.5	2.5	< 0.5	< 0.5
1,4-Dichlorobenzene	µg/L	0.5	4	< 0.5	< 0.5
Dichlorodifluoromethane	µg/L	2	NO	< 2	< 2
1,1,1-Dichloroethane	µg/L	0.5	200	< 0.5	< 0.5
1,2-Dichloroethane	µg/L	0.5	100	< 0.5	< 0.5
1,1-Dichloroethylene	µg/L	0.5	40	< 0.5	< 0.5
cis-1,2-Dichloroethylene	µg/L	0.5	200	< 0.5	< 0.5
trans-1,2-Dichloroethylene	µg/L	0.5	200	< 0.5	< 0.5
1,2-Dichloropropane	µg/L	0.5	0.7	< 0.5	< 0.5
1,3-Dichloropropane (Cis + Trans)	µg/L	0.5	NO	< 0.5	< 0.5
Ethylbenzene	µg/L	0.5	8	< 0.5	< 0.5
Ethylene Dibromide	µg/L	0.2	5	< 0.2	< 0.2
n-Hexane	µg/L	1	NO	< 1	< 1
Methylene Chloride	µg/L	0.5	100	< 0.5	< 0.5
Methyl Isobutyl Ketone	µg/L	20	NO	< 20	< 20
Methyl Ethyl Ketone	µg/L	20	400	< 20	< 20
Methyl tert-butyl ether	µg/L	2	200	< 2	< 2
Styrene	µg/L	0.5	4	< 0.5	< 0.5
1,1,1,2-Tetrachloroethane	µg/L	0.5	20	< 0.5	< 0.5
1,1,1,2,2-Tetrachloroethane	µg/L	0.5	70	< 0.5	< 0.5
Tetrachloroethylene	µg/L	0.5	50	< 0.5	< 0.5
Toluene	µg/L	0.5	0.8	< 0.5	< 0.5
1,1,1-Trichloroethane	µg/L	0.5	10	< 0.5	< 0.5
1,1,2-Trichloroethane	µg/L	0.5	800	< 0.5	< 0.5
1,3,5-Trimethylbenzene	µg/L	0.5	3	-	-
Trichloroethylene	µg/L	0.5	20	< 0.5	< 0.5
Vinyl Chloride	µg/L	0.20	600	< 0.2	< 0.2
m & p-Xylene	µg/L	0.5	32	< 0.5	< 0.5
o-Xylene	µg/L	0.5	40	< 0.5	< 0.5
Xylene Mixture (Total)	µg/L	0.5	NO	< 0.5	< 0.5
Trichlorofluoromethane	µg/L	5	NO	< 5	< 5
Petroleum Hydrocarbons					
F1-BTEX (C6-C10)	µg/L	25	NO	< 25	---
F2 (C10-C16)	µg/L	100	NO	< 100	---
F3 (C16-C34)	µg/L	200	NO	< 200	---
F4 (C34-C50)	µg/L	200	NO	< 200	---

Notes:
 1. NO = No objective
 2. µg/L = Microgram per Litre
 3. RDL = Laboratory Reportable Detection Limit
 4. PWQO = Provincial Water Quality Objectives, July, 1994
 5. Bold type and shaded indicates an exceedance of the PWQO

APPENDIX A

2025 Sampling Locations

Well	Monitoring Pipe Elevations (masl)	Ground Surface Elevations (masl)	Well Screen Elevations (masl)	
			Top of Screen (masl)	Bottom of Screen (masl)
Site 4				
GP-D7	222.79	222.11	221.35	219.83
GP-D26	224.51	224.63	223.56	220.51
GP-D27	224.60	224.74	223.83	220.78
Site 5				
GP-D15	225.44	224.54	223.92	222.40
GP-D16	226.16	225.25	224.04	222.51
GP-D17	223.94	224.04	223.05	221.53
GP-D19	226.33	225.34	224.12	222.60
Site 6				
GP-D1	226.16	225.28	223.75	222.23
GP-D2	226.09	225.20	223.67	222.15
GP-D3	224.59	223.53	223.22	221.7
GP-D8	226.51	225.58	224.05	222.53
GP-D13	223.81	222.93	222.47	220.95
GP-D14	228.47	227.59	226.06	224.54
GP-D20	228.16	227.25	225.88	222.83
GP-D21	227.82	226.84	225.62	222.57
GP-D23R	226.04	226.18	224.81	221.76

Notes:

m asl - metres above sea level

APPENDIX B

Groundwater Elevations

**Table B-1
Groundwater Elevations
Dymert's Creek Landfills**

Well ID	Monitoring Pipe Elevation (masl)	Ground Elevation (masl)	Depth to Bottom of Well (mbmp)	Depth to Bottom of Well (mbgs)	Screen Length (m)	Top of Screen Elevation (masl)	Base of Well Elevation (masl)	Date	Depth to Groundwater (mbmp)	Depth to Groundwater (mbgs)	Groundwater Elevation (masl)
GP-D1	226.16	225.28	3.93	3.05	1.52	223.75	222.23	2012-09-17	2.74	1.86	223.41
								2012-12-03	2.55	1.67	223.61
								2012-12-18	2.53	1.65	223.63
								2013-04-04	2.34	1.46	223.82
								2013-06-20	2.52	1.64	223.64
								2013-08-22	2.72	1.84	223.44
								2013-10-11	2.59	1.71	223.56
								2013-12-13	2.56	1.68	223.60
								2014-02-12	2.64	1.76	223.52
								2014-11-27	2.50	1.62	223.66
								2015-03-11	2.71	1.83	223.45
								2015-09-21	2.71	1.83	223.45
								2015-12-14	2.45	1.57	223.70
								2017-02-28	2.19	1.31	223.97
								2018-02-23	2.30	1.42	223.86
								2019-08-29	2.76	1.88	223.40
								2020-03-09	2.49	1.61	223.67
								2020-09-11	3.25	2.37	222.91
								2021-02-03	2.53	1.65	223.63
								2021-09-17	2.58	1.70	223.58
2022-01-25	2.54	1.66	223.62								
2022-09-28	2.68	1.80	223.48								
2023-02-23	2.39	1.51	223.77								
2023-08-29	2.67	1.79	223.49								
2024-02-22	2.47	1.59	223.69								
2024-09-19	2.69	1.81	223.47								
2025-01-27	2.51	1.63	223.65								
2025-09-05	2.69	1.81	223.47								

**Table B-1
Groundwater Elevations
Dymert's Creek Landfills**

Well ID	Monitoring Pipe Elevation (masl)	Ground Elevation (masl)	Depth to Bottom of Well (mbmp)	Depth to Bottom of Well (mbgs)	Screen Length (m)	Top of Screen Elevation (masl)	Base of Well Elevation (masl)	Date	Depth to Groundwater (mbmp)	Depth to Groundwater (mbgs)	Groundwater Elevation (masl)
GP-D2	226.09	225.20	3.94	3.05	1.52	223.67	222.15	2012-09-17	3.52	2.62	222.57
								2012-12-03	3.31	2.42	222.78
								2012-12-18	3.25	2.36	222.84
								2013-04-04	3.05	2.16	223.04
								2013-06-20	3.32	2.43	222.77
								2013-08-22	3.51	2.62	222.58
								2013-10-11	3.37	2.48	222.72
								2013-12-13	3.32	2.42	222.78
								2014-02-12	3.43	2.54	222.66
								2014-11-27	3.27	2.37	222.83
								2015-03-11	3.48	2.59	222.61
								2015-09-21	3.45	2.55	222.64
								2015-12-14	3.11	2.21	222.99
								2016-03-14	2.85	1.95	223.25
								2016-09-06	3.52	2.63	222.57
								2017-02-28	2.95	2.06	223.14
								2018-02-23	2.96	2.07	223.13
								2020-03-09	3.31	2.42	222.78
								2021-02-03	3.31	2.42	222.78
								2021-09-17	3.29	2.40	222.80
								2022-01-25	3.37	2.47	222.72
								2022-09-25	3.47	2.57	222.62
								2023-02-23	3.11	2.22	222.98
								2023-08-29	3.44	2.55	222.65
								2024-02-22	3.21	2.31	222.89
								2024-09-19	3.68	2.79	222.41
								2025-01-27	3.61	2.72	222.48
								2025-09-05	3.40	2.51	222.69

Table B-1
Groundwater Elevations
Dymont's Creek Landfills

Well ID	Monitoring Pipe Elevation (masl)	Ground Elevation (masl)	Depth to Bottom of Well (mbmp)	Depth to Bottom of Well (mbgs)	Screen Length (m)	Top of Screen Elevation (masl)	Base of Well Elevation (masl)	Date	Depth to Groundwater (mbmp)	Depth to Groundwater (mbgs)	Groundwater Elevation (masl)
GP-D3	224.59	223.53	2.89	1.83	1.52	223.22	221.70	2012-03-21	1.87	0.81	222.72
								2012-09-17	2.26	1.20	222.33
								2012-12-03	1.87	0.81	222.71
								2012-12-18	1.97	0.91	222.62
								2013-04-04	1.80	0.74	222.79
								2013-06-20	2.04	0.98	222.55
								2013-08-22	2.29	1.23	222.30
								2013-10-11	2.00	0.94	222.59
								2013-12-13	2.03	0.97	222.55
								2014-02-12	2.09	1.03	222.49
								2014-11-27	Damaged	NA	NA
								2015-03-11	Damaged	NA	NA
								2015-09-21	Damaged	NA	NA
								2015-12-14	1.85	0.79	222.74
								2016-03-14	1.44	0.38	223.14
								2016-09-06	dry	dry	NA
								2017-02-28	1.69	0.62	222.90
								2018-02-23	1.51	0.45	223.08
								2020-03-09	1.85	0.79	222.74
								2020-09-11	1.99	0.93	222.60
								2021-02-03	1.89	0.83	222.70
								2021-09-17	1.47	0.41	223.12
								2022-01-25	1.86	0.80	222.72
								2022-09-28	dry	dry	NA
								2022-10-26	1.95	0.89	222.64
2023-02-23	1.78	0.72	222.81								
2023-08-29	2.04	0.97	222.55								
2024-02-22	1.78	0.72	222.80								
2024-09-19	2.15	1.09	222.44								
2025-01-27	2.18	1.12	222.41								
2025-09-05	2.09	1.03	222.50								
GP-D4	224.20	223.32	3.31	2.44	1.37	222.25	220.88	2012-09-17	2.03	1.16	222.17
								2012-12-03	1.46	0.59	222.73
								2012-12-18	1.51	0.64	222.68
								2013-04-04	1.33	0.46	222.87
								2013-06-20	1.79	0.92	222.41
								2013-08-22	1.96	1.09	222.24
								2013-10-11	1.55	0.68	222.65
								2013-12-13	1.67	0.80	222.52
								2014-02-12	1.78	0.91	222.42
								2014-11-27	1.42	0.55	222.77
								2015-03-11	1.70	0.83	222.50
								2015-09-21	1.88	1.01	222.31
								2015-12-14	1.62	0.74	222.58
								2016-03-14	1.17	0.29	223.03
								2016-09-06	2.09	1.22	222.10
								2017-02-27	1.20	0.33	223.00
								2018-02-23	1.24	0.37	222.95
2025-01-27	1.98	1.11	222.22								

**Table B-1
Groundwater Elevations
Dymert's Creek Landfills**

Well ID	Monitoring Pipe Elevation (masl)	Ground Elevation (masl)	Depth to Bottom of Well (mbmp)	Depth to Bottom of Well (mbgs)	Screen Length (m)	Top of Screen Elevation (masl)	Base of Well Elevation (masl)	Date	Depth to Groundwater (mbmp)	Depth to Groundwater (mbgs)	Groundwater Elevation (masl)
GP-D5	224.98	223.99	2.69	1.71	1.52	223.81	222.29	2012-03-21	2.05	1.06	222.93
								2012-09-17	dry	dry	NA
								2012-12-03	2.23	1.24	222.75
								2012-12-18	2.11	1.12	222.87
								2013-04-04	1.72	0.73	223.26
								2013-06-20	2.21	1.22	222.77
								2013-08-22	2.54	1.55	222.44
								2013-10-11	2.49	1.50	222.49
								2013-12-13	2.14	1.15	222.84
								2014-02-12	2.37	1.38	222.61
								2014-11-27	2.09	1.10	222.89
								2015-03-11	2.45	1.46	222.53
								2015-09-21	2.56	1.57	222.42
								2015-12-14	2.33	1.34	222.65
								2016-03-14	1.70	0.71	223.28
								2016-09-06	dry	dry	NA
								2017-02-27	1.69	0.70	223.29
2018-02-23	2.00	1.01	222.98								
2025-01-27	2.70	1.71	222.28								
GP-D6	224.38	223.42	3.10	2.13	1.37	222.65	221.28	2012-03-21	1.83	0.86	222.55
								2012-09-17	1.98	1.01	222.40
								2012-12-03	2.48	1.52	221.90
								2012-12-18	1.99	1.02	222.39
								2013-04-04	1.72	0.75	222.66
								2013-06-20	1.96	1.00	222.42
								2013-08-22	2.35	1.39	222.03
								2013-10-11	1.36	0.39	223.02
								2013-12-13	2.18	1.22	222.20
								2014-02-12	2.60	1.64	221.78
								2014-11-27	1.78	0.81	222.61
								2015-03-11	1.76	0.79	222.62
								2015-09-21	2.03	1.07	222.35
								2015-12-14	2.14	1.17	222.24
								2016-03-14	1.27	0.31	223.11
								2016-09-06	2.38	1.42	222.00
								2017-02-28	1.40	0.44	222.98
2017-09-08	2.20	1.24	222.18								
2018-02-23	1.36	0.39	223.03								
2025-01-27	2.57	1.61	221.81								

**Table B-1
Groundwater Elevations
Dymert's Creek Landfills**

Well ID	Monitoring Pipe Elevation (masl)	Ground Elevation (masl)	Depth to Bottom of Well (mbmp)	Depth to Bottom of Well (mbgs)	Screen Length (m)	Top of Screen Elevation (masl)	Base of Well Elevation (masl)	Date	Depth to Groundwater (mbmp)	Depth to Groundwater (mbgs)	Groundwater Elevation (masl)
GP-D7	222.79	222.11	2.97	2.29	1.52	221.35	219.83	2012-09-17	2.56	1.88	220.24
								2012-12-03	2.53	1.85	220.27
								2012-12-18	2.53	1.85	220.27
								2013-04-04	2.39	1.70	220.41
								2013-06-20	2.43	1.75	220.36
								2013-08-22	2.60	1.92	220.20
								2013-10-11	2.53	1.85	220.26
								2013-12-13	2.53	1.85	220.26
								2014-02-13	2.62	1.94	220.17
								2014-11-27	2.56	1.87	220.24
								2015-03-11	2.45	1.77	220.34
								2015-09-21	2.77	2.09	220.02
								2015-12-14	2.73	2.04	220.07
								2017-02-28	2.45	1.76	220.35
								2017-09-08	2.70	2.02	220.10
								2018-02-23	2.55	1.87	220.24
								2018-09-04	2.70	2.02	220.09
								2019-04-01	2.48	1.80	220.31
								2019-08-29	2.71	2.03	220.09
								2020-02-14	2.47	1.78	220.33
								2020-09-11	2.74	2.06	220.05
								2021-02-03	2.73	2.05	220.06
								2021-09-20	2.72	2.03	220.08
								2022-01-25	2.63	1.94	220.17
								2022-09-28	2.55	1.87	220.25
2023-03-20	2.54	1.86	220.26								
2023-08-30	2.67	1.98	220.13								
2024-02-22	2.57	1.89	220.22								
2024-09-19	2.68	2.00	220.11								
2025-01-27	dry @ 2.81	dry @ 2.13	NA								
2025-09-05	2.72	2.04	220.07								

**Table B-1
Groundwater Elevations
Dymont's Creek Landfills**

Well ID	Monitoring Pipe Elevation (masl)	Ground Elevation (masl)	Depth to Bottom of Well (mbmp)	Depth to Bottom of Well (mbgs)	Screen Length (m)	Top of Screen Elevation (masl)	Base of Well Elevation (masl)	Date	Depth to Groundwater (mbmp)	Depth to Groundwater (mbgs)	Groundwater Elevation (masl)
GP-D8	226.51	225.58	3.98	3.05	1.52	224.05	222.53	2012-12-03	2.92	1.99	223.59
								2012-12-18	2.89	1.96	223.62
								2013-04-04	2.72	1.79	223.79
								2013-06-20	2.84	1.91	223.67
								2013-08-22	3.05	2.11	223.46
								2013-10-11	2.97	2.04	223.53
								2013-12-13	2.89	1.96	223.61
								2014-02-12	3.03	2.10	223.48
								2014-11-27	2.69	1.76	223.82
								2015-03-11	3.06	2.13	223.45
								2015-09-21	3.07	2.14	223.44
								2015-12-14	2.86	1.93	223.65
								2016-03-14	2.59	1.66	223.92
								2016-09-06	3.11	2.18	223.39
								2017-02-28	2.50	1.57	224.01
								2017-09-08	2.93	2.00	223.58
								2018-02-23	2.33	1.39	224.18
								2019-09-04	3.85	2.92	222.66
								2019-04-01	2.71	1.78	223.79
								2019-08-29	3.11	2.18	223.40
								2020-02-14	2.73	1.80	223.78
								2020-09-11	2.96	2.03	223.55
								2021-02-03	2.87	1.94	223.64
								2021-09-17	2.89	1.96	223.62
								2022-01-25	2.87	1.94	223.64
								2022-09-28	dry	dry	NA
								2022-10-26	3.04	2.10	223.47
								2023-03-20	2.75	1.82	223.76
								2023-08-29	2.98	2.05	223.53
								2024-02-22	2.83	1.89	223.68
								2024-09-19	3.00	2.07	223.51
								2025-01-27	2.84	1.91	223.67
								2025-09-05	3.00	2.07	223.51

**Table B-1
Groundwater Elevations
Dymert's Creek Landfills**

Well ID	Monitoring Pipe Elevation (masl)	Ground Elevation (masl)	Depth to Bottom of Well (mbmp)	Depth to Bottom of Well (mbgs)	Screen Length (m)	Top of Screen Elevation (masl)	Base of Well Elevation (masl)	Date	Depth to Groundwater (mbmp)	Depth to Groundwater (mbgs)	Groundwater Elevation (masl)
GP-D13	223.77	222.93	2.82	1.98	1.52	222.47	220.95	2012-12-03	1.25	0.37	222.56
								2012-12-18	1.27	0.39	222.54
								2013-04-04	1.14	0.26	222.67
								2013-06-20	1.30	0.42	222.51
								2013-08-22	1.53	0.68	222.24
								2013-10-11	1.28	0.43	222.50
								2013-12-13	1.29	0.44	222.49
								2014-02-12	1.30	0.45	222.47
								2014-11-27	1.20	0.35	222.57
								2015-03-11	1.37	0.53	222.40
								2015-09-21	1.46	0.62	222.31
								2015-12-14	1.14	0.30	222.63
								2016-03-14	1.00	0.16	222.77
								2016-09-06	1.54	0.70	222.23
								2017-02-28	1.02	0.18	222.75
								2017-09-08	1.39	0.54	222.38
								2018-02-23	0.94	0.10	222.83
								2019-09-04	1.44	0.59	222.34
								2019-04-01	1.37	0.53	222.40
								2019-08-29	1.56	0.72	222.21
								2020-02-14	1.27	0.43	222.50
								2021-02-03	1.20	0.35	222.57
								2021-09-17	nm	nm	na
								2021-10-06	1.18	0.34	222.59
								2022-01-25	1.25	0.41	222.52
2022-09-28	1.43	0.59	222.34								
2023-03-20	1.14	0.30	222.63								
2023-08-29	1.43	0.59	222.34								
2024-02-22	1.14	0.30	222.63								
2024-03-29	1.21	0.37	222.56								
2024-09-19	1.50	0.66	222.27								
2025-01-27	1.51	0.67	222.26								
2025-09-05	1.42	0.58	222.35								

**Table B-1
Groundwater Elevations
Dymert's Creek Landfills**

Well ID	Monitoring Pipe Elevation (masl)	Ground Elevation (masl)	Depth to Bottom of Well (mbmp)	Depth to Bottom of Well (mbgs)	Screen Length (m)	Top of Screen Elevation (masl)	Base of Well Elevation (masl)	Date	Depth to Groundwater (mbmp)	Depth to Groundwater (mbgs)	Groundwater Elevation (masl)
GP-D14	223.89	223.00	3.93	3.05	1.52	221.47	219.95	2012-09-17	2.59	1.70	221.30
								2012-12-03	2.37	1.49	221.51
								2012-12-18	2.42	1.53	221.47
								2013-04-04	2.21	1.32	221.68
								2013-06-20	2.54	1.66	221.34
								2013-08-22	2.63	1.75	221.25
								2013-10-11	2.50	1.62	221.39
								2013-12-13	2.51	1.62	221.38
								2014-02-12	2.54	1.65	221.35
								2014-11-27	2.25	1.36	221.64
								2015-03-11	2.56	1.68	221.33
								2015-09-21	2.63	1.75	221.25
								2015-12-14	2.51	1.63	221.38
								2016-03-14	2.00	1.11	221.89
								2016-09-06	2.65	1.77	221.24
								2016-11-25	2.52	1.64	221.37
								2017-02-27	2.18	1.30	221.71
								2017-09-08	2.57	1.69	221.31
								2018-02-23	2.04	1.16	221.85
								2018-09-04	2.58	1.70	221.31
								2019-04-01	2.44	1.55	221.45
								2019-08-29	2.63	1.74	221.26
								2020-02-14	2.45	1.56	221.44
								2020-09-11	2.59	1.71	221.29
								2021-02-03	2.47	1.59	221.41
2021-09-17	2.29	1.41	221.60								
2022-01-25	2.59	1.70	221.30								
2022-09-28	2.57	1.69	221.32								
2022-11-18	2.48	1.60	221.40								
2023-03-20	2.40	1.52	221.49								
2023-08-29	2.66	1.78	221.23								
2024-02-22	2.48	1.60	221.40								
2024-09-19	2.65	1.77	221.24								
2025-01-27	2.85	1.97	221.04								
2025-09-05	2.61	1.73	221.28								

**Table B-1
Groundwater Elevations
Dymont's Creek Landfills**

Well ID	Monitoring Pipe Elevation (masl)	Ground Elevation (masl)	Depth to Bottom of Well (mbmp)	Depth to Bottom of Well (mbgs)	Screen Length (m)	Top of Screen Elevation (masl)	Base of Well Elevation (masl)	Date	Depth to Groundwater (mbmp)	Depth to Groundwater (mbgs)	Groundwater Elevation (masl)
GP-D15	225.44	224.54	3.05	2.14	1.52	223.91	222.39	2012-12-03	2.88	1.98	222.56
								2012-12-18	2.89	1.99	222.55
								2013-04-04	2.80	1.89	222.64
								2013-06-20	2.89	1.99	222.55
								2013-08-22	3.06	2.15	222.38
								2013-10-11	2.97	2.07	222.47
								2013-12-13	2.90	2.00	222.54
								2014-02-12	3.01	2.10	222.43
								2014-11-27	2.77	1.87	222.67
								2015-03-11	2.90	2.00	222.54
								2015-09-21	3.08	2.17	222.36
								2015-12-14	2.82	1.92	222.62
								2017-02-27	2.69	1.79	222.75
								2017-09-08	2.87	1.97	222.57
								2018-02-23	2.80	1.90	222.64
								2018-09-04	2.91	2.01	222.53
								2019-04-01	2.76	1.86	222.68
								2019-08-29	2.91	2.01	222.53
								2020-02-14	2.78	1.88	222.66
								2021-02-03	dry	na	NA
								2021-09-17	dry	na	NA
								2022-01-25	dry	dry	NA
								2022-09-28	dry	dry	NA
								2022-11-18	dry	dry	NA
								2023-02-24	dry	dry	NA
2023-08-29	dry	dry	NA								
2024-02-22	dry	dry	NA								
2024-09-19	dry	dry	NA								
2025-01-27	dry	dry	NA								
2025-09-03	dry	dry	NA								

**Table B-1
Groundwater Elevations
Dymert's Creek Landfills**

Well ID	Monitoring Pipe Elevation (masl)	Ground Elevation (masl)	Depth to Bottom of Well (mbmp)	Depth to Bottom of Well (mbgs)	Screen Length (m)	Top of Screen Elevation (masl)	Base of Well Elevation (masl)	Date	Depth to Groundwater (mbmp)	Depth to Groundwater (mbgs)	Groundwater Elevation (masl)
GP-D16	226.16	225.25	3.65	2.74	1.52	224.04	222.51	2012-09-17	3.31	2.40	222.85
								2012-12-03	3.25	2.34	222.91
								2012-12-18	3.24	2.33	222.92
								2013-04-04	3.09	2.18	223.07
								2013-06-20	3.10	2.19	223.06
								2013-08-22	3.29	2.39	222.87
								2013-10-11	3.29	2.38	222.87
								2013-12-13	3.24	2.33	222.92
								2014-02-12	3.36	2.45	222.80
								2014-11-27	3.22	2.31	222.94
								2015-03-11	2.99	2.09	223.17
								2015-09-21	3.34	2.43	222.82
								2015-12-14	3.32	2.41	222.84
								2017-02-27	2.96	2.05	223.20
								2017-09-08	3.15	2.24	223.01
								2018-02-23	3.18	2.28	222.98
								2018-09-04	3.30	2.40	222.86
								2019-04-01	3.20	2.30	222.96
								2019-08-29	3.31	2.41	222.85
								2020-02-14	3.18	2.27	222.98
								2021-02-03	3.21	2.31	222.95
								2021-09-17	3.14	2.24	223.02
								2022-01-25	3.16	2.26	223.00
								2022-09-28	3.33	2.43	222.83
								2022-11-18	3.36	2.46	222.80
2023-03-20	3.05	2.15	223.11								
2023-08-30	3.15	2.25	223.01								
2024-02-22	3.07	2.17	223.09								
2024-09-19	3.16	2.26	223.00								
2025-01-27	3.49	2.59	222.67								
2025-09-05	3.25	2.35	222.91								

**Table B-1
Groundwater Elevations
Dymont's Creek Landfills**

Well ID	Monitoring Pipe Elevation (masl)	Ground Elevation (masl)	Depth to Bottom of Well (mbmp)	Depth to Bottom of Well (mbgs)	Screen Length (m)	Top of Screen Elevation (masl)	Base of Well Elevation (masl)	Date	Depth to Groundwater (mbmp)	Depth to Groundwater (mbgs)	Groundwater Elevation (masl)
GP-D17	223.94	224.04	2.41	2.52	1.52	223.05	221.53	2012-12-03	1.98	2.08	221.96
								2012-12-19	1.98	2.08	221.96
								2013-04-04	1.87	1.97	222.07
								2013-06-20	1.73	1.83	222.21
								2013-08-22	2.11	2.21	221.83
								2013-10-11	2.02	2.12	221.92
								2013-12-13	1.94	2.04	222.00
								2014-02-12	2.06	2.16	221.88
								2014-11-27	1.94	2.04	222.00
								2015-03-12	2.11	2.21	221.83
								2015-09-21	2.13	2.23	221.81
								2015-12-14	1.98	2.08	221.96
								2017-03-20	1.71	1.81	222.23
								2017-09-08	2.04	2.15	221.90
								2018-02-23	1.95	2.05	221.99
								2018-09-04	2.16	2.26	221.78
								2019-04-01	1.90	2.00	222.04
								2019-08-29	2.20	2.30	221.74
								2020-02-14	1.94	2.04	222.00
								2020-09-11	2.11	2.21	221.83
								2021-03-03	2.11	2.21	221.84
								2021-09-17	2.05	2.15	221.89
								2022-02-17	2.01	2.12	221.93
								2022-09-28	2.07	2.17	221.87
								2023-02-24	1.95	2.05	221.99
2023-08-29	2.22	2.32	221.73								
2024-02-22	2.22	2.32	221.73								
2024-02-22	dry @ 2.12	dry @ 2.22	NA								
2024-03-30	1.94	2.04	222.00								
2024-09-19	2.00	2.10	221.94								
2025-01-27	dry @ 2.11	dry @ 2.21	NA								
2025-09-03	2.01	2.11	221.93								

**Table B-1
Groundwater Elevations
Dymert's Creek Landfills**

Well ID	Monitoring Pipe Elevation (masl)	Ground Elevation (masl)	Depth to Bottom of Well (mbmp)	Depth to Bottom of Well (mbgs)	Screen Length (m)	Top of Screen Elevation (masl)	Base of Well Elevation (masl)	Date	Depth to Groundwater (mbmp)	Depth to Groundwater (mbgs)	Groundwater Elevation (masl)
GP-D18	224.58	223.47	3.85	2.74	1.52	222.25	220.73	2012-09-17	3.37	2.26	221.21
								2012-12-03	3.19	2.08	221.39
								2012-12-18	3.18	2.07	221.39
								2013-04-04	2.89	1.78	221.69
								2013-06-20	3.22	2.11	221.36
								2013-08-22	2.44	1.33	222.14
								2013-10-11	3.24	2.13	221.34
								2013-12-13	3.26	2.15	221.32
								2014-02-12	3.37	2.26	221.21
								2014-11-27	3.06	1.95	221.52
								2015-03-11	2.91	1.80	221.67
								2015-09-21	3.39	2.28	221.19
								2015-12-14	3.29	2.18	221.29
								2016-03-14	2.72	1.61	221.85
								2016-09-06	3.15	2.04	221.42
								2017-02-28	2.69	1.58	221.89
								2018-02-23	2.77	1.66	221.80
2020-09-11	3.36	2.25	221.21								
2025-01-27	3.55	2.44	221.03								
GP-D19	226.33	225.34	3.73	2.74	1.52	224.12	222.60	2012-12-03	dry	dry	NA
								2012-12-18	dry	dry	NA
								2013-04-04	dry	dry	NA
								2013-06-20	dry	dry	NA
								2013-08-22	dry	dry	NA
								2013-10-11	dry	dry	NA
								2013-12-13	dry	dry	NA
								2014-02-12	3.36	2.37	222.97
								2014-11-27	3.24	2.25	223.09
								2015-03-11	dry	dry	NA
								2015-09-21	dry	dry	NA
								2015-12-14	dry	dry	NA
								2017-02-28	dry	dry	NA
								2017-09-08	dry	dry	NA
								2018-02-23	dry	dry	NA
								2018-09-04	dry	dry	NA
								2019-04-01	dry	dry	NA
2019-08-29	dry	dry	NA								
2020-02-14	dry	dry	NA								
2020-09-11	3.74	2.75	222.59								
2021-02-03	dry	dry	NA								
2021-09-17	dry	dry	NA								
2022-01-25	dry	dry	NA								
2022-09-28	dry	dry	NA								
2023-02-24	dry	dry	NA								
2023-08-30	dry	dry	NA								
2024-02-22	dry	dry	NA								
2024-09-19	dry	dry	NA								
2025-01-27	dry	dry	NA								
2025-09-03	dry	dry	NA								

**Table B-1
Groundwater Elevations
Dymert's Creek Landfills**

Well ID	Monitoring Pipe Elevation (masl)	Ground Elevation (masl)	Depth to Bottom of Well (mbmp)	Depth to Bottom of Well (mbgs)	Screen Length (m)	Top of Screen Elevation (masl)	Base of Well Elevation (masl)	Date	Depth to Groundwater (mbmp)	Depth to Groundwater (mbgs)	Groundwater Elevation (masl)
GP-D20	228.16	227.25	5.33	4.42	3.05	225.88	222.83	2013-08-22	4.48	3.57	223.67
								2013-10-11	4.42	3.51	223.73
								2013-12-13	4.37	3.46	223.79
								2014-02-12	4.49	3.58	223.67
								2014-11-27	4.36	3.45	223.80
								2015-03-12	4.51	3.60	223.65
								2015-09-21	4.51	3.60	223.65
								2015-12-14	4.37	3.46	223.79
								2017-02-27	4.13	3.22	224.03
								2017-09-08	4.40	3.49	223.75
								2018-02-23	4.27	3.36	223.89
								2018-09-04	4.42	3.51	223.74
								2019-04-01	4.26	3.35	223.90
								2019-08-29	4.55	3.64	223.61
								2020-02-14	4.24	3.33	223.92
								2020-09-11	4.43	3.52	223.72
								2021-02-03	4.36	3.45	223.79
								2021-09-17	4.36	3.45	223.80
								2022-01-25	4.23	3.32	223.92
								2022-09-28	4.46	3.55	223.69
2023-03-20	4.27	3.36	223.89								
2023-08-29	4.43	3.52	223.72								
2024-02-22	4.32	3.41	223.84								
2024-09-19	4.44	3.53	223.72								
2025-01-27	4.34	3.43	223.82								
2025-09-05	4.48	3.57	223.68								

Table B-1
Groundwater Elevations
Dymert's Creek Landfills

Well ID	Monitoring Pipe Elevation (masl)	Ground Elevation (masl)	Depth to Bottom of Well (mbmp)	Depth to Bottom of Well (mbgs)	Screen Length (m)	Top of Screen Elevation (masl)	Base of Well Elevation (masl)	Date	Depth to Groundwater (mbmp)	Depth to Groundwater (mbgs)	Groundwater Elevation (masl)
GP-D21	227.82	226.84	5.24	4.27	3.05	225.62	222.57	2013-08-22	4.48	3.50	223.34
								2013-10-11	4.42	3.44	223.40
								2013-12-13	4.34	3.36	223.48
								2014-02-12	4.50	3.53	223.32
								2014-11-27	4.32	3.34	223.50
								2015-03-12	4.52	3.55	223.30
								2015-09-21	4.52	3.55	223.29
								2015-12-14	4.22	3.25	223.59
								2017-02-27	4.01	3.03	223.81
								2018-02-23	4.21	3.23	223.61
								2019-04-01	4.25	3.28	223.57
								2019-08-29	4.57	3.60	223.25
								2020-02-14	4.28	3.30	223.54
								2020-09-11	3.43	2.46	224.38
								2021-02-03	4.35	3.38	223.46
								2021-09-17	4.25	3.28	223.57
								2022-01-25	4.29	3.32	223.53
								2022-09-28	4.49	3.51	223.33
								2023-03-20	4.25	3.27	223.57
								2023-08-29	4.50	3.52	223.32
2024-02-22	4.31	3.34	223.50								
2024-09-19	4.45	3.48	223.37								
2025-01-27	4.51	3.54	223.31								
2025-09-05	4.51	3.54	223.31								
GP-D22	227.03	227.15	4.45	4.57	3.05	225.63	222.58	2013-08-22	3.91	4.03	223.11
								2013-10-11	3.85	3.97	223.18
								2013-12-13	3.75	3.88	223.27
								2014-02-25	3.92	4.04	223.11
								2014-11-25	3.70	3.82	223.33
								2015-03-12	3.95	4.07	223.08
								2015-09-21	3.95	4.07	223.08
								2015-12-14	3.63	3.75	223.40
								2017-02-27	3.17	3.29	223.86
								2017-09-08	3.73	3.85	223.30
								2018-02-23	3.63	3.75	223.40
								2018-09-04	3.85	3.97	223.18
								2019-04-01	3.79	3.91	223.24
								2019-08-29	4.00	4.12	223.03
								2020-02-14	3.78	3.90	223.25
								2020-09-11	3.86	3.98	223.17
								2021-03-03	3.81	3.93	223.21
2021-09-17	3.74	3.86	223.29								
2022-02-17	3.66	3.78	223.37								
2022-09-28	3.87	3.99	223.16								
2023-02-24	3.65	3.77	223.38								
2023-04-13						Decommissioned					

Table B-1
Groundwater Elevations
Dymert's Creek Landfills

Well ID	Monitoring Pipe Elevation (masl)	Ground Elevation (masl)	Depth to Bottom of Well (mbmp)	Depth to Bottom of Well (mbgs)	Screen Length (m)	Top of Screen Elevation (masl)	Base of Well Elevation (masl)	Date	Depth to Groundwater (mbmp)	Depth to Groundwater (mbgs)	Groundwater Elevation (masl)
GP-D23	225.73	225.93	3.77	3.96	3.05	225.02	221.97	2013-08-22	2.69	2.88	223.05
								2013-10-11	2.60	2.79	223.14
								2013-12-13	2.52	2.71	223.21
								2014-02-25	2.69	2.89	223.04
								2014-11-25	2.51	2.71	223.22
								2016-03-16	2.55	2.74	223.18
								2015-09-21	2.71	2.90	223.03
								2015-12-14	2.43	2.62	223.31
								2017-03-28	1.71	1.90	224.03
								2017-09-08	2.52	2.72	223.21
								2018-02-23	2.37	2.56	223.37
								2018-09-04	2.83	3.02	222.90
								2019-04-01	2.73	2.92	223.01
								2019-08-29	2.76	2.96	222.97
								2020-02-14	3.74	3.93	221.99
								2021-03-03	2.74	2.93	223.00
2021-09-17	2.49	2.68	223.24								
2022-02-24	2.56	2.75	223.18								
2022-09-28	2.82	3.01	222.92								
2023-02-24	2.51	2.70	223.23								
2023-04-13								decommissioned			
GP-D23R	226.04	226.18	4.28	4.42	3.05	224.81	221.76	2023-12-22	2.92	3.06	223.12
								2024-02-22	2.85	2.99	223.19
								2024-09-19	3.00	3.14	223.04
								2025-01-27	3.21	3.35	222.83
								2025-09-05	3.01	3.15	223.03
GP-D24	226.79	227.00	5.28	5.49	3.05	224.56	221.51	2013-08-22	4.93	5.14	221.87
								2013-10-11	3.86	4.07	222.93
								2013-12-13	3.77	3.98	223.03
								2014-02-12	Buried	NA	NA
								2014-11-25	3.78	3.99	223.01
								2015-03-12	Buried	NA	NA
								2015-09-21	3.97	4.18	222.83
								2015-12-14	3.07	3.28	223.72
								2017-02-27	3.55	3.76	223.24
								2017-09-08	3.69	3.90	223.11
								2018-02-23	3.66	3.87	223.14
								2018-09-04	3.92	4.13	222.87
								2019-04-01	3.90	4.11	222.89
								2019-08-30	4.01	4.22	222.78
								2020-02-14	3.91	4.12	222.88
								2020-09-11	3.88	4.09	222.91
2021-03-03	3.83	4.04	222.96								
2021-09-17	3.78	3.99	223.01								
2022-02-24	3.71	3.92	223.08								
2022-09-28	3.82	4.03	222.98								
2023-02-24	3.66	3.87	223.13								
2023-04-13								decommissioned			

**Table B-1
Groundwater Elevations
Dymont's Creek Landfills**

Well ID	Monitoring Pipe Elevation (masl)	Ground Elevation (masl)	Depth to Bottom of Well (mbmp)	Depth to Bottom of Well (mbgs)	Screen Length (m)	Top of Screen Elevation (masl)	Base of Well Elevation (masl)	Date	Depth to Groundwater (mbmp)	Depth to Groundwater (mbgs)	Groundwater Elevation (masl)
GP-D26	224.51	224.63	4.00	4.12	3.05	223.56	220.51	2013-08-22	2.70	2.81	221.81
								2013-10-11	2.66	2.77	221.86
								2013-12-13	2.55	2.67	221.96
								2014-02-25	2.68	2.80	221.83
								2014-11-27	2.57	2.68	221.94
								2015-03-12	2.75	2.86	221.76
								2015-09-22	2.76	2.88	221.75
								2015-12-14	2.61	2.72	221.91
								2017-02-28	2.30	2.41	222.22
								2017-09-08	2.68	2.79	221.84
								2018-02-23	2.58	2.70	221.93
								2018-09-04	2.79	2.90	221.73
								2019-04-01	2.71	2.82	221.81
								2019-08-29	2.83	2.95	221.68
								2020-02-14	2.69	2.80	221.83
								2021-03-03	2.75	2.86	221.77
								2021-09-17	2.68	2.79	221.83
								2022-02-17	2.66	2.77	221.86
								2022-09-28	2.74	2.85	221.78
								2023-02-24	2.58	2.69	221.94
2023-08-29	2.84	2.95	221.68								
2024-02-22	2.58	2.69	221.93								
2024-09-19	2.73	2.84	221.78								
2025-01-28	2.96	3.07	221.55								
2025-09-03	3.79	3.90	220.72								
GP-D27	224.60	224.74	3.83	3.96	3.05	223.83	220.78	2013-08-22	2.39	2.53	222.21
								2013-10-11	2.45	2.58	222.15
								2013-12-13	2.39	2.53	222.21
								2014-02-25	2.57	2.71	222.03
								2014-11-25	2.45	2.58	222.15
								2015-03-12	2.55	2.68	222.05
								2015-09-21	2.53	2.66	222.07
								2015-12-14	2.49	2.62	222.12
								2017-02-28	2.16	2.29	222.44
								2017-09-08	2.31	2.44	222.29
								2018-02-23	2.32	2.46	222.28
								2018-09-04	2.50	2.63	222.10
								2019-04-01	2.45	2.58	222.16
								2019-08-29	2.50	2.63	222.10
								2020-02-14	2.47	2.60	222.13
								2021-03-03	2.35	2.48	222.26
								2021-09-17	2.33	2.46	222.27
								2022-02-17	2.35	2.48	222.26
								2022-09-28	2.50	2.63	222.10
								2023-02-24	2.23	2.36	222.37
2023-08-29	2.27	2.41	222.33								
2024-02-22	2.18	2.31	222.43								
2024-09-19	2.22	2.35	222.38								
2025-01-27	2.51	2.64	222.09								
2025-09-03	2.38	2.51	222.22								

masl = metres above sea level
mbmp = metres below monitoring pipe
mbgs = metres below ground surface



APPENDIX C

Laboratory Certificates of Analysis



FINAL REPORT

CA40044-SEP25 R1

C.AGLD-23592540

Prepared for

WSP Canada Inc.

First Page

CLIENT DETAILS

Client WSP Canada Inc.
 Address 121 Commerce Park Dr, Unit L, Barrie
 Canada, L4N 8X1
 Phone: 705-718-1446. Fax:
 Contact Christi Groves
 Telephone 705-718-1446
 Facsimile
 Email christi.groves@wsp.com
 Project C.AGLD-23592540
 Order Number
 Samples Surface Water (6)

LABORATORY DETAILS

Project Specialist Brad Moore Hon. B.Sc
 Laboratory SGS Canada Inc.
 Address 185 Concession St., Lakefield ON, K0L 2H0
 Telephone 705-652-2143
 Facsimile 705-652-6365
 Email brad.moore@sgs.com
 SGS Reference CA40044-SEP25
 Received 09/04/2025
 Approved 09/12/2025
 Report Number CA40044-SEP25 R1
 Date Reported 09/25/2025

COMMENTS

Temperature of Sample upon Receipt: 7 degrees C
 Cooling Agent Present: Yes
 Custody Seal Present: Yes
 Chain of Custody Number: 045108
 Revision 1 - K and Na results included

SIGNATORIES

Brad Moore Hon. B.Sc



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FINAL REPORT

CA40044-SEP25 R1

Client: WSP Canada Inc.

Project: C.AGLD-23592540

Project Manager: Christi Groves

Samplers: K. Tamasauskas

MATRIX: WATER

L1 = PWQQ_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Sample Number	9	10	11	12	13	14
Sample Name	SWB1	SWB2	SWB3	SWB4	SWB5	Dup B
Sample Matrix	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Sample Date	03/09/2025	03/09/2025	03/09/2025	03/09/2025	03/09/2025	03/09/2025

Parameter	Units	RL	L1	Result	Result	Result	Result	Result	Result
BTEX									
Benzene	ug/L	0.5	100	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	ug/L	0.5	8	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	ug/L	0.5	0.8	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Xylene (total)	ug/L	0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
m/p-xylene	ug/L	0.5	2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
o-xylene	ug/L	0.5	40	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

General Chemistry

Alkalinity	mg/L as CaCO3	2		262	246	246	226	218	254
Temperature @ pH	°C	0		18.6	18.8	19.0	19.1	18.6	18.9
Conductivity	uS/cm	2		1890	1810	1840	1900	1780	1890
Ammonia+Ammonium (N)	as N mg/L	0.1		0.6	0.4	0.3	0.2	< 0.1	0.6
Unionized Ammonia	mg/L as N	0.001	0.02	0.020	0.014	0.012	0.008	0.002	0.024

Metals and Inorganics

Sulphate	mg/L	0.2		28	28	28	31	31	28
Hardness	mg/L as CaCO3	0.05		383	395	390	342	343	401
Aluminum (0.2µm)	mg/L	0.001	0.075	0.005	0.005	0.004	0.003	0.003	0.005
Boron (total)	mg/L	0.002	0.2	0.020	0.020	0.019	0.022	0.018	0.021
Bismuth (total)	mg/L	0.00001		< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Calcium (total)	mg/L	0.01		126	129	128	111	111	131
Iron (total)	mg/L	0.007	0.3	0.959	0.944	0.905	0.731	0.297	1.00
Magnesium (total)	mg/L	0.001		16.9	17.5	17.4	15.7	15.9	17.8



FINAL REPORT

CA40044-SEP25 R1

Client: WSP Canada Inc.

Project: C.AGLD-23592540

Project Manager: Christi Groves

Samplers: K. Tamasauskas

MATRIX: WATER

L1 = PWQQ_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Sample Number	9	10	11	12	13	14
Sample Name	SWB1	SWB2	SWB3	SWB4	SWB5	Dup B
Sample Matrix	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Sample Date	03/09/2025	03/09/2025	03/09/2025	03/09/2025	03/09/2025	03/09/2025

Parameter	Units	RL	L1	Result	Result	Result	Result	Result	Result
Metals and Inorganics (continued)									
Aluminum (total)	mg/L	0.001		0.077	0.076	0.100	0.012	0.027	0.081
Antimony (total)	mg/L	0.0009	0.02	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009
Arsenic (total)	mg/L	0.0002	0.005	0.0002	0.0002	0.0002	< 0.0002	0.0002	0.0003
Barium (total)	mg/L	0.00008		0.185	0.184	0.180	0.152	0.144	0.196
Beryllium (total)	mg/L	0.000007	1.1	< 0.000007	< 0.000007	< 0.000007	< 0.000007	< 0.000007	< 0.000007
Cadmium (total)	mg/L	0.000003	0.0005	0.000010	0.000013	0.000009	0.000003	0.000003	0.000008
Cobalt (total)	mg/L	0.000004	0.0009	0.000148	0.000158	0.000155	0.000096	0.000106	0.000160
Chromium (total)	mg/L	0.00008		0.00085	0.00089	0.00098	0.00099	0.00096	0.00101
Copper (total)	mg/L	0.001	0.005	0.001	0.002	0.002	< 0.001	0.001	0.001
Manganese (total)	mg/L	0.00001		0.0559	0.0510	0.0476	0.0352	0.0301	0.0580
Molybdenum (total)	mg/L	0.0004	0.04	0.0005	0.0004	0.0004	0.0005	0.0004	0.0005
Potassium (total)	mg/L	0.009		2.83	2.79	2.78	2.73	2.65	2.95
Sodium (total)	mg/L	0.01		257	257	253	270	263	270
Nickel (total)	mg/L	0.0001	0.025	0.0006	0.0006	0.0007	0.0006	0.0006	0.0007
Phosphorus (total)	mg/L	0.003	0.01	0.031	0.037	0.036	0.020	0.017	0.034
Lead (total)	mg/L	0.00009	0.025	0.00073	0.00091	0.00067	0.00011	0.00017	0.00081
Lithium (total)	mg/L	0.0001		0.0028	0.0028	0.0028	0.0027	0.0023	0.0030
Selenium (total)	mg/L	0.00004	0.1	0.00031	0.00025	0.00025	0.00028	0.00035	0.00026
Silicon (total)	mg/L	0.02		5.58	5.78	5.74	5.22	5.06	5.79
Silver (total)	mg/L	0.00005	0.0001	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Strontium (total)	mg/L	0.00008		0.521	0.523	0.536	0.567	0.530	0.539
Tellurium (total)	mg/L	0.0001		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001



FINAL REPORT

CA40044-SEP25 R1

Client: WSP Canada Inc.

Project: C.AGLD-23592540

Project Manager: Christi Groves

Samplers: K. Tamasauskas

MATRIX: WATER

L1 = PWQO_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Sample Number	9	10	11	12	13	14
Sample Name	SWB1	SWB2	SWB3	SWB4	SWB5	Dup B
Sample Matrix	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Sample Date	03/09/2025	03/09/2025	03/09/2025	03/09/2025	03/09/2025	03/09/2025

Parameter	Units	RL	L1	Result	Result	Result	Result	Result	Result
Metals and Inorganics (continued)									
Thallium (total)	mg/L	0.000005	0.0003	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005
Tin (total)	mg/L	0.00006		0.00011	0.00012	0.00014	0.00009	0.00009	0.00015
Titanium (total)	mg/L	0.0001		0.0039	0.0046	0.0060	0.0006	0.0014	0.0072
Tungsten (total)	mg/L	0.0002	0.03	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Uranium (total)	mg/L	0.000002	0.005	0.000810	0.000843	0.000836	0.000928	0.00106	0.000849
Vanadium (total)	mg/L	0.00001	0.006	0.00102	0.00108	0.00105	0.00068	0.00099	0.00103
Zirconium (total)	mg/L	0.002	0.004	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Zinc (total)	mg/L	0.002	0.02	0.006	0.009	0.008	0.003	0.004	0.007
Other (ORP)									
pH	No unit	0.05	8.6	7.98	8.06	8.05	8.04	8.08	8.04
Chloride	mg/L	0.2		470	440	430	460	440	450
Mercury (dissolved)	mg/L	0.00001	0.0002	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
PHCs									
F1 (C6-C10)	µg/L	25		< 25	< 25	< 25	< 25	< 25	< 25
F1-BTEX (C6-C10)	µg/L	25		< 25	< 25	< 25	< 25	< 25	< 25
F2 (C10-C16)	µg/L	100		< 100	< 100	< 100	< 100	< 100	< 100
F3 (C16-C34)	µg/L	200		< 200	< 200	< 200	< 200	< 200	< 200
F4 (C34-C50)	µg/L	200		< 200	< 200	< 200	< 200	< 200	< 200
Chromatogram returned to baseline at nC50	Yes / No	no		YES	YES	YES	YES	YES	YES



FINAL REPORT

CA40044-SEP25 R1

Client: WSP Canada Inc.

Project: C.AGLD-23592540

Project Manager: Christi Groves

Samplers: K. Tamasauskas

MATRIX: WATER

L1 = PWQQ_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Sample Number	9	10	11	12	13	14
Sample Name	SWB1	SWB2	SWB3	SWB4	SWB5	Dup B
Sample Matrix	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Sample Date	03/09/2025	03/09/2025	03/09/2025	03/09/2025	03/09/2025	03/09/2025

Parameter	Units	RL	L1	Result	Result	Result	Result	Result	Result
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THMs (VOC)

Bromodichloromethane	µg/L	0.5	200	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromoform	µg/L	0.5	60	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibromochloromethane	µg/L	0.5	40	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

VOC Surrogates

Surr 1,2-Dichloroethane-d4	Surr Rec %			109	110	112	113	110	114
Surr 2-Bromo-1-Chloropropane	Surr Rec %			97	99	99	98	99	101
Surr 4-Bromofluorobenzene	Surr Rec %			90	88	90	87	90	89

VOCs

Acetone	µg/L	30		< 30	< 30	< 30	< 30	< 30	< 30
Bromomethane	µg/L	0.5	0.9	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Carbon tetrachloride	µg/L	0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chlorobenzene	µg/L	0.5	15	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dichlorobenzene	µg/L	0.5	2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,3-Dichlorobenzene	µg/L	0.5	2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,4-Dichlorobenzene	µg/L	0.5	4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorodifluoromethane	µg/L	2.0		< 2	< 2	< 2	< 2	< 2	< 2
1,1-Dichloroethane	µg/L	0.5	100	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dichloroethane	µg/L	0.5	100	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloroethylene	µg/L	0.5	40	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
trans-1,2-Dichloroethene	µg/L	0.5	200	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
cis-1,2-Dichloroethene	µg/L	0.5	200	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5



FINAL REPORT

CA40044-SEP25 R1

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Project Manager: Christi Groves

Samplers: K. Tamasauskas

MATRIX: WATER

L1 = PWQQ_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Sample Number	9	10	11	12	13	14
Sample Name	SWB1	SWB2	SWB3	SWB4	SWB5	Dup B
Sample Matrix	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Sample Date	03/09/2025	03/09/2025	03/09/2025	03/09/2025	03/09/2025	03/09/2025

Parameter	Units	RL	L1	Result	Result	Result	Result	Result	Result
VOCs (continued)									
1,2-Dichloropropane	µg/L	0.5	0.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
cis-1,3-Dichloropropene	µg/L	0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
trans-1,3-Dichloropropene	µg/L	0.5	7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,3-dichloropropene (total)	µg/L	0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylenedibromide	µg/L	0.2	5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
n-Hexane	µg/L	1.0		< 1	< 1	< 1	< 1	< 1	< 1
Methyl ethyl ketone	µg/L	20	400	< 20	< 20	< 20	< 20	< 20	< 20
Methyl Isobutyl Ketone	µg/L	20		< 20	< 20	< 20	< 20	< 20	< 20
Methyl-t-butyl Ether	µg/L	2.0	200	< 2	< 2	< 2	< 2	< 2	< 2
Methylene Chloride	µg/L	0.5	100	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Styrene	µg/L	0.5	4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene	µg/L	0.5	50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,1,2-Tetrachloroethane	µg/L	0.5	20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2,2-Tetrachloroethane	µg/L	0.5	70	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,1-Trichloroethane	µg/L	0.5	10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2-Trichloroethane	µg/L	0.5	800	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethylene	µg/L	0.5	20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorofluoromethane	µg/L	5.0		< 5	< 5	< 5	< 5	< 5	< 5
Vinyl Chloride	µg/L	0.2	600	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chloroform	µg/L	0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	PWQO_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E L1
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SWB1

Iron	SM 3030/EPA 200.8	mg/L	0.959	0.3
Phosphorus	SM 3030/EPA 200.8	mg/L	0.031	0.01

SWB2

Iron	SM 3030/EPA 200.8	mg/L	0.944	0.3
Phosphorus	SM 3030/EPA 200.8	mg/L	0.037	0.01

SWB3

Iron	SM 3030/EPA 200.8	mg/L	0.905	0.3
Phosphorus	SM 3030/EPA 200.8	mg/L	0.036	0.01

SWB4

Iron	SM 3030/EPA 200.8	mg/L	0.731	0.3
Phosphorus	SM 3030/EPA 200.8	mg/L	0.020	0.01

SWB5

Phosphorus	SM 3030/EPA 200.8	mg/L	0.017	0.01
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Dup B

Unionized Ammonia	N/A - Calculation	mg/L as N	0.024	0.02
Iron	SM 3030/EPA 200.8	mg/L	1.00	0.3
Phosphorus	SM 3030/EPA 200.8	mg/L	0.034	0.01

QC SUMMARY

Alkalinity

Method: SM 2320 | Internal ref.: ME-CA-1ENVIEWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Alkalinity	EWL0118-SEP25	mg/L as CaCO3	2	< 2	1	20	94	80	120	NA		

Ammonia by SFA

Method: SM 4500 | Internal ref.: ME-CA-1ENVISFA-LAK-AN-007

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Ammonia+Ammonium (N)	SKA0074-SEP25	as N mg/L	0.1	<0.1	ND	10	99	90	110	98	75	125

QC SUMMARY

Anions by IC

Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-IENVIIC-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Chloride	DIO0224-SEP25	mg/L	0.2	<0.2	0	20	98	70	130	NV	70	130
Sulphate	DIO0224-SEP25	mg/L	0.2	<0.2	1	20	99	90	110	96	75	125
Chloride	DIO0245-SEP25	mg/L	0.2	<0.2	1	20	99	70	130	110	70	130

Conductivity

Method: SM 2510 | Internal ref.: ME-CA-IENVIEWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Conductivity	EWL0118-SEP25	uS/cm	2	< 2	1	10	101	90	110	NA		



FINAL REPORT

CA40044-SEP25 R1

QC SUMMARY

Mercury by CVAAS

Method: EPA 7471A/SM 3112B | Internal ref.: ME-CA-IENVISPE-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Mercury (dissolved)	EHG0013-SEP25	mg/L	0.00001	< 0.00001	ND	20	108	80	120	124	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS

Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-IENVISPE-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Silver (total)	EMS0059-SEP25	mg/L	0.00005	<0.00005	ND	20	96	90	110	NV	70	130
Aluminum (total)	EMS0059-SEP25	mg/L	0.001	<0.001	3	20	98	90	110	109	70	130
Aluminum (0.2µm)	EMS0059-SEP25	mg/L	0.001	<0.001	3	20	98	90	110	109	70	130
Arsenic (total)	EMS0059-SEP25	mg/L	0.0002	<0.0002	18	20	96	90	110	102	70	130
Barium (total)	EMS0059-SEP25	mg/L	0.00008	<0.00008	4	20	98	90	110	96	70	130
Beryllium (total)	EMS0059-SEP25	mg/L	0.000007	<0.000007	ND	20	99	90	110	106	70	130
Boron (total)	EMS0059-SEP25	mg/L	0.002	<0.002	0	20	97	90	110	94	70	130
Bismuth (total)	EMS0059-SEP25	mg/L	0.00001	<0.00001	ND	20	94	90	110	84	70	130
Calcium (total)	EMS0059-SEP25	mg/L	0.01	<0.01	0	20	98	90	110	85	70	130
Cadmium (total)	EMS0059-SEP25	mg/L	0.000003	<0.000003	1	20	97	90	110	95	70	130
Cobalt (total)	EMS0059-SEP25	mg/L	0.000004	<0.000004	5	20	99	90	110	92	70	130
Chromium (total)	EMS0059-SEP25	mg/L	0.00008	<0.00008	ND	20	101	90	110	100	70	130
Copper (total)	EMS0059-SEP25	mg/L	0.001	<0.001	8	20	99	90	110	83	70	130
Iron (total)	EMS0059-SEP25	mg/L	0.007	<0.007	12	20	99	90	110	100	70	130
Potassium (total)	EMS0059-SEP25	mg/L	0.009	<0.009	0	20	100	90	110	92	70	130
Lithium (total)	EMS0059-SEP25	mg/L	0.0001	<0.0001	6	20	99	90	110	102	70	130
Magnesium (total)	EMS0059-SEP25	mg/L	0.001	<0.001	1	20	98	90	110	94	70	130
Manganese (total)	EMS0059-SEP25	mg/L	0.00001	<0.00001	2	20	99	90	110	80	70	130
Molybdenum (total)	EMS0059-SEP25	mg/L	0.0004	<0.0004	18	20	97	90	110	94	70	130
Sodium (total)	EMS0059-SEP25	mg/L	0.01	<0.01	0	20	98	90	110	98	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS (continued)

Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-IENVISPE-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Nickel (total)	EMS0059-SEP25	mg/L	0.0001	<0.0001	6	20	98	90	110	86	70	130
Lead (total)	EMS0059-SEP25	mg/L	0.00009	<0.00009	4	20	96	90	110	84	70	130
Phosphorus (total)	EMS0059-SEP25	mg/L	0.003	<0.003	ND	20	96	90	110	NV	70	130
Antimony (total)	EMS0059-SEP25	mg/L	0.0009	<0.0005	8	20	101	90	110	93	70	130
Selenium (total)	EMS0059-SEP25	mg/L	0.00004	<0.00004	ND	20	97	90	110	101	70	130
Silicon (total)	EMS0059-SEP25	mg/L	0.02	<0.02	1	20	95	90	110	NV	70	130
Tin (total)	EMS0059-SEP25	mg/L	0.00006	<0.00006	ND	20	98	90	110	NV	70	130
Strontium (total)	EMS0059-SEP25	mg/L	0.00008	<0.00008	1	20	101	90	110	88	70	130
Tellurium (total)	EMS0059-SEP25	mg/L	0.0001	<0.0001	ND	20	97	90	110	NV	70	130
Titanium (total)	EMS0059-SEP25	mg/L	0.0001	<0.0001	ND	20	100	90	110	NV	70	130
Thallium (total)	EMS0059-SEP25	mg/L	0.000005	<0.000005	ND	20	94	90	110	81	70	130
Uranium (total)	EMS0059-SEP25	mg/L	0.000002	<0.000002	3	20	94	90	110	86	70	130
Vanadium (total)	EMS0059-SEP25	mg/L	0.00001	<0.00001	1	20	98	90	110	97	70	130
Tungsten (total)	EMS0059-SEP25	mg/L	0.0002	<0.0002	ND	20	99	90	110	NV	70	130
Zinc (total)	EMS0059-SEP25	mg/L	0.002	<0.002	8	20	98	90	110	94	70	130
Zirconium (total)	EMS0059-SEP25	mg/L	0.002	<0.002	ND	20	95	90	110	NV	70	130



FINAL REPORT

CA40044-SEP25 R1

QC SUMMARY

Petroleum Hydrocarbons (F1)

Method: CCME Tier 1 | Internal ref.: ME-CA-IENVIGC-LAK-AN-010

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
F1 (C6-C10)	GCM0091-SEP25	ug/L	25	<25	ND	30	89	60	140	86	60	140

Petroleum Hydrocarbons (F2-F4)

Method: CCME Tier 1 | Internal ref.: ME-CA-IENVIGC-LAK-AN-010

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
F2 (C10-C16)	GCM0159-SEP25	µg/L	100	<100	ND	30	81	60	140	88	60	140
F3 (C16-C34)	GCM0159-SEP25	µg/L	200	<200	ND	30	81	60	140	88	60	140
F4 (C34-C50)	GCM0159-SEP25	µg/L	200	<200	ND	30	81	60	140	88	60	140

QC SUMMARY

pH
 Method: SM 4500 | Internal ref.: ME-CA-ENVIEWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
pH	EWL0118-SEP25	No unit	0.05	NA	0		100			NA		

QC SUMMARY

Volatile Organics

Method: EPA 5030B/8260C | Internal ref.: ME-CA-ENVIGC-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
1,1,1,2-Tetrachloroethane	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	106	60	130	114	50	140
1,1,1-Trichloroethane	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	106	60	130	117	50	140
1,1,2,2-Tetrachloroethane	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	104	60	130	116	50	140
1,1,2-Trichloroethane	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	99	60	130	116	50	140
1,1-Dichloroethane	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	105	60	130	115	50	140
1,1-Dichloroethylene	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	107	60	130	120	50	140
1,2-Dichlorobenzene	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	108	60	130	116	50	140
1,2-Dichloroethane	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	101	60	130	113	50	140
1,2-Dichloropropane	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	102	60	130	114	50	140
1,3-Dichlorobenzene	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	110	60	130	115	50	140
1,4-Dichlorobenzene	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	108	60	130	115	50	140
Acetone	GCM0113-SEP25	ug/L	30	<30	ND	30	93	50	140	114	50	140
Benzene	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	104	60	130	115	50	140
Bromodichloromethane	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	103	60	130	116	50	140
Bromoform	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	100	60	130	113	50	140
Bromomethane	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	108	50	140	120	50	140
Carbon tetrachloride	GCM0113-SEP25	ug/L	0.2	<0.2	ND	30	108	60	130	115	50	140
Chlorobenzene	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	108	60	130	116	50	140
Chloroform	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	105	60	130	115	50	140
cis-1,2-Dichloroethene	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	104	60	130	115	50	140

QC SUMMARY

Volatile Organics (continued)

Method: EPA 5030B/8260C | Internal ref.: ME-CA-ENVIGC-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
cis-1,3-Dichloropropene	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	100	60	130	110	50	140
Dibromochloromethane	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	97	60	130	112	50	140
Dichlorodifluoromethane	GCM0113-SEP25	ug/L	2.0	<2	ND	30	66	50	140	71	50	140
Ethylbenzene	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	111	60	130	118	50	140
Ethylenedibromide	GCM0113-SEP25	ug/L	0.2	<0.2	ND	30	98	60	130	115	50	140
n-Hexane	GCM0113-SEP25	ug/L	1.0	<1	ND	30	78	60	130	81	50	140
m/p-xylene	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	110	60	130	117	50	140
Methyl ethyl ketone	GCM0113-SEP25	ug/L	20	<20	ND	30	99	60	130	120	50	140
Methyl Isobutyl Ketone	GCM0113-SEP25	ug/L	20	<20	ND	30	97	50	140	123	50	140
Methyl-t-butyl Ether	GCM0113-SEP25	ug/L	2.0	<2	ND	30	96	60	130	112	50	140
Methylene Chloride	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	104	60	130	118	50	140
o-xylene	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	110	60	130	116	50	140
Styrene	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	111	60	130	118	50	140
Tetrachloroethylene	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	106	60	130	115	50	140
Toluene	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	104	60	130	115	50	140
trans-1,2-Dichloroethene	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	107	60	130	118	50	140
trans-1,3-Dichloropropene	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	102	60	130	116	50	140
Trichloroethylene	GCM0113-SEP25	ug/L	0.5	<0.5	ND	30	107	60	130	119	50	140
Trichlorofluoromethane	GCM0113-SEP25	ug/L	5.0	<5	ND	30	99	50	140	110	50	140
Vinyl Chloride	GCM0113-SEP25	ug/L	0.2	<0.2	ND	30	98	50	140	110	50	140

QC SUMMARY

Method Blank: a blank matrix that is carried through the entire analytical procedure. Used to assess laboratory contamination.

Duplicate: Paired analysis of a separate portion of the same sample that is carried through the entire analytical procedure. Used to evaluate measurement precision.

LCS/Spike Blank: Laboratory control sample or spike blank refer to a blank matrix to which a known amount of analyte has been added. Used to evaluate analyte recovery and laboratory accuracy without sample matrix effects.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate laboratory accuracy with sample matrix effects.

Reference Material: a material or substance matrix matched to the samples that contains a known amount of the analyte of interest. A reference material may be used in place of a matrix spike.

RL: Reporting limit

RPD: Relative percent difference

AC: Acceptance criteria

Multielement Scan Qualifier: as the number of analytes in a scan increases, so does the chance of a limit exceedance by random chance as opposed to a real method problem. Thus, in multielement scans, for the LCS and matrix spike, up to 10% of the analytes may exceed the quoted limits by up to 10% absolute and the spike is considered acceptable.

Duplicate Qualifier: for duplicates as the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Matrix Spike Qualifier: for matrix spikes, as the concentration of the native analyte increases, the uncertainty of the matrix spike recovery increases. Thus, the matrix spike acceptance limits apply only when the concentration of the matrix spike is greater than or equal to the concentration of the native analyte.

LEGEND

FOOTNOTES

NSS Insufficient sample for analysis.
RL Reporting Limit.
 ↑ Reporting limit raised.
 ↓ Reporting limit lowered.
NA The sample was not analysed for this analyte
ND Non Detect

Results relate only to the sample tested.

Data reported represent the sample as submitted to SGS. Solid samples expressed on a dry weight basis.

"Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.

Analysis conducted on samples submitted pursuant to or as part of Reg. 153/04, are in accordance to the "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act and Excess Soil Quality" published by the Ministry and dated March 9, 2004 as amended.

SGS provides criteria information (such as regulatory or guideline limits and summary of limit exceedances) as a service. Every attempt is made to ensure the criteria information in this report is accurate and current, however, it is not guaranteed. Comparison to the most current criteria is the responsibility of the client and SGS assumes no responsibility for the accuracy of the criteria levels indicated.

SGS Canada Inc. statement of conformity decision rule does not consider uncertainty when analytical results are compared to a specified standard or regulation.

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This report supersedes all previous versions.

-- End of Analytical Report --



Request for Laboratory Services and CHAIN OF CUSTODY

No: 045108

Page 1 of 3

Received By: Ari Goodman
 Received Date: 09/04/25 (mm/dd/yy)
 Received Time: 14:50 (hr : min)

Received By (signature): [Signature]
 Custody Seal Present: Yes No
 Custody Seal Intact: Yes No
 Cooling Agent Present: Yes No Type: ice
 Temperature Upon Receipt (°C): 7x3

Laboratory Information Section - Lab use only

LAB LIMS #: CA 40044 8025

REPORT INFORMATION	INVOICE INFORMATION
Company: <u>WSP CANADA</u>	<input checked="" type="checkbox"/> (same as Report Information)
Contact: <u>CHRISTI GROVES</u>	Company: _____
Address: <u>121 COMMERCE PARK DR UNIT 4, BARRIE, ON</u>	Contact: _____
Phone: _____	Address: _____
Fax: _____	Phone: _____
Email: <u>christi.groves@wsp.com</u>	Email: <u>capayables.invoice@wsp.com</u>

Quotation #: 2023-451 P.O. #: _____
 Project #: CA-GLD-23592540 Site Location/ID: _____

TURNAROUND TIME (TAT) REQUIRED
 Client Regular TAT Regular TAT (5-7days) TAT's are quoted in business days (exclude statutory holidays & weekends).
 Samples received after 6pm or on weekends: TAT begins next business day

RUSH TAT (Additional Charges May Apply): 1 Day 2 Days 3 Days 4 Days
PLEASE CONFIRM RUSH FEASIBILITY WITH SGS REPRESENTATIVE PRIOR TO SUBMISSION

Specify Due Date: _____ *NOTE: DRINKING (POTABLE) WATER SAMPLES FOR HUMAN CONSUMPTION MUST BE SUBMITTED WITH SGS DRINKING WATER CHAIN OF CUSTODY

REGULATIONS

O.Reg 153/04 O.Reg 406/19

Other Regulations:
 Reg 347/558 (3 Day min TAT)
 PWQO MMR
 CCME Other: _____
 MISA
 ODWS Not Reportable *See note

Sewer By-Law:
 Sanitary
 Storm
 Municipality: _____

ANALYSIS REQUESTED

RECORD OF SITE CONDITION (RSC) YES NO

SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	# OF BOTTLES	MATRIX
1 SWB1	9-3-25	12pm	13	SW
2 SWB2		12:45		
3 SWB3		1:15		
4 SWB4		1:45		
5 SWB5		2:15		
6 DUP B				
7				
8				
9				
10				
11				
12				

Field Filtered (Y/N)	M & I	SVOC	PCB	PHC	VOC	Pest	Other (please specify)	SPLP	TCLP
	Metals & Inorganics <small>Pb, Cd, Cr, Cu, Ni, Hg, pH, (B)(H)(W)(S)(EC,SAR-soil) (Cl, No-water)</small>								
	Full Metals Suite <small>ICP metals plus B, Pb, Ni, Se, Ag, Tl, U, V, Zn, Hg, Cr, V</small>								
	ICP Metals only <small>Sr, As, Ba, Be, B, Cd, Cr, Co, Cu, Pb, Mo, Ni, Se, Ag, Tl, U, V, Zn</small>								
	PAHs only								
	SVOCs <small>all Incl: PAHs, ABNs, CPs</small>								
	PCBs <small>Total Arochlor</small>								
	F1-F4 + BTEX								
	F1-F4 only <small>no BTEX</small>								
	VOCs <small>all Incl: BTEX</small>								
	BTEX only								
	Pesticides <small>Organochlorine or specify other</small>								
	major ions								
	indicators								
	Sewer Use: <small>Specify pkg:</small>								
	Water Characterization Pkg <small>General Extended</small>								
	Specify tests								
	Specify tests								

COMMENTS:

Observations/Comments/Special Instructions

Sampled By (NAME): K. TANASOUSKAS Signature: [Signature] Date: 9/3/25 (mm/dd/yy) Pink Copy - Client
 Relinquished by (NAME): K. TANASOUSKAS Signature: [Signature] Date: 9/3/25 (mm/dd/yy) Yellow & White Copy - SGS



FINAL REPORT

CA40045-SEP25 R2

C.AGLD-23592540

Prepared for

WSP Canada Inc.

First Page

CLIENT DETAILS

LABORATORY DETAILS

Client	WSP Canada Inc.	Project Specialist	Brad Moore Hon. B.Sc
Address	121 Commerce Park Dr, Unit L, Barrie Canada, L4N 8X1 Phone: 705-718-1446. Fax:	Laboratory	SGS Canada Inc.
Contact	Christi Groves	Address	185 Concession St., Lakefield ON, K0L 2H0
Telephone	705-718-1446	Telephone	705-652-2143
Facsimile		Facsimile	705-652-6365
Email	christi.groves@wsp.com	Email	brad.moore@sgs.com
Project	C.AGLD-23592540	SGS Reference	CA40045-SEP25
Order Number		Received	09/04/2025
Samples	Surface Water (2)	Approved	09/12/2025
		Report Number	CA40045-SEP25 R2
		Date Reported	09/12/2025

COMMENTS

Temperature of Sample upon Receipt: 7 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Chain of Custody Number: 045110

QC Batch ID: GCM088-SEP25 - Dichlorodifluoromethane LCS and Matrix Spike; Recovery is outside of control limits; the overall quality control for this analysis has been assessed and was determined to be acceptable.

SIGNATORIES

Brad Moore Hon. B.Sc




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FINAL REPORT

CA40045-SEP25 R2

Client: WSP Canada Inc.

Project: C.AGLD-23592540

Project Manager: Christi Groves

Samplers: K. Tamasauskas

MATRIX: WATER

Sample Number	9	10
Sample Name	Trip Blank	Field Blank
Sample Matrix	Surface Water	Surface Water
Sample Date	29/08/2025	03/09/2025

L1 = PWQQ_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Parameter	Units	RL	L1	Result	Result
BTEX					
Benzene	ug/L	0.5	100	< 0.5	< 0.5
Ethylbenzene	ug/L	0.5	8	< 0.5	< 0.5
Toluene	ug/L	0.5	0.8	< 0.5	< 0.5
Xylene (total)	ug/L	0.5		< 0.5	< 0.5
m/p-xylene	ug/L	0.5	2	< 0.5	< 0.5
o-xylene	ug/L	0.5	40	< 0.5	< 0.5

General Chemistry

Alkalinity	mg/L as CaCO3	2		---	7
Temperature @ pH	°C	0		---	21.1
Conductivity	uS/cm	2		---	18
Ammonia+Ammonium (N)	as N mg/L	0.1		---	< 0.1
Unionized Ammonia	mg/L as N	0.001	0.02	---	< 0.001

Metals and Inorganics

Sulphate	mg/L	0.2		---	< 0.2
Hardness	mg/L as CaCO3	0.05		---	< 0.05
Aluminum (0.2µm)	mg/L	0.001	0.015	---	0.001
Boron (total)	mg/L	0.002	0.2	---	< 0.002
Bismuth (total)	mg/L	0.00001		---	< 0.00001
Calcium (total)	mg/L	0.01		---	< 0.01
Iron (total)	mg/L	0.007	0.3	---	< 0.007
Magnesium (total)	mg/L	0.001		---	0.003



FINAL REPORT

CA40045-SEP25 R2

Client: WSP Canada Inc.

Project: C.AGLD-23592540

Project Manager: Christi Groves

Samplers: K. Tamasauskas

MATRIX: WATER

Sample Number	9	10
Sample Name	Trip Blank	Field Blank
Sample Matrix	Surface Water	Surface Water
Sample Date	29/08/2025	03/09/2025

L1 = PWQQ_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Parameter	Units	RL	L1	Result	Result
Metals and Inorganics (continued)					
Aluminum (total)	mg/L	0.001		---	< 0.001
Antimony (total)	mg/L	0.0009	0.02	---	< 0.0009
Arsenic (total)	mg/L	0.0002	0.005	---	< 0.0002
Barium (total)	mg/L	0.00008		---	0.00049
Beryllium (total)	mg/L	0.000007	0.011	---	< 0.000007
Cadmium (total)	mg/L	0.000003	0.0001	---	< 0.000003
Cobalt (total)	mg/L	0.000004	0.0009	---	< 0.000004
Chromium (total)	mg/L	0.00008		---	0.00013
Copper (total)	mg/L	0.001	0.001	---	< 0.001
Manganese (total)	mg/L	0.00001		---	0.00004
Molybdenum (total)	mg/L	0.0004	0.04	---	< 0.0004
Potassium (total)	mg/L	0.009		---	< 0.009
Sodium (total)	mg/L	0.01		---	0.02
Nickel (total)	mg/L	0.0001	0.025	---	< 0.0001
Phosphorus (total)	mg/L	0.003	0.01	---	< 0.003
Lead (total)	mg/L	0.00009	0.005	---	0.00015
Lithium (total)	mg/L	0.0001		---	< 0.0001
Selenium (total)	mg/L	0.00004	0.1	---	< 0.00004
Silicon (total)	mg/L	0.02		---	< 0.02
Silver (total)	mg/L	0.00005	0.0001	---	< 0.00005
Strontium (total)	mg/L	0.00008		---	0.00024
Tellurium (total)	mg/L	0.0001		---	< 0.0001



FINAL REPORT

CA40045-SEP25 R2

Client: WSP Canada Inc.

Project: C.AGLD-23592540

Project Manager: Christi Groves

Samplers: K. Tamasauskas

MATRIX: WATER

Sample Number	9	10
Sample Name	Trip Blank	Field Blank
Sample Matrix	Surface Water	Surface Water
Sample Date	29/08/2025	03/09/2025

L1 = PWQQ_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Parameter	Units	RL	L1	Result	Result
Metals and Inorganics (continued)					
Thallium (total)	mg/L	0.000005	0.0003	---	< 0.000005
Tin (total)	mg/L	0.00006		---	< 0.00006
Titanium (total)	mg/L	0.0001		---	< 0.0001
Tungsten (total)	mg/L	0.0002	0.03	---	< 0.0002
Uranium (total)	mg/L	0.000002	0.005	---	< 0.000002
Vanadium (total)	mg/L	0.00001	0.006	---	< 0.00001
Zirconium (total)	mg/L	0.002	0.004	---	< 0.002
Zinc (total)	mg/L	0.002	0.02	---	< 0.002
Other (ORP)					
pH	No unit	0.05	0.1	---	6.21
Chloride	mg/L	0.2		---	3.8
Mercury (dissolved)	mg/L	0.00001	0.0002	---	< 0.00001
PHCs					
F1 (C6-C10)	µg/L	25		---	< 25
F1-BTEX (C6-C10)	µg/L	25		---	< 25
F2 (C10-C16)	µg/L	100		---	< 100
F3 (C16-C34)	µg/L	200		---	< 200
F4 (C34-C50)	µg/L	200		---	< 200
Chromatogram returned to baseline at nC50	Yes / No	no		---	YES



FINAL REPORT

CA40045-SEP25 R2

Client: WSP Canada Inc.

Project: C.AGLD-23592540

Project Manager: Christi Groves

Samplers: K. Tamasauskas

MATRIX: WATER

Sample Number	9	10
Sample Name	Trip Blank	Field Blank
Sample Matrix	Surface Water	Surface Water
Sample Date	29/08/2025	03/09/2025

L1 = PWQQ_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Parameter	Units	RL	L1	Result	Result
THMs (VOC)					
Bromodichloromethane	µg/L	0.5	200	< 0.5	< 0.5
Bromoform	µg/L	0.5	60	< 0.5	< 0.5
Dibromochloromethane	µg/L	0.5	40	< 0.5	< 0.5
VOC Surrogates					
Surr 1,2-Dichloroethane-d4	Surr Rec %			113	113
Surr 2-Bromo-1-Chloropropane	Surr Rec %			99	103
Surr 4-Bromofluorobenzene	Surr Rec %			89	89
VOCs					
Acetone	µg/L	30		< 30	< 30
Bromomethane	µg/L	0.5	0.9	< 0.5	< 0.5
Carbon tetrachloride	µg/L	0.2		< 0.2	< 0.2
Chlorobenzene	µg/L	0.5	15	< 0.5	< 0.5
1,2-Dichlorobenzene	µg/L	0.5	2.5	< 0.5	< 0.5
1,3-Dichlorobenzene	µg/L	0.5	2.5	< 0.5	< 0.5
1,4-Dichlorobenzene	µg/L	0.5	4	< 0.5	< 0.5
Dichlorodifluoromethane	µg/L	2.0		< 2	< 2
1,1-Dichloroethane	µg/L	0.5	100	< 0.5	< 0.5
1,2-Dichloroethane	µg/L	0.5	100	< 0.5	< 0.5
1,1-Dichloroethylene	µg/L	0.5	40	< 0.5	< 0.5
trans-1,2-Dichloroethene	µg/L	0.5	200	< 0.5	< 0.5
cis-1,2-Dichloroethene	µg/L	0.5	200	< 0.5	< 0.5



FINAL REPORT

CA40045-SEP25 R2

Client: WSP Canada Inc.

Project: C.AGLD-23592540

Project Manager: Christi Groves

Samplers: K. Tamasauskas

MATRIX: WATER

Sample Number	9	10
Sample Name	Trip Blank	Field Blank
Sample Matrix	Surface Water	Surface Water
Sample Date	29/08/2025	03/09/2025

L1 = PWQQ_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Parameter	Units	RL	L1	Result	Result
VOCs (continued)					
1,2-Dichloropropane	µg/L	0.5	0.7	< 0.5	< 0.5
cis-1,3-Dichloropropene	µg/L	0.5		< 0.5	< 0.5
trans-1,3-Dichloropropene	µg/L	0.5	7	< 0.5	< 0.5
1,3-dichloropropene (total)	µg/L	0.5		< 0.5	< 0.5
Ethylenedibromide	µg/L	0.2	5	< 0.2	< 0.2
n-Hexane	µg/L	1.0		< 1	< 1
Methyl ethyl ketone	µg/L	20	400	< 20	< 20
Methyl Isobutyl Ketone	µg/L	20		< 20	< 20
Methyl-t-butyl Ether	µg/L	2.0	200	< 2	< 2
Methylene Chloride	µg/L	0.5	100	< 0.5	< 0.5
Styrene	µg/L	0.5	4	< 0.5	< 0.5
Tetrachloroethylene	µg/L	0.5	50	< 0.5	< 0.5
1,1,1,2-Tetrachloroethane	µg/L	0.5	20	< 0.5	< 0.5
1,1,2,2-Tetrachloroethane	µg/L	0.5	70	< 0.5	< 0.5
1,1,1-Trichloroethane	µg/L	0.5	10	< 0.5	< 0.5
1,1,2-Trichloroethane	µg/L	0.5	800	< 0.5	< 0.5
Trichloroethylene	µg/L	0.5	20	< 0.5	< 0.5
Trichlorofluoromethane	µg/L	5.0		< 5	< 5
Vinyl Chloride	µg/L	0.2	600	< 0.2	< 0.2
Chloroform	µg/L	0.5		< 0.5	< 0.5

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	PWQO_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E L1
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Field Blank

pH	SM 4500	No unit	6.21	0.1
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FINAL REPORT

CA40045-SEP25 R2

QC SUMMARY

Alkalinity

Method: SM 2320 | Internal ref.: ME-CA-1ENVIEWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Alkalinity	EWL0116-SEP25	mg/L as CaCO3	2	< 2	1	20	109	80	120	NA		

Ammonia by SFA

Method: SM 4500 | Internal ref.: ME-CA-1ENVISFA-LAK-AN-007

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Ammonia+Ammonium (N)	SKA0074-SEP25	as N mg/L	0.1	<0.1	ND	10	99	90	110	98	75	125

QC SUMMARY

Anions by IC

Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-IENVIIC-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Sulphate	DIO0224-SEP25	mg/L	0.2	<0.2	1	20	99	90	110	96	75	125
Chloride	DIO0257-SEP25	mg/L	0.2	<0.2	1	20	99	70	130	111	70	130

Conductivity

Method: SM 2510 | Internal ref.: ME-CA-IENVIEWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Conductivity	EWL0116-SEP25	uS/cm	2	< 2	0	10	99	90	110	NA		

Mercury by CVAAS

Method: EPA 7471A/SM 3112B | Internal ref.: ME-CA-IENVISPE-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Mercury (dissolved)	EHG0013-SEP25	mg/L	0.00001	< 0.00001	ND	20	108	80	120	124	70	130



FINAL REPORT

CA40045-SEP25 R2

QC SUMMARY

Metals in aqueous samples - ICP-MS

Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-IENVISPE-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Silver (total)	EMS0059-SEP25	mg/L	0.00005	<0.00005	ND	20	96	90	110	NV	70	130
Aluminum (total)	EMS0059-SEP25	mg/L	0.001	<0.001	3	20	98	90	110	109	70	130
Aluminum (0.2µm)	EMS0059-SEP25	mg/L	0.001	<0.001	3	20	98	90	110	109	70	130
Arsenic (total)	EMS0059-SEP25	mg/L	0.0002	<0.0002	18	20	96	90	110	102	70	130
Beryllium (total)	EMS0059-SEP25	mg/L	0.000007	<0.000007	ND	20	99	90	110	106	70	130
Boron (total)	EMS0059-SEP25	mg/L	0.002	<0.002	0	20	97	90	110	94	70	130
Bismuth (total)	EMS0059-SEP25	mg/L	0.00001	<0.00001	ND	20	94	90	110	84	70	130
Calcium (total)	EMS0059-SEP25	mg/L	0.01	<0.01	0	20	98	90	110	85	70	130
Cadmium (total)	EMS0059-SEP25	mg/L	0.000003	<0.000003	1	20	97	90	110	95	70	130
Copper (total)	EMS0059-SEP25	mg/L	0.001	<0.001	8	20	99	90	110	83	70	130
Iron (total)	EMS0059-SEP25	mg/L	0.007	<0.007	12	20	99	90	110	100	70	130
Potassium (total)	EMS0059-SEP25	mg/L	0.009	<0.009	0	20	100	90	110	92	70	130
Lithium (total)	EMS0059-SEP25	mg/L	0.0001	<0.0001	6	20	99	90	110	102	70	130
Molybdenum (total)	EMS0059-SEP25	mg/L	0.0004	<0.0004	18	20	97	90	110	94	70	130
Nickel (total)	EMS0059-SEP25	mg/L	0.0001	<0.0001	6	20	98	90	110	86	70	130
Phosphorus (total)	EMS0059-SEP25	mg/L	0.003	<0.003	ND	20	96	90	110	NV	70	130
Antimony (total)	EMS0059-SEP25	mg/L	0.0009	<0.0005	8	20	101	90	110	93	70	130
Selenium (total)	EMS0059-SEP25	mg/L	0.00004	<0.00004	ND	20	97	90	110	101	70	130
Silicon (total)	EMS0059-SEP25	mg/L	0.02	<0.02	1	20	95	90	110	NV	70	130
Tin (total)	EMS0059-SEP25	mg/L	0.00006	<0.00006	ND	20	98	90	110	NV	70	130



FINAL REPORT

CA40045-SEP25 R2

QC SUMMARY

Metals in aqueous samples - ICP-MS (continued)

Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-IENVISPE-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Tellurium (total)	EMS0059-SEP25	mg/L	0.0001	<0.0001	ND	20	97	90	110	NV	70	130
Titanium (total)	EMS0059-SEP25	mg/L	0.0001	<0.0001	ND	20	100	90	110	NV	70	130
Thallium (total)	EMS0059-SEP25	mg/L	0.000005	<0.000005	ND	20	94	90	110	81	70	130
Vanadium (total)	EMS0059-SEP25	mg/L	0.00001	<0.00001	1	20	98	90	110	97	70	130
Tungsten (total)	EMS0059-SEP25	mg/L	0.0002	<0.0002	ND	20	99	90	110	NV	70	130
Zinc (total)	EMS0059-SEP25	mg/L	0.002	<0.002	8	20	98	90	110	94	70	130
Zirconium (total)	EMS0059-SEP25	mg/L	0.002	<0.002	ND	20	95	90	110	NV	70	130
Barium (total)	EMS0103-SEP25	mg/L	0.00008	<0.00008	1	20	99	90	110	93	70	130
Cobalt (total)	EMS0103-SEP25	mg/L	0.000004	<0.000004	2	20	99	90	110	95	70	130
Chromium (total)	EMS0103-SEP25	mg/L	0.00008	<0.00008	ND	20	98	90	110	90	70	130
Magnesium (total)	EMS0103-SEP25	mg/L	0.001	<0.001	0	20	95	90	110	113	70	130
Manganese (total)	EMS0103-SEP25	mg/L	0.00001	<0.00001	0	20	97	90	110	99	70	130
Sodium (total)	EMS0103-SEP25	mg/L	0.01	<0.01	0	20	96	90	110	98	70	130
Lead (total)	EMS0103-SEP25	mg/L	0.00009	<0.00009	7	20	98	90	110	84	70	130
Strontium (total)	EMS0103-SEP25	mg/L	0.00008	<0.00008	1	20	99	90	110	95	70	130
Uranium (total)	EMS0103-SEP25	mg/L	0.000002	<0.000002	6	20	98	90	110	88	70	130

QC SUMMARY

Petroleum Hydrocarbons (F1)

Method: CCME Tier 1 | Internal ref.: ME-CA-IENVIGC-LAK-AN-010

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
F1 (C6-C10)	GCM0091-SEP25	ug/L	25	<25	ND	30	89	60	140	86	60	140

Petroleum Hydrocarbons (F2-F4)

Method: CCME Tier 1 | Internal ref.: ME-CA-IENVIGC-LAK-AN-010

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
F2 (C10-C16)	GCM0178-SEP25	µg/L	100	<100	ND	30	79	60	140	82	60	140
F3 (C16-C34)	GCM0178-SEP25	µg/L	200	<200	ND	30	79	60	140	82	60	140
F4 (C34-C50)	GCM0178-SEP25	µg/L	200	<200	ND	30	79	60	140	82	60	140

QC SUMMARY

pH

Method: SM 4500 | Internal ref.: ME-CA-ENVIEWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
pH	EWL0116-SEP25	No unit	0.05	NA	0		100			NA		

QC SUMMARY

Volatile Organics

Method: EPA 5030B/8260C | Internal ref.: ME-CA-ENVIGC-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
1,1,1,2-Tetrachloroethane	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	99	60	130	101	50	140
1,1,1-Trichloroethane	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	102	60	130	105	50	140
1,1,2,2-Tetrachloroethane	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	95	60	130	99	50	140
1,1,2-Trichloroethane	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	100	60	130	99	50	140
1,1-Dichloroethane	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	99	60	130	103	50	140
1,1-Dichloroethylene	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	98	60	130	100	50	140
1,2-Dichlorobenzene	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	96	60	130	102	50	140
1,2-Dichloroethane	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	101	60	130	102	50	140
1,2-Dichloropropane	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	100	60	130	99	50	140
1,3-Dichlorobenzene	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	100	60	130	102	50	140
1,4-Dichlorobenzene	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	100	60	130	101	50	140
Acetone	GCM0088-SEP25	ug/L	30	<30	ND	30	92	50	140	93	50	140
Benzene	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	99	60	130	103	50	140
Bromodichloromethane	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	101	60	130	100	50	140
Bromoform	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	94	60	130	98	50	140
Bromomethane	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	92	50	140	94	50	140
Carbon tetrachloride	GCM0088-SEP25	ug/L	0.2	<0.2	ND	30	102	60	130	106	50	140
Chlorobenzene	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	101	60	130	102	50	140
Chloroform	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	101	60	130	105	50	140
cis-1,2-Dichloroethene	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	100	60	130	103	50	140

QC SUMMARY

Volatile Organics (continued)

Method: EPA 5030B/8260C | Internal ref.: ME-CA-ENVIGC-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
cis-1,3-Dichloropropene	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	99	60	130	98	50	140
Dibromochloromethane	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	97	60	130	97	50	140
Dichlorodifluoromethane	GCM0088-SEP25	ug/L	2.0	<2	ND	30	45	50	140	45	50	140
Ethylbenzene	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	102	60	130	102	50	140
Ethylenedibromide	GCM0088-SEP25	ug/L	0.2	<0.2	ND	30	101	60	130	102	50	140
n-Hexane	GCM0088-SEP25	ug/L	1.0	<1	ND	30	85	60	130	90	50	140
m/p-xylene	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	100	60	130	103	50	140
Methyl ethyl ketone	GCM0088-SEP25	ug/L	20	<20	ND	30	98	60	130	98	50	140
Methyl Isobutyl Ketone	GCM0088-SEP25	ug/L	20	<20	ND	30	98	50	140	93	50	140
Methyl-t-butyl Ether	GCM0088-SEP25	ug/L	2.0	<2	ND	30	95	60	130	96	50	140
Methylene Chloride	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	96	60	130	99	50	140
o-xylene	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	100	60	130	103	50	140
Styrene	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	101	60	130	104	50	140
Tetrachloroethylene	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	104	60	130	101	50	140
Toluene	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	101	60	130	101	50	140
trans-1,2-Dichloroethene	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	99	60	130	105	50	140
trans-1,3-Dichloropropene	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	100	60	130	99	50	140
Trichloroethylene	GCM0088-SEP25	ug/L	0.5	<0.5	ND	30	107	60	130	102	50	140
Trichlorofluoromethane	GCM0088-SEP25	ug/L	5.0	<5	ND	30	81	50	140	83	50	140
Vinyl Chloride	GCM0088-SEP25	ug/L	0.2	<0.2	ND	30	82	50	140	82	50	140

QC SUMMARY

Method Blank: a blank matrix that is carried through the entire analytical procedure. Used to assess laboratory contamination.

Duplicate: Paired analysis of a separate portion of the same sample that is carried through the entire analytical procedure. Used to evaluate measurement precision.

LCS/Spike Blank: Laboratory control sample or spike blank refer to a blank matrix to which a known amount of analyte has been added. Used to evaluate analyte recovery and laboratory accuracy without sample matrix effects.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate laboratory accuracy with sample matrix effects.

Reference Material: a material or substance matrix matched to the samples that contains a known amount of the analyte of interest. A reference material may be used in place of a matrix spike.

RL: Reporting limit

RPD: Relative percent difference

AC: Acceptance criteria

Multielement Scan Qualifier: as the number of analytes in a scan increases, so does the chance of a limit exceedance by random chance as opposed to a real method problem. Thus, in multielement scans, for the LCS and matrix spike, up to 10% of the analytes may exceed the quoted limits by up to 10% absolute and the spike is considered acceptable.

Duplicate Qualifier: for duplicates as the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Matrix Spike Qualifier: for matrix spikes, as the concentration of the native analyte increases, the uncertainty of the matrix spike recovery increases. Thus, the matrix spike acceptance limits apply only when the concentration of the matrix spike is greater than or equal to the concentration of the native analyte.

LEGEND

FOOTNOTES

- NSS** Insufficient sample for analysis.
- RL** Reporting Limit.
 - ↑ Reporting limit raised.
 - ↓ Reporting limit lowered.
- NA** The sample was not analysed for this analyte
- ND** Non Detect

Results relate only to the sample tested.

Data reported represent the sample as submitted to SGS. Solid samples expressed on a dry weight basis.

"Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.

Analysis conducted on samples submitted pursuant to or as part of Reg. 153/04, are in accordance to the "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act and Excess Soil Quality" published by the Ministry and dated March 9, 2004 as amended.

SGS provides criteria information (such as regulatory or guideline limits and summary of limit exceedances) as a service. Every attempt is made to ensure the criteria information in this report is accurate and current, however, it is not guaranteed. Comparison to the most current criteria is the responsibility of the client and SGS assumes no responsibility for the accuracy of the criteria levels indicated.

SGS Canada Inc. statement of conformity decision rule does not consider uncertainty when analytical results are compared to a specified standard or regulation.

This document is issued, on the Client's behalf, by the Company under its General Conditions of Service available on request and accessible at http://www.sgs.com/terms_and_conditions.htm.

The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any other holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Reproduction of this analytical report in full or in part is prohibited.

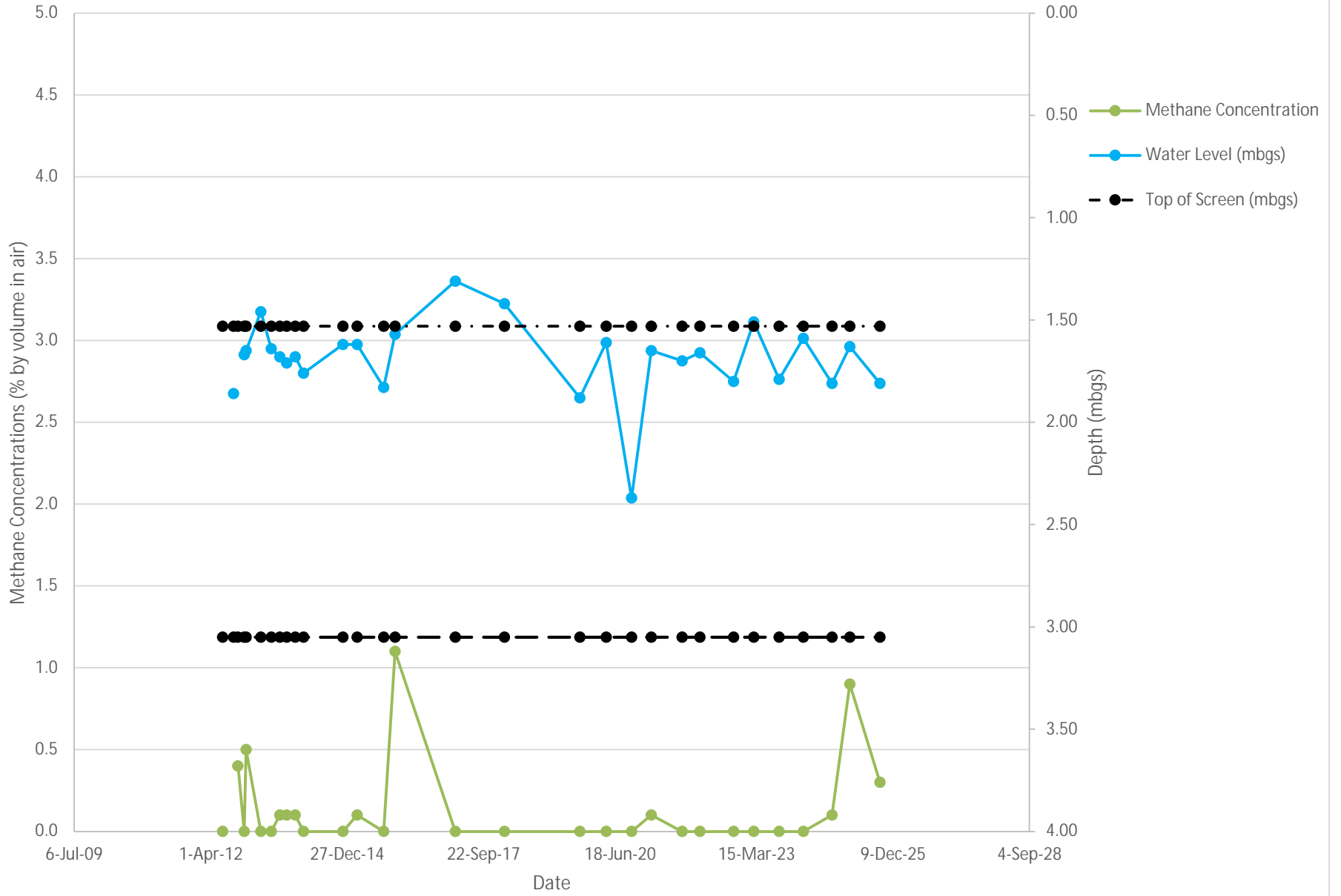
This report supersedes all previous versions.

-- End of Analytical Report --

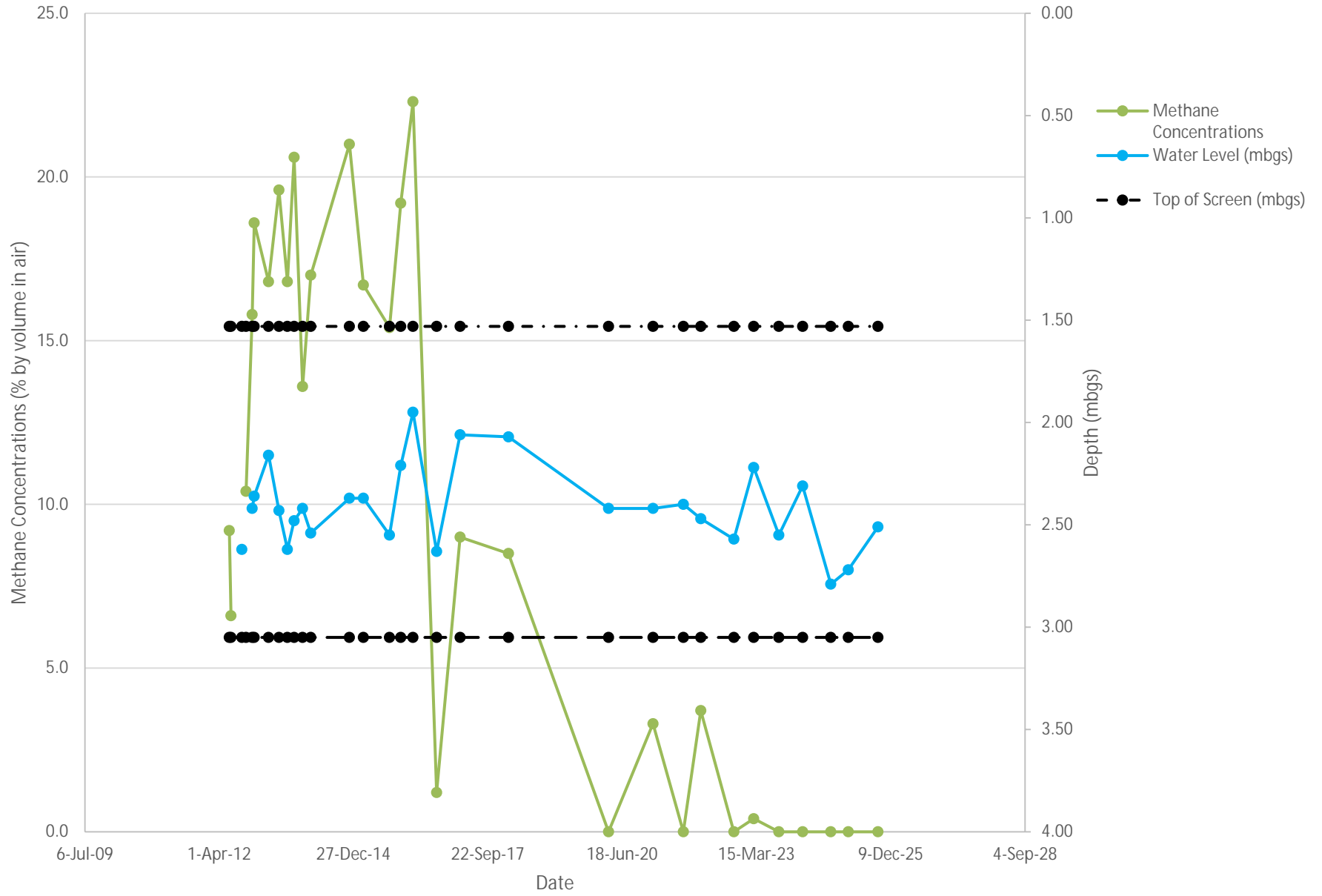
APPENDIX D

Landfill Gas Graphs

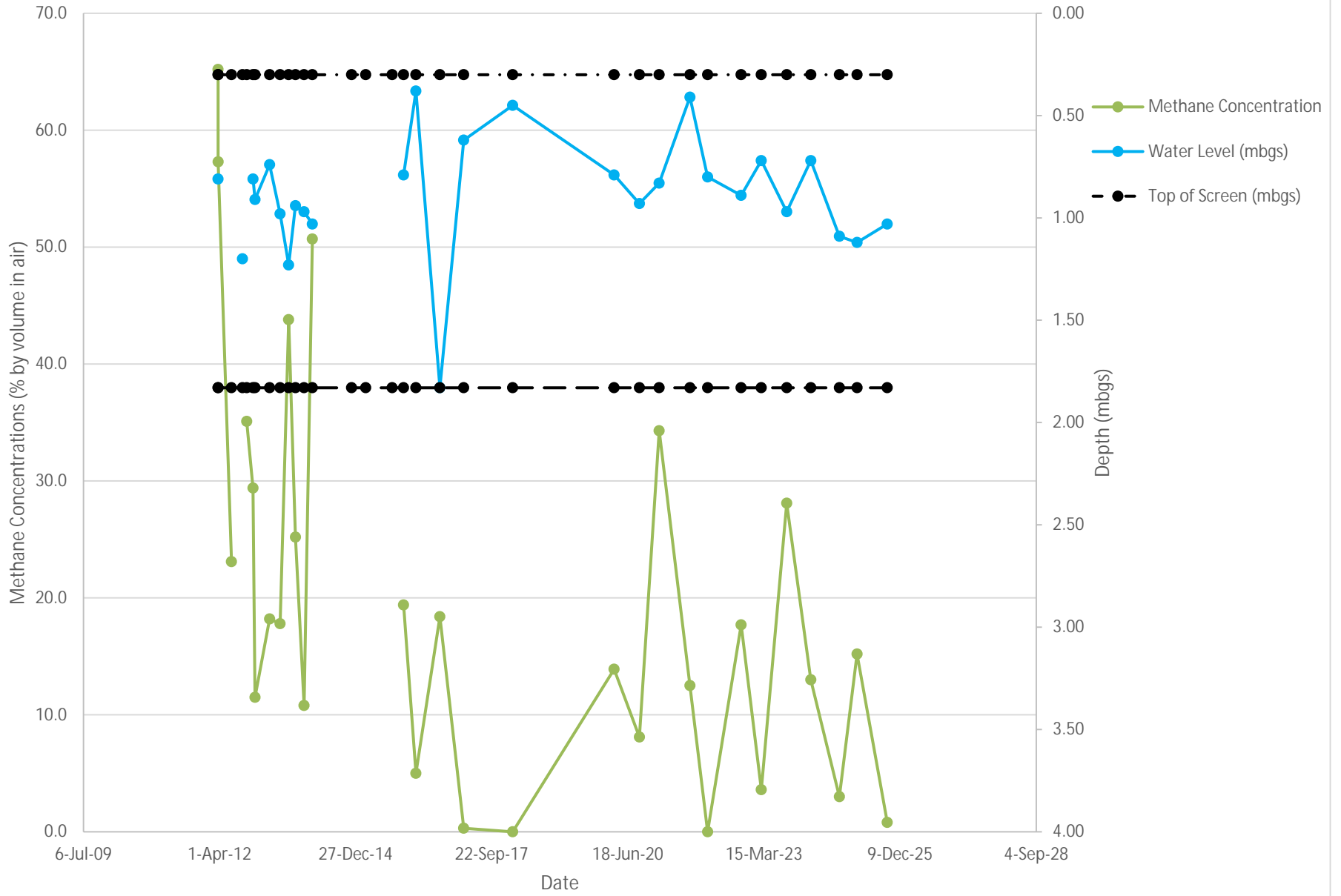
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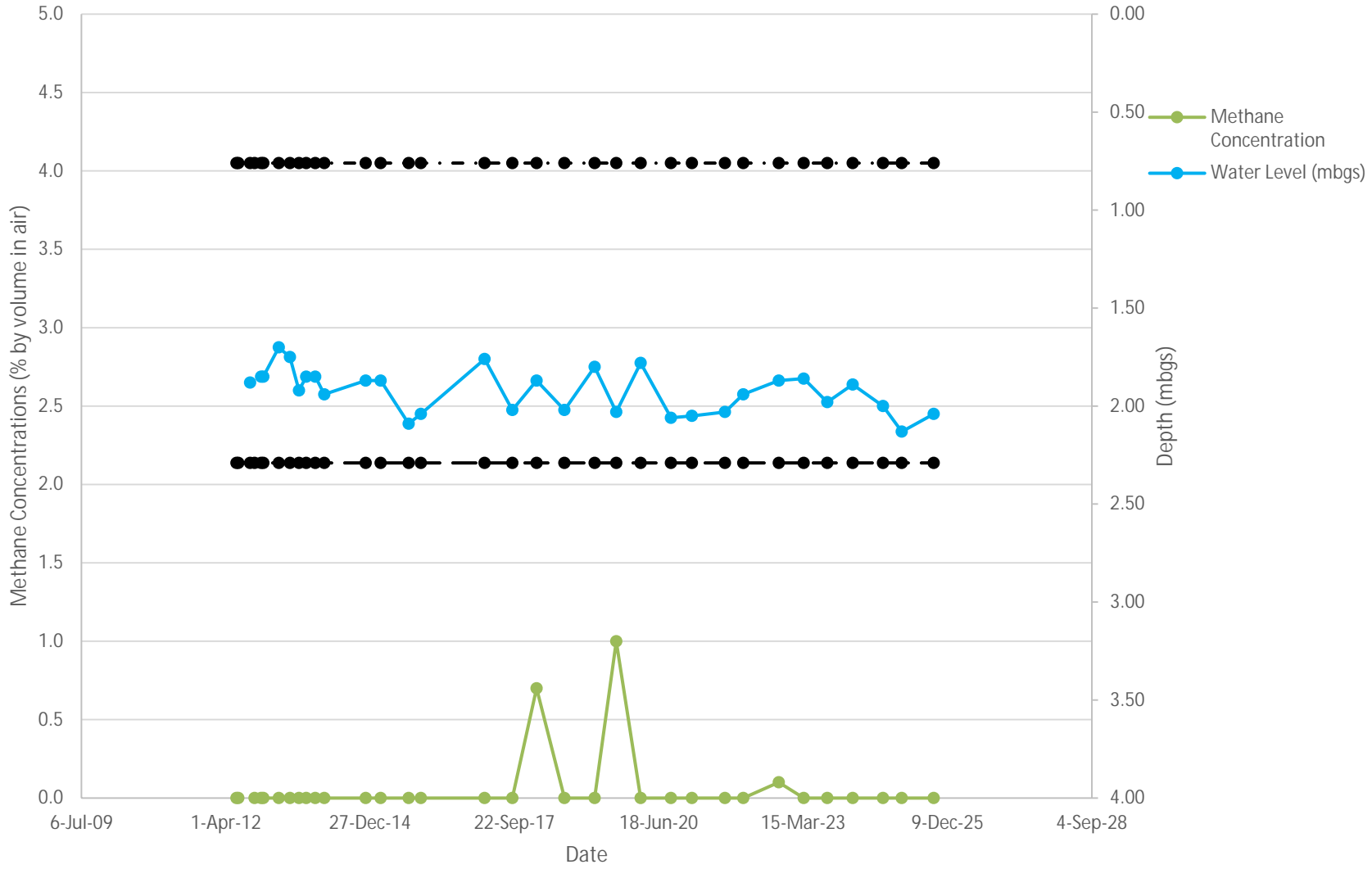
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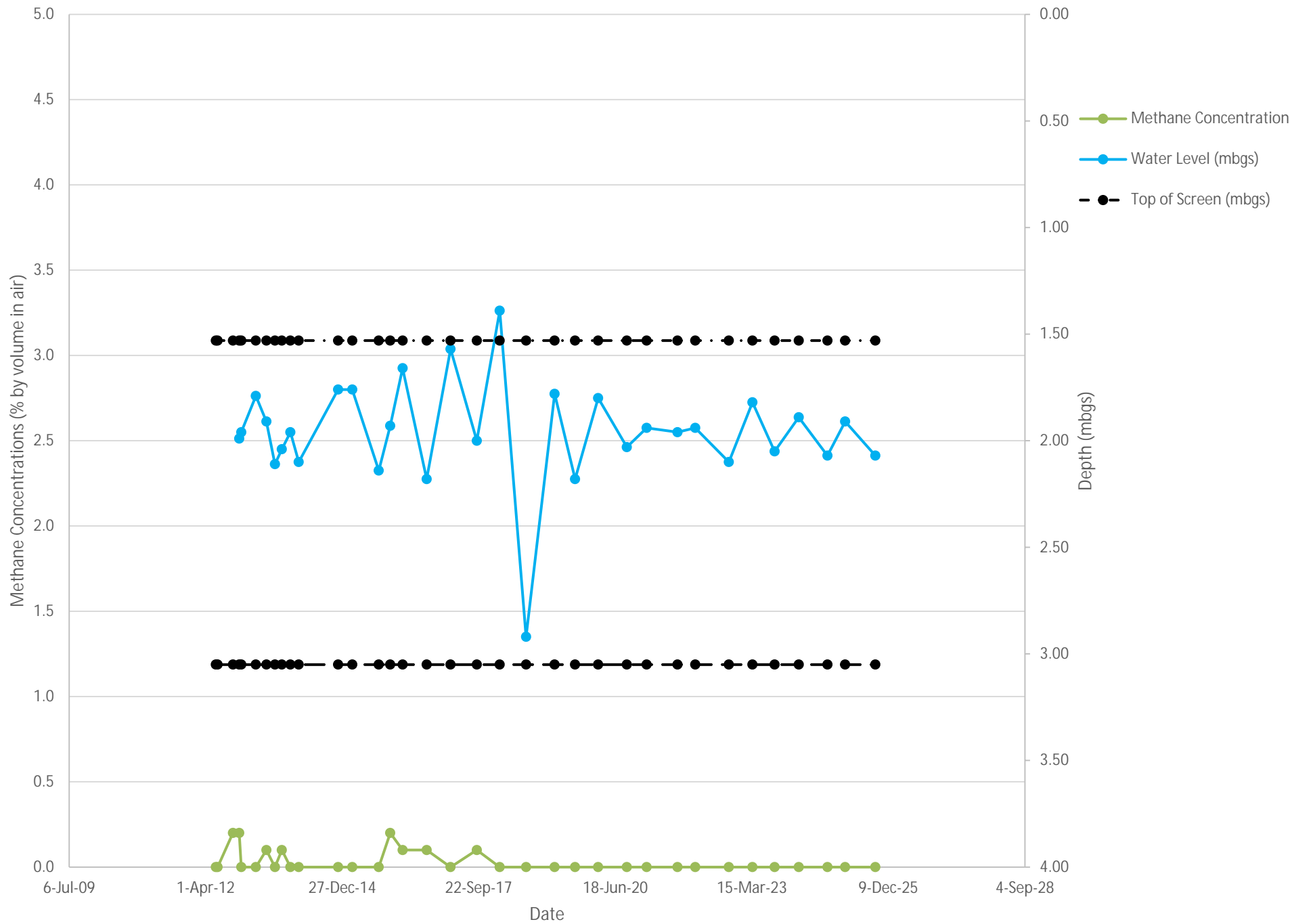
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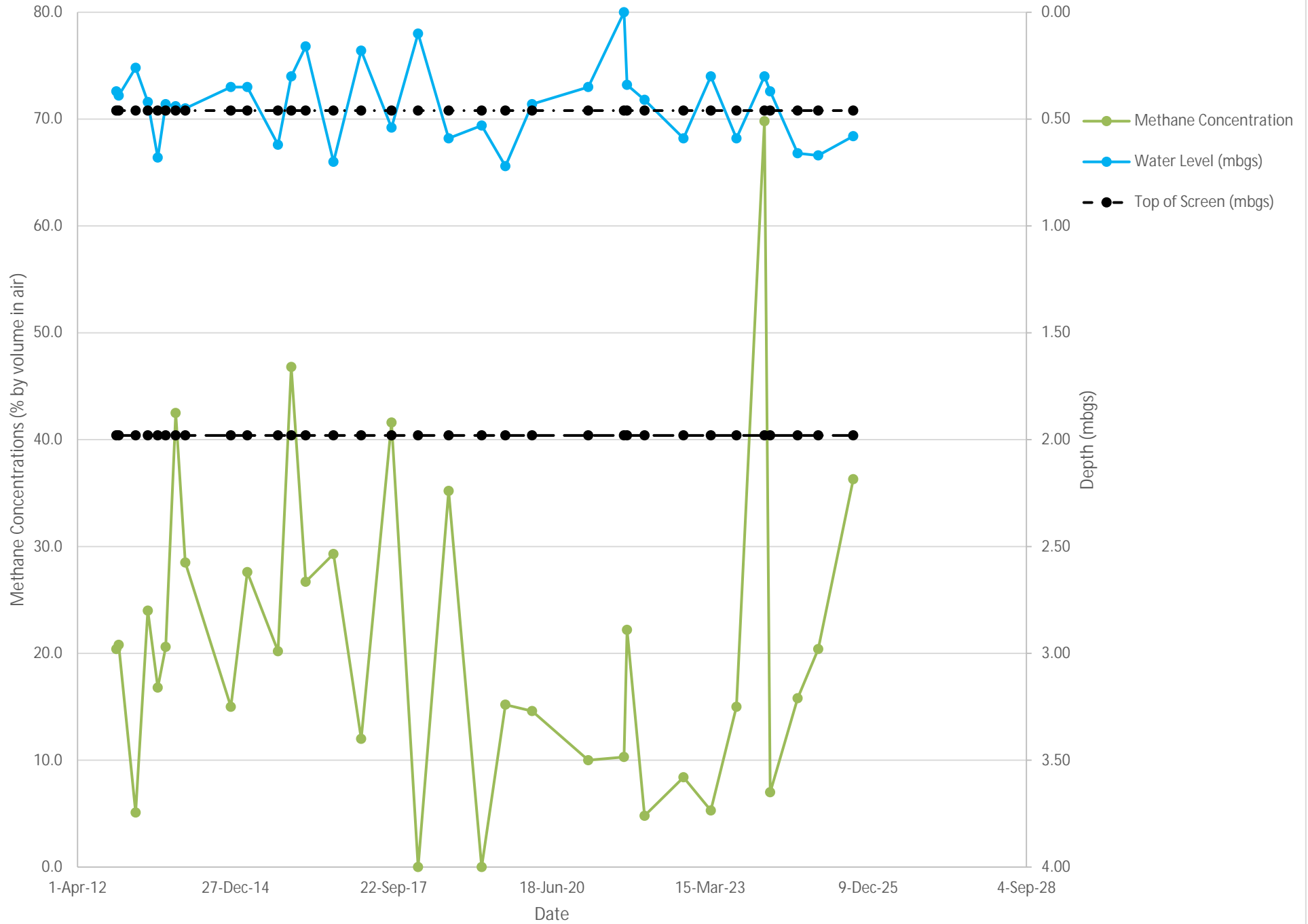
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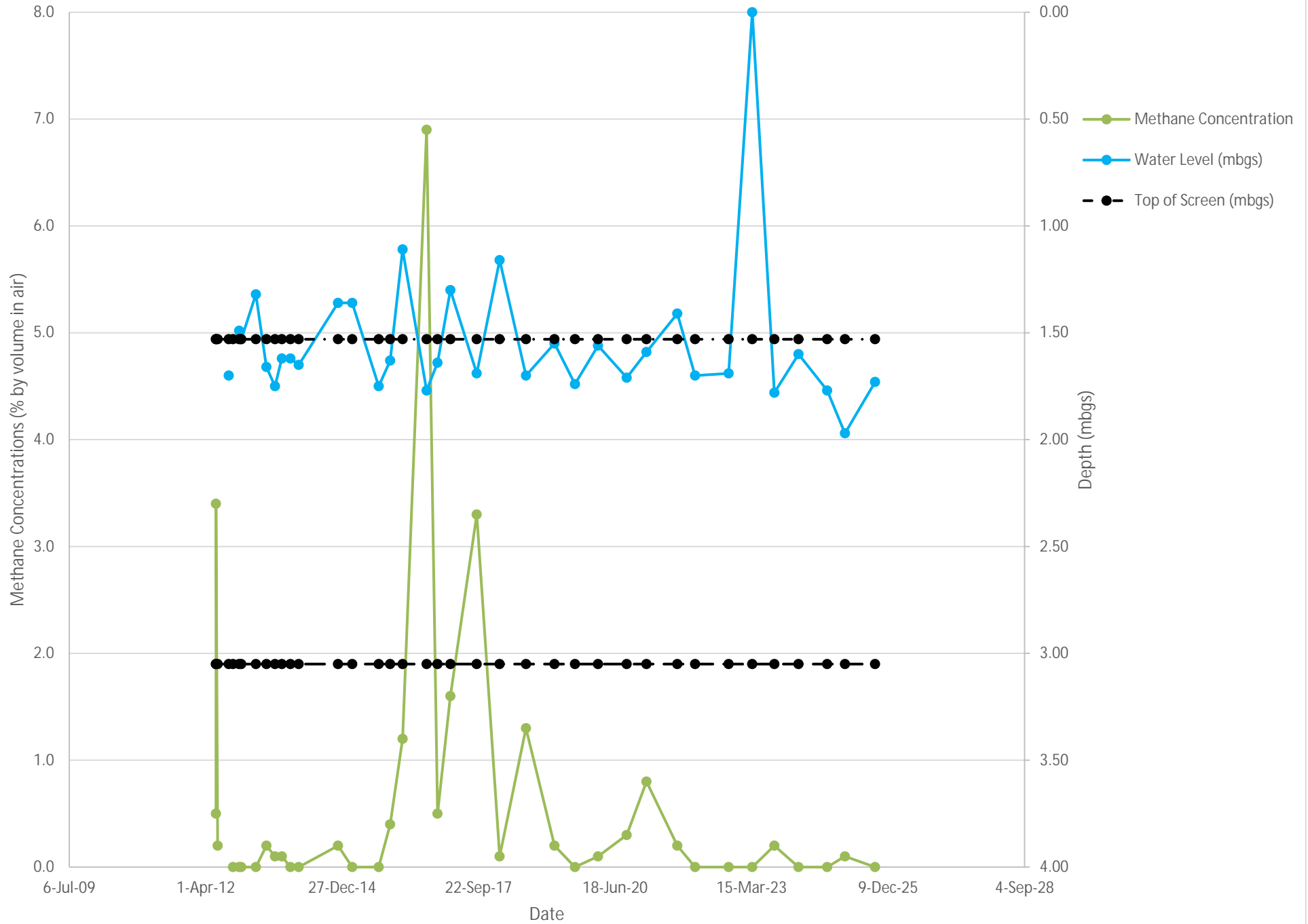
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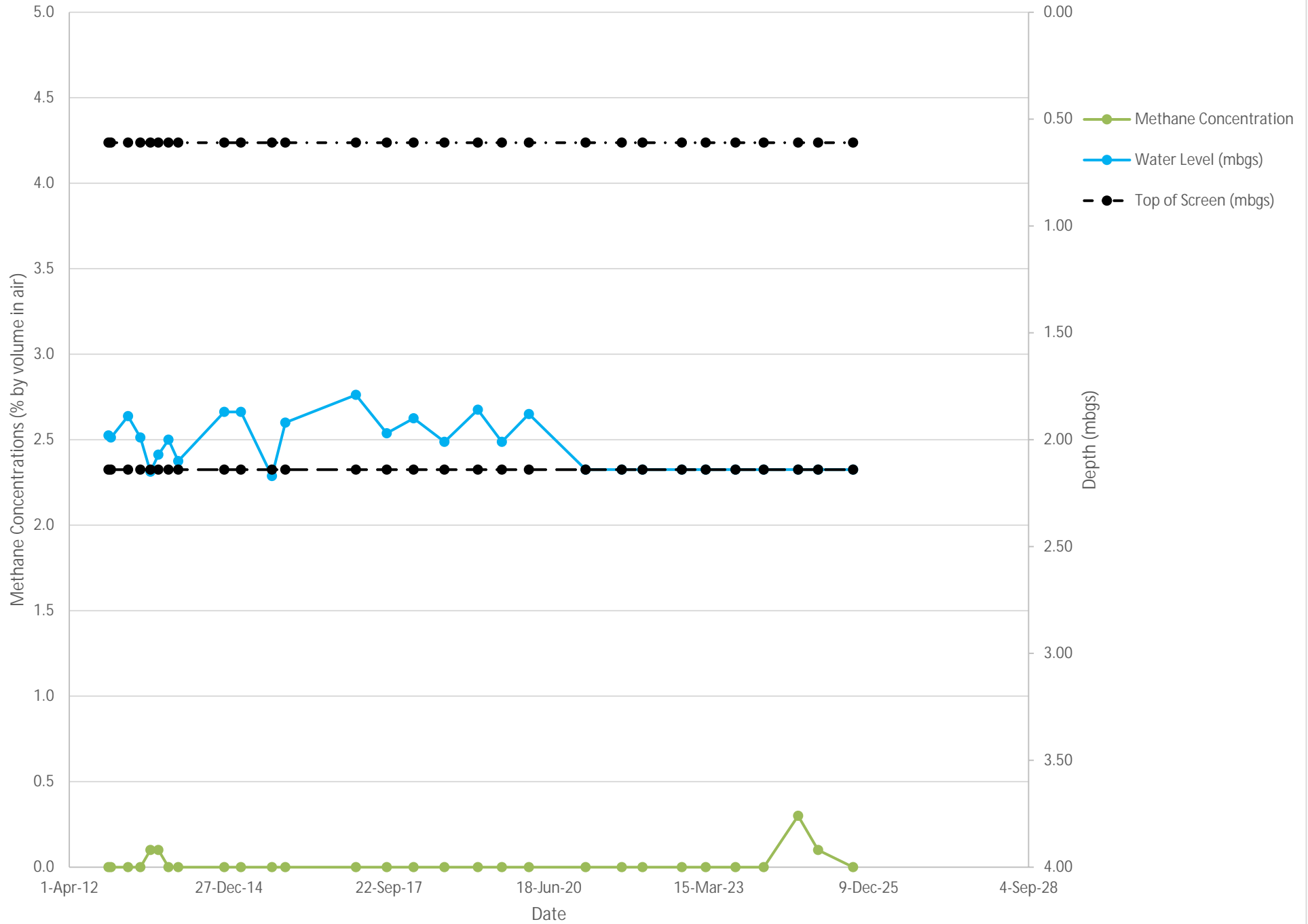
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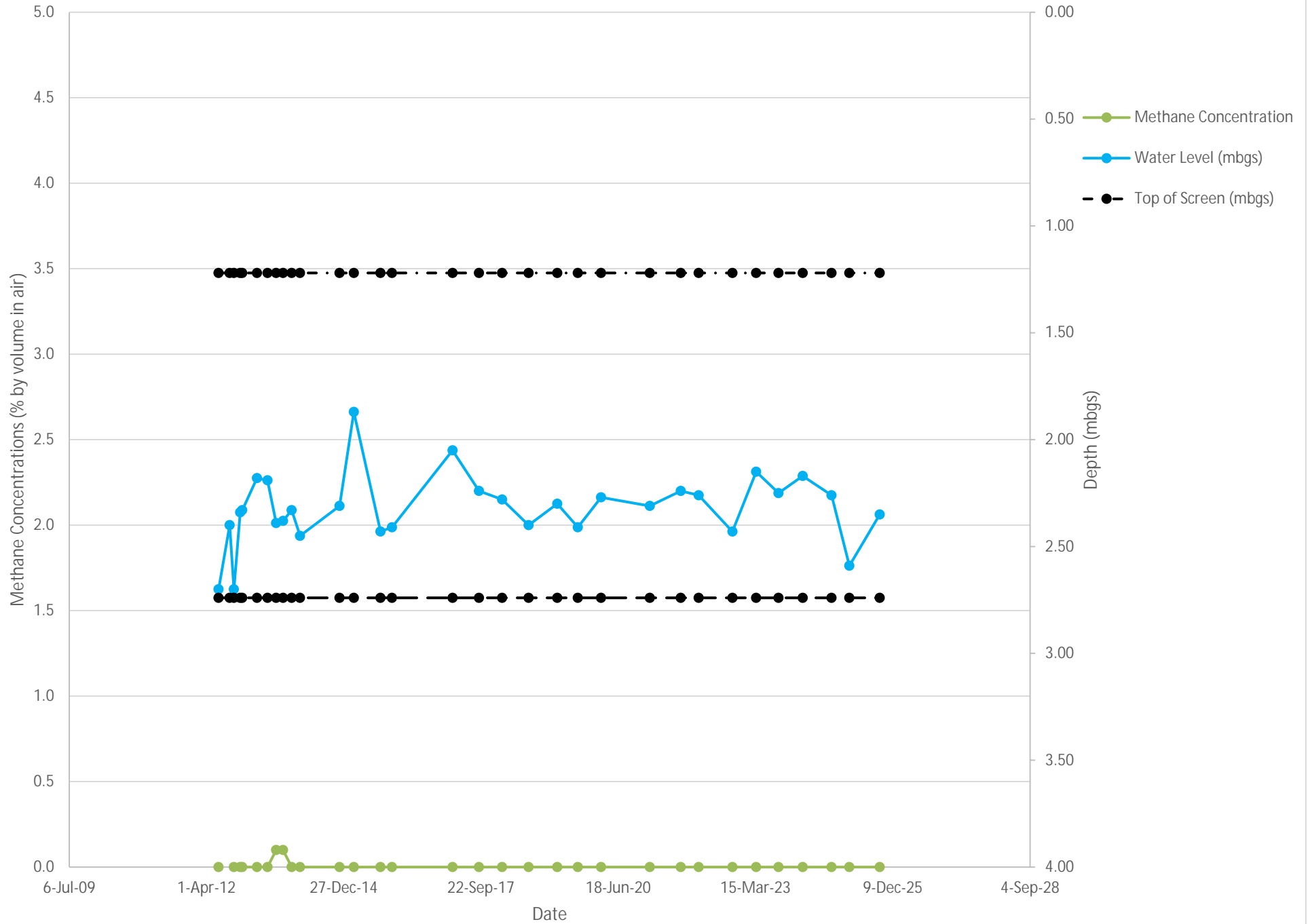
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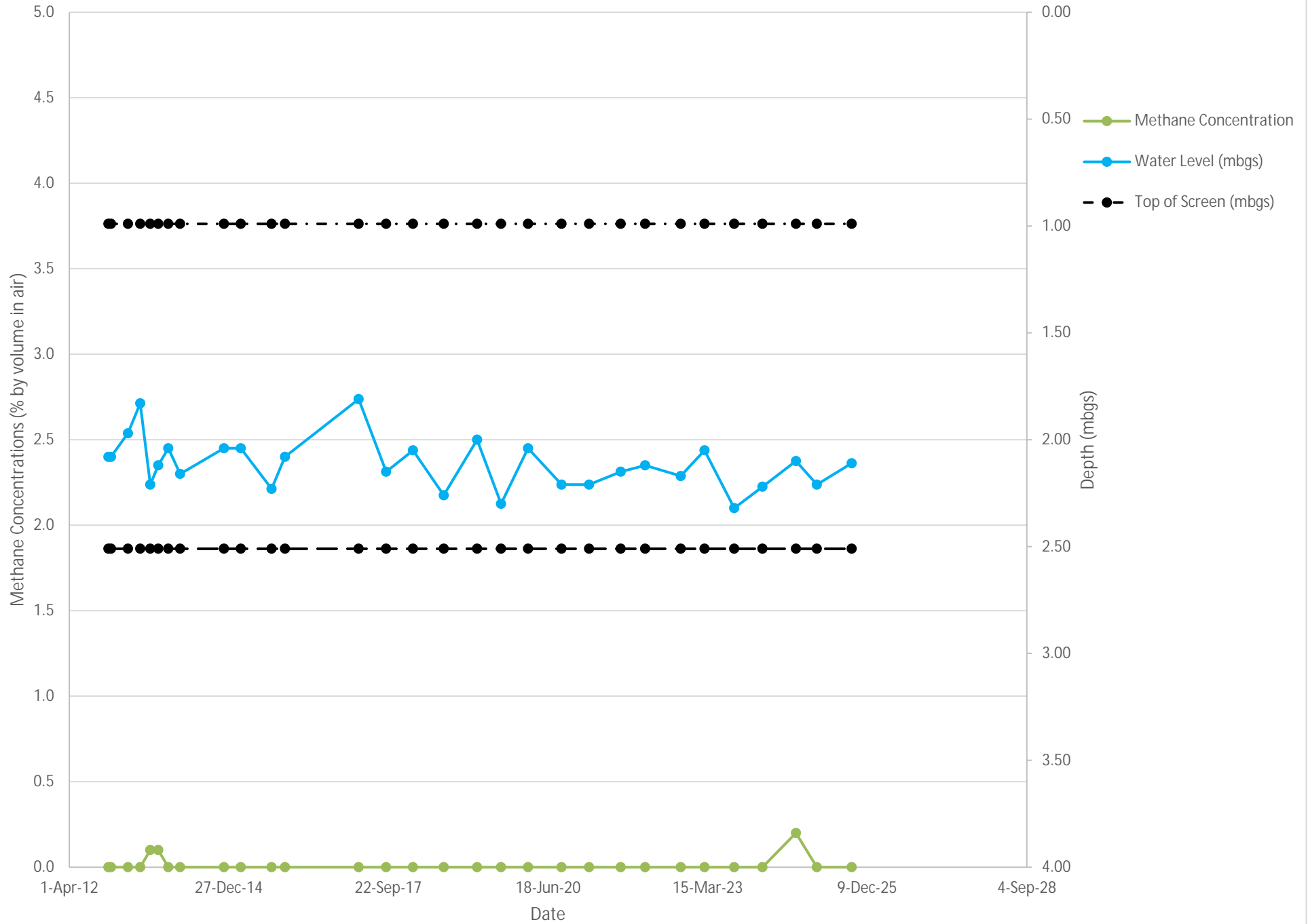
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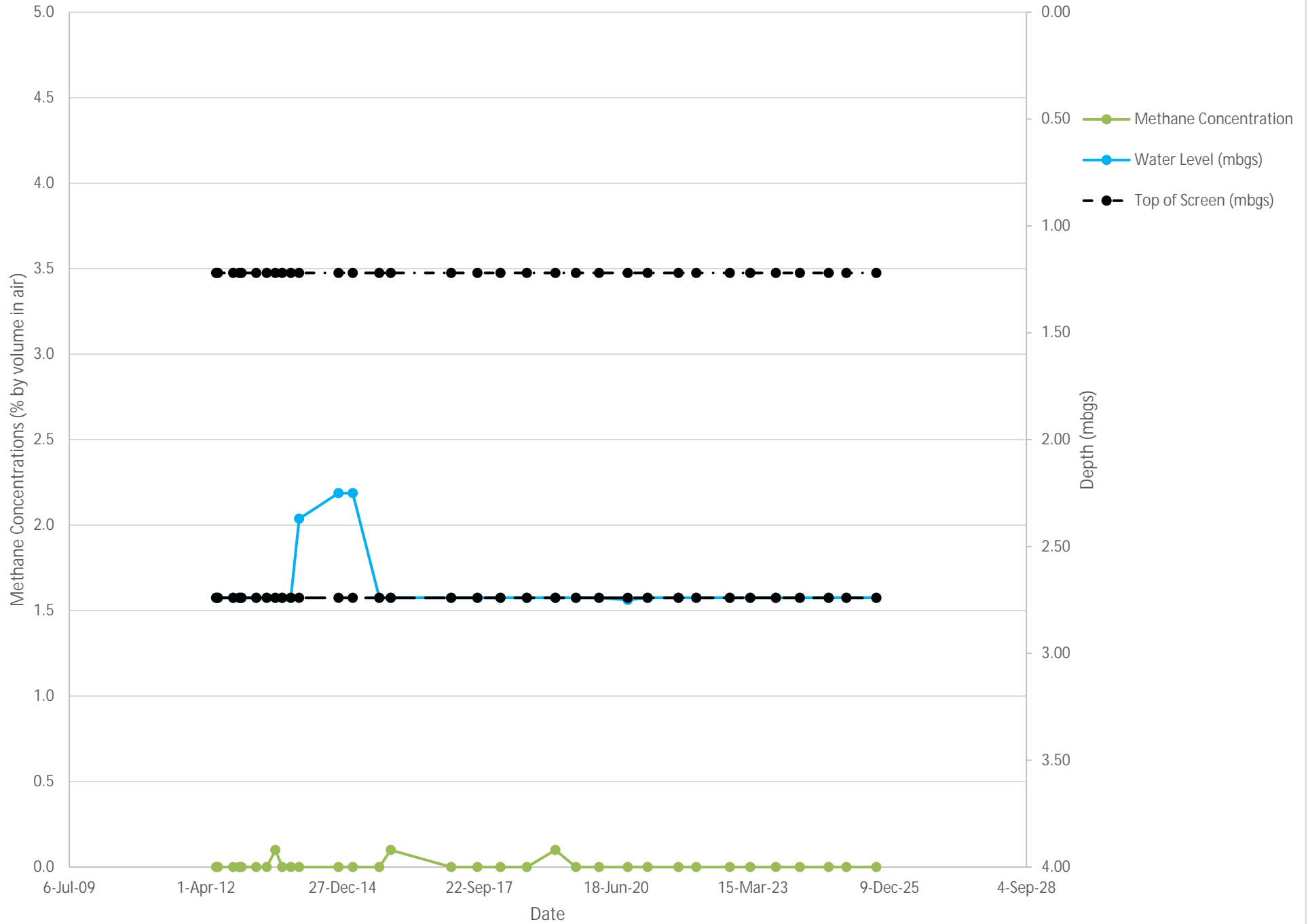
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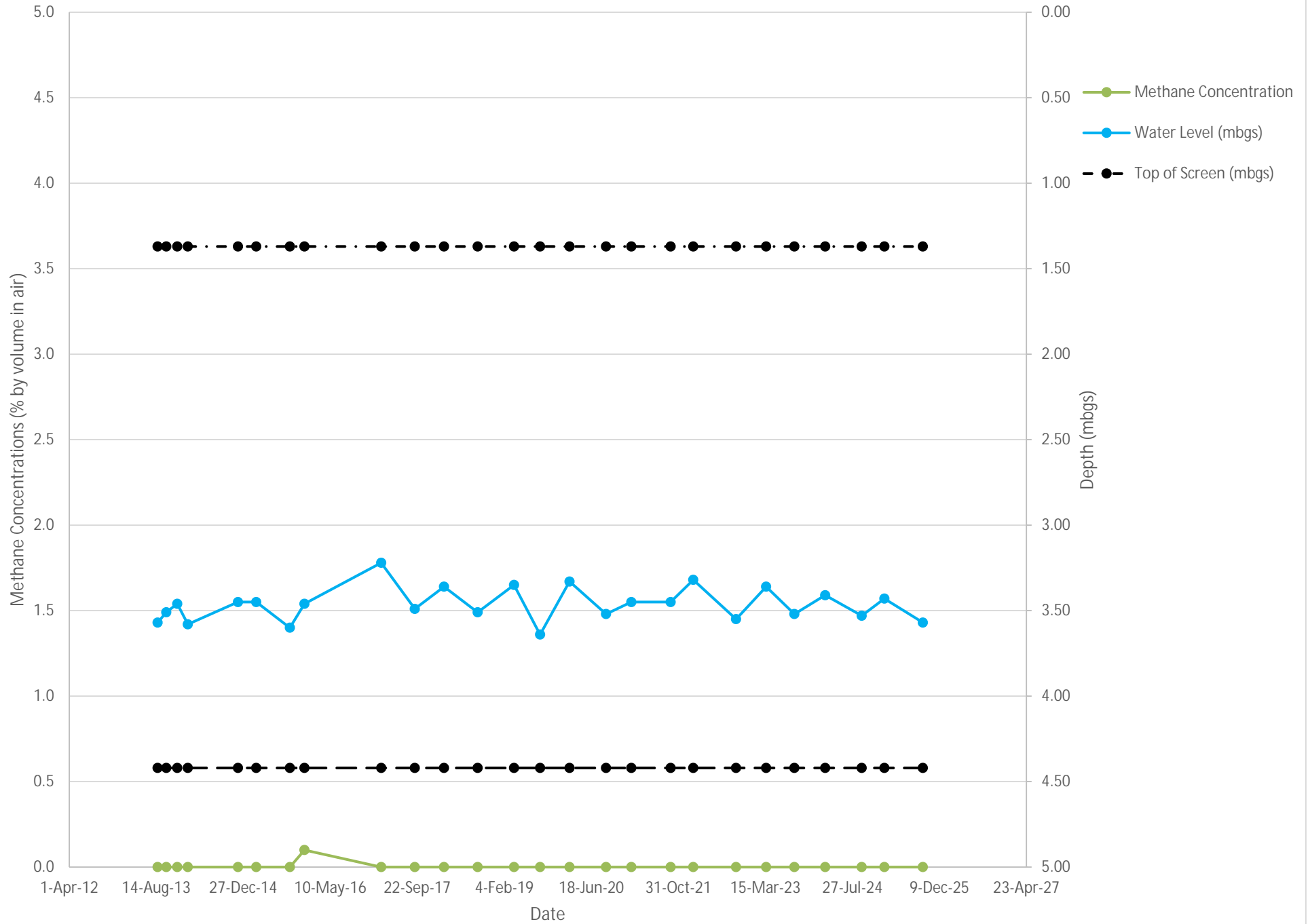
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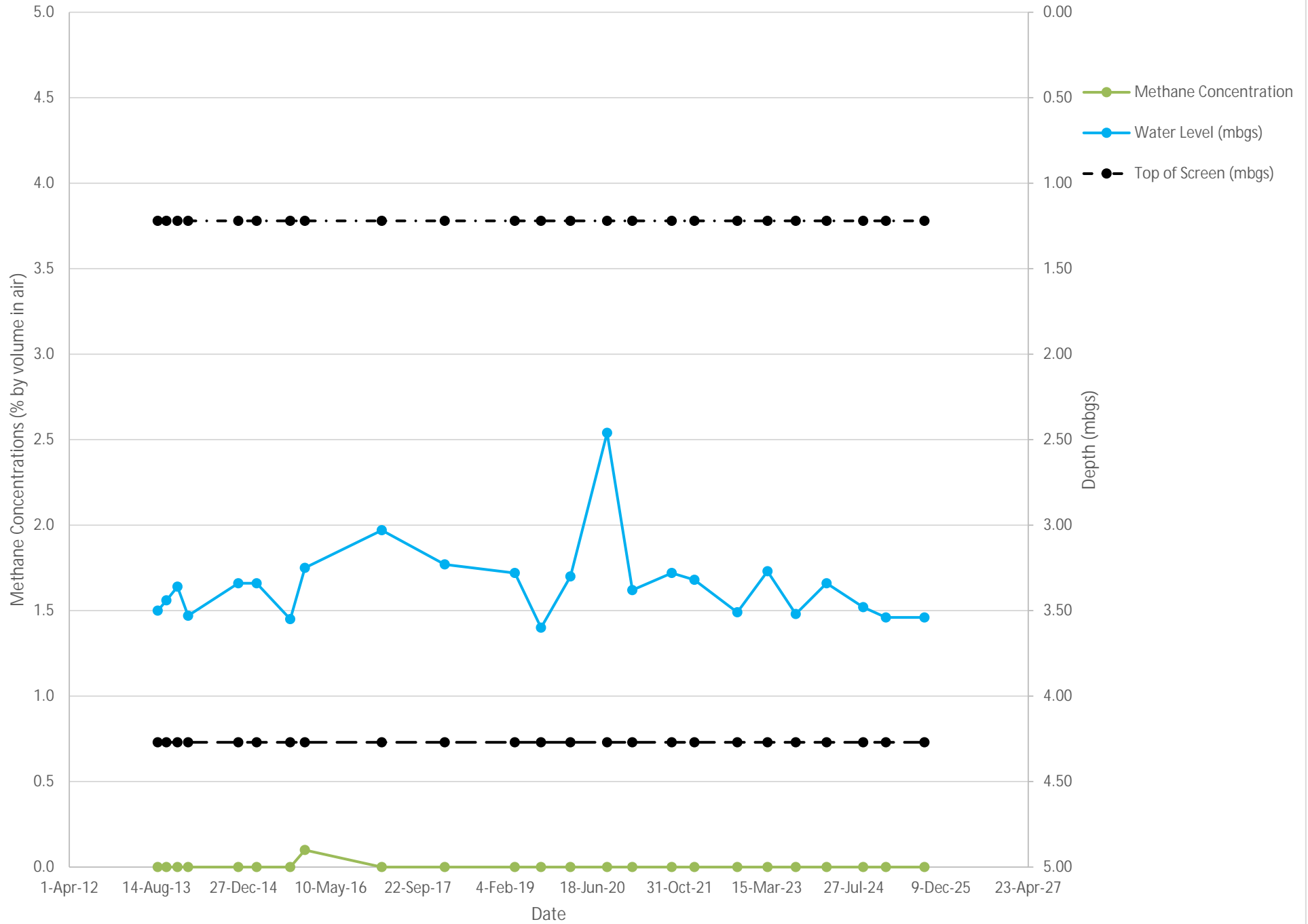
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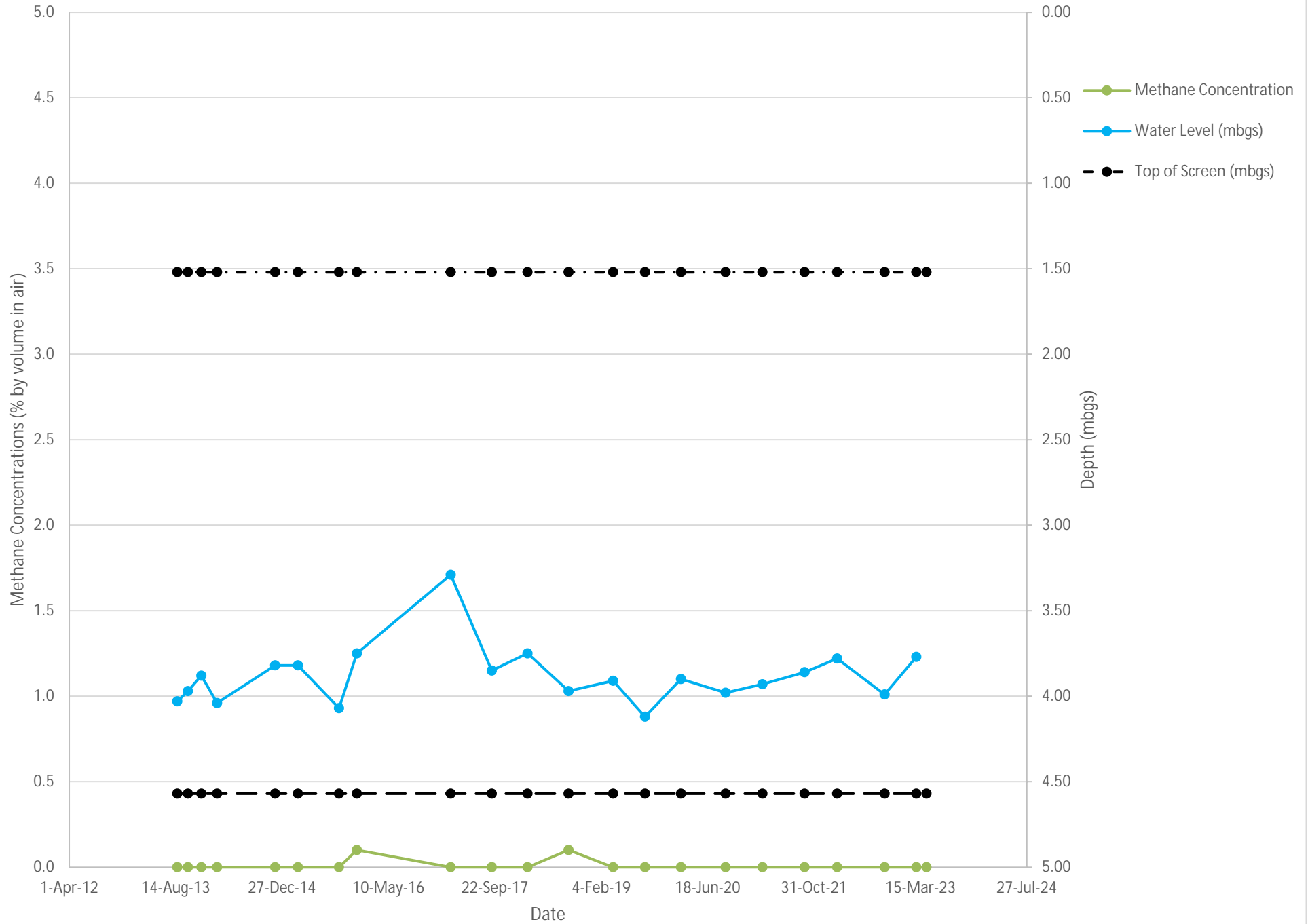
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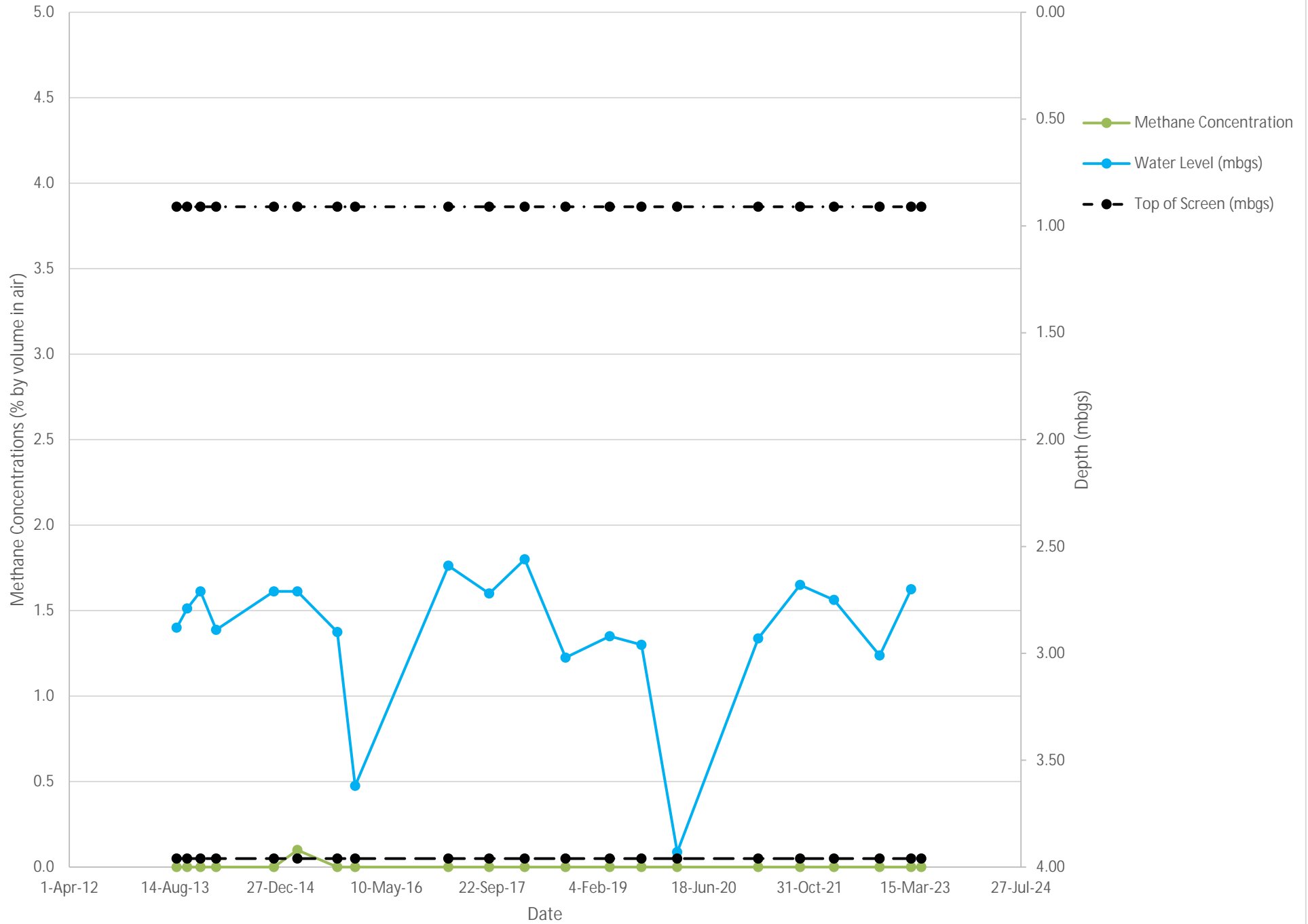
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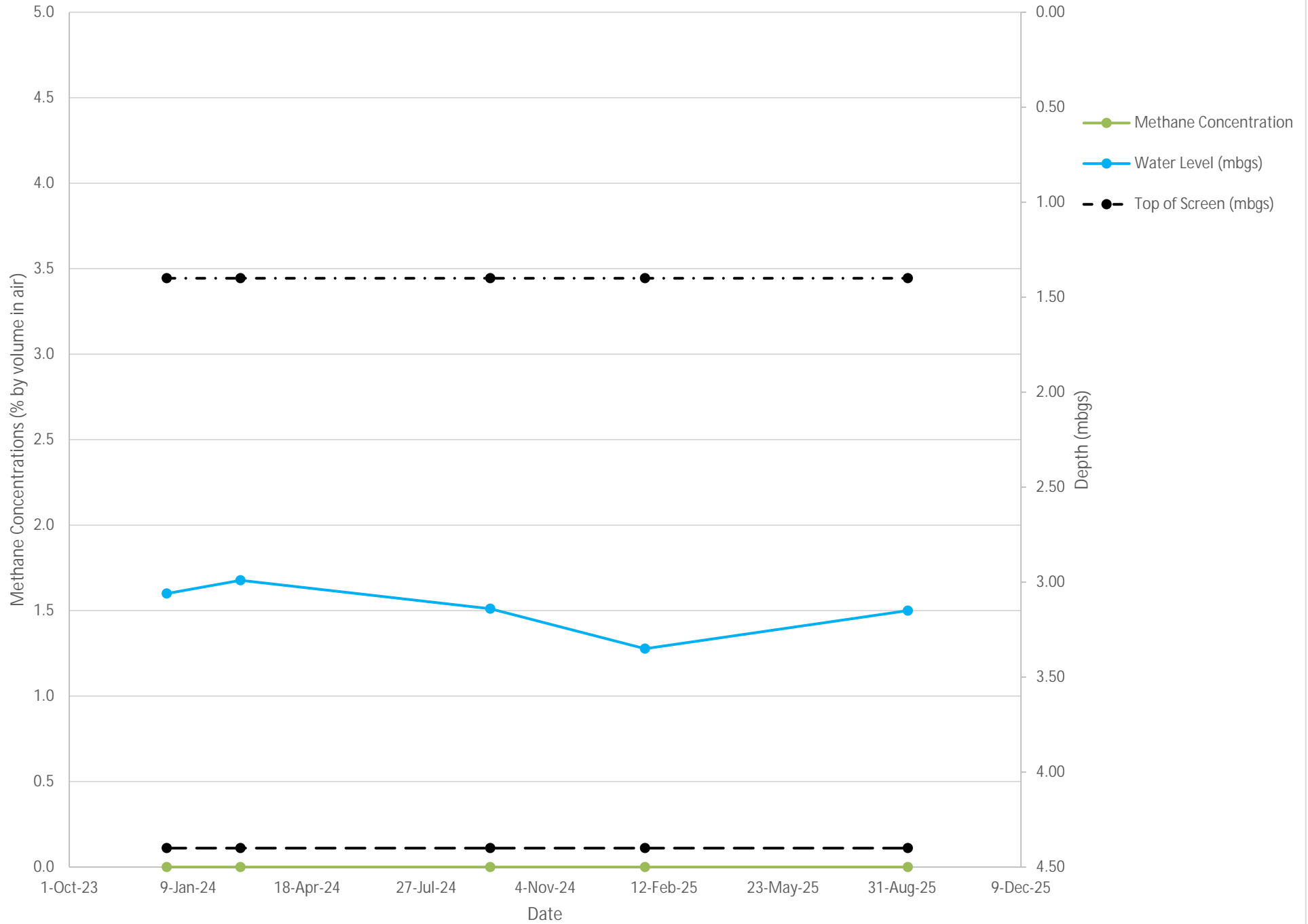
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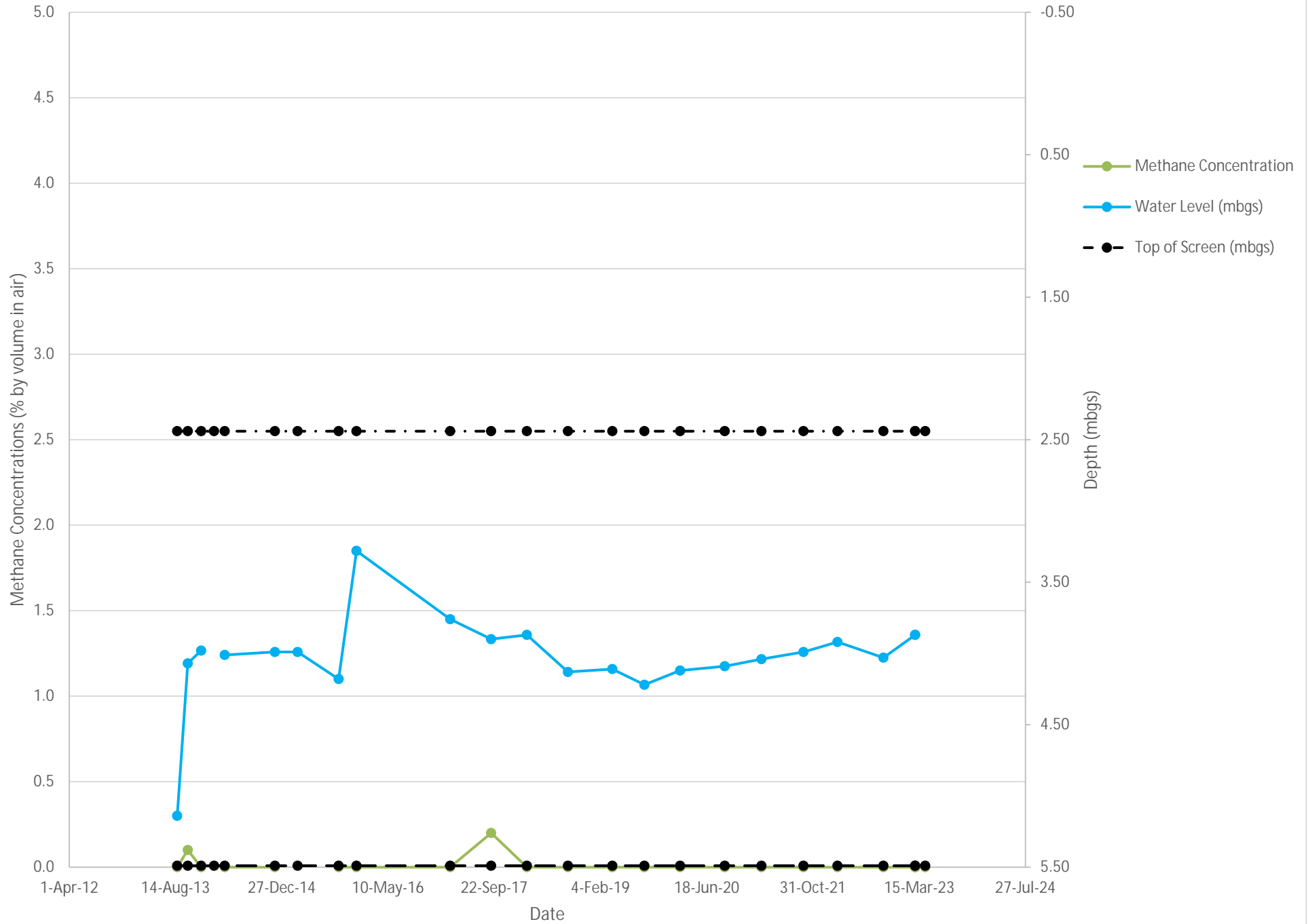
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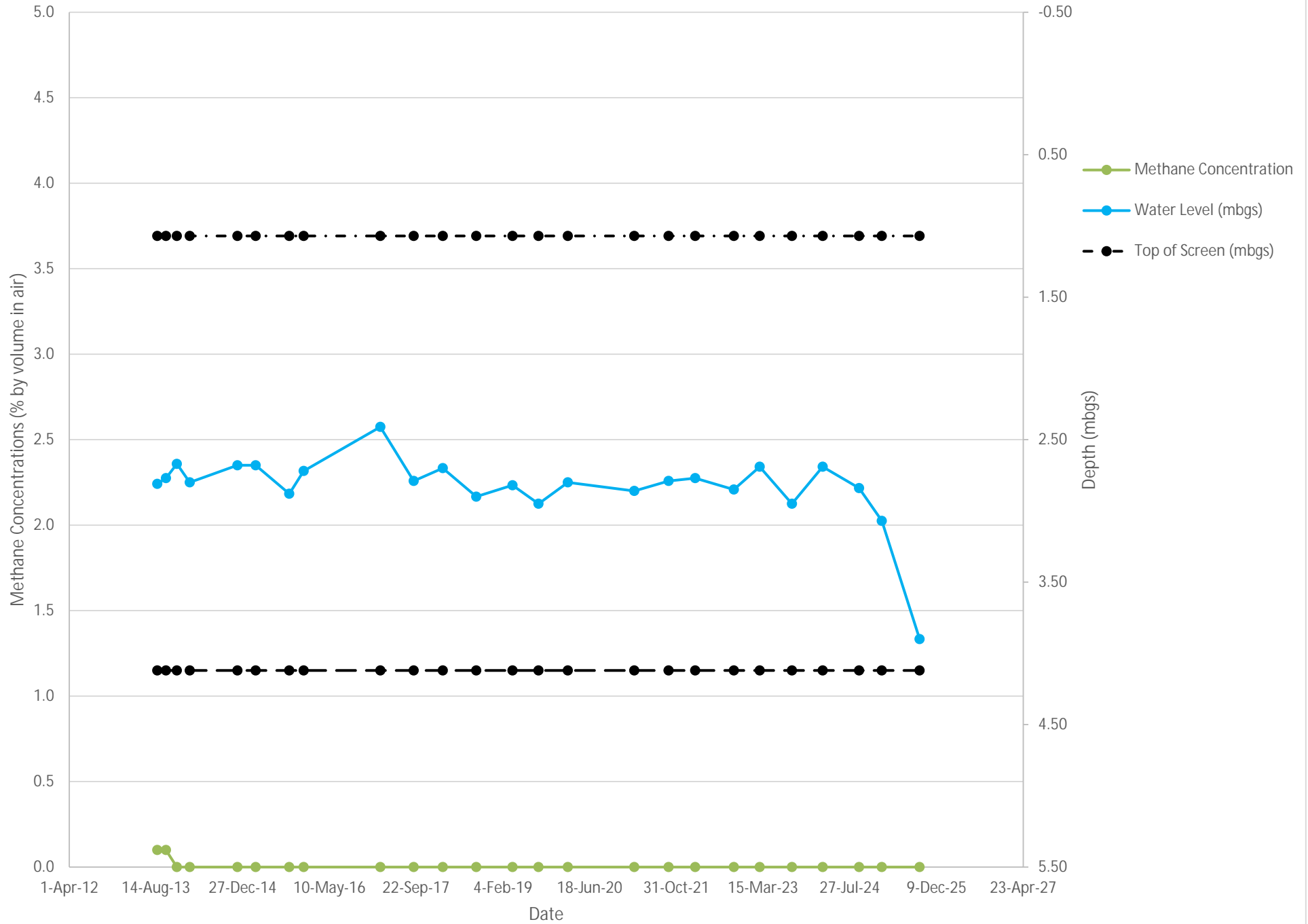
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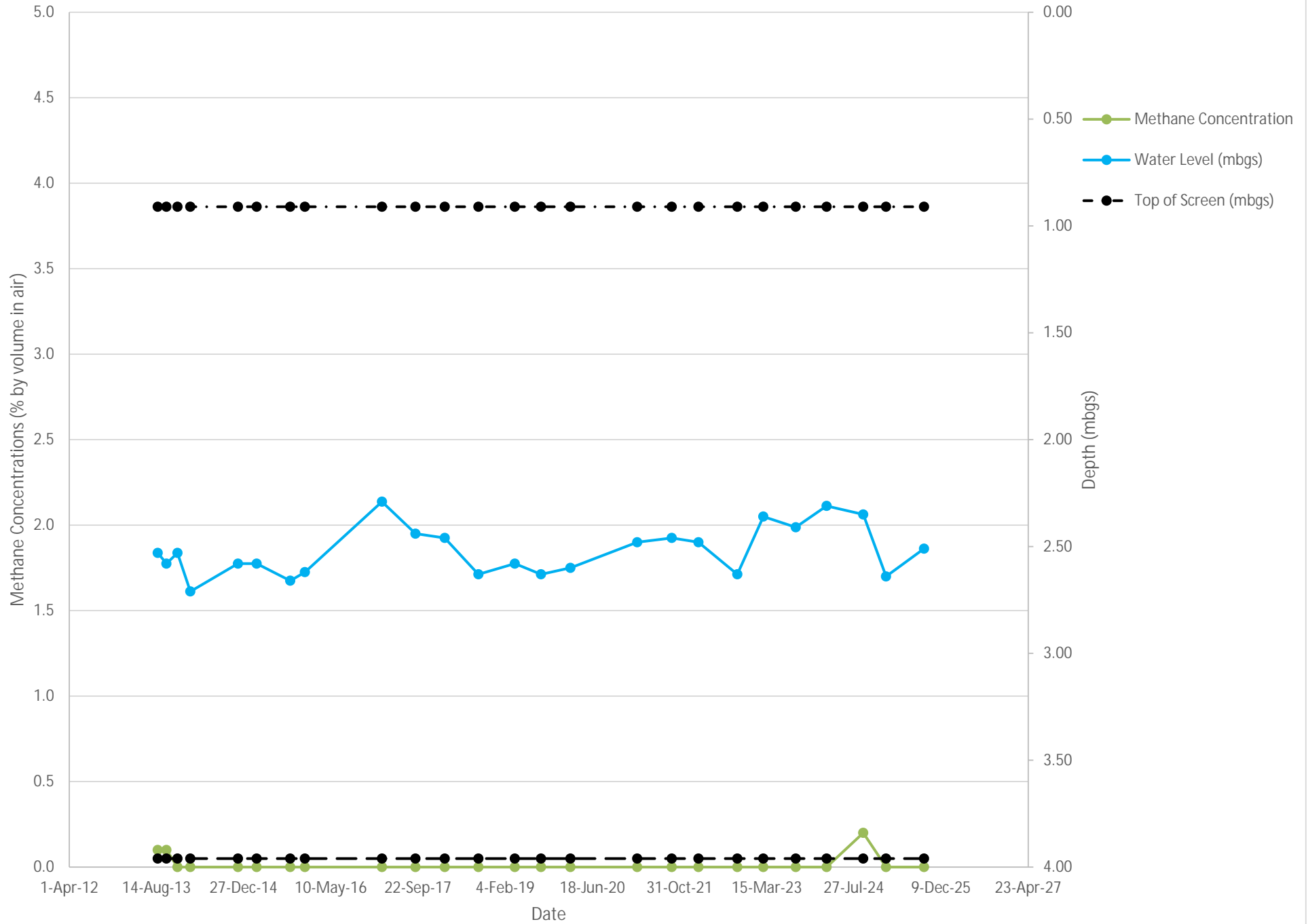
GP-D24



GP-D26



GP-D27



APPENDIX E

ECA Air No. 3118-BD5KTE



Landfill Gas Barrier and Passive Venting System Proposed LFG Monitoring Plan

CITY OF BARRIE HISTORIC WASTE SITE 6

Submitted to:

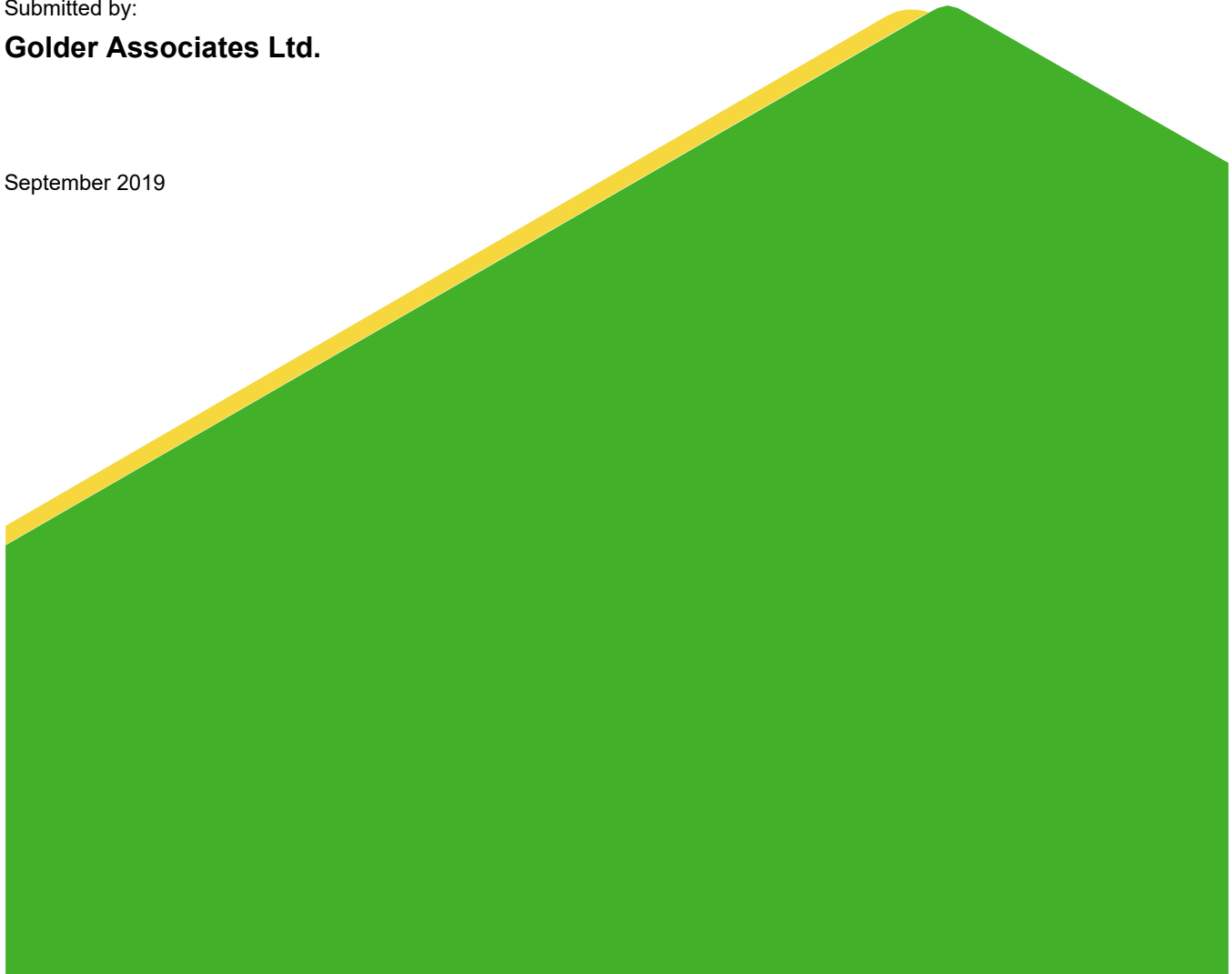
The City of Barrie

70 Collier Street
Barrie, Ontario
L4M 4T5

Submitted by:

Golder Associates Ltd.

September 2019



Distribution List

e-copy – City of Barrie

e-copy – MECP Barrie District Manager

e-copy – Golder Associates Ltd.

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FIGURES (Appended)

Figure 1 – Key Plan

Figure 2 – System Layout / Monitoring Locations

APPENDICES

Appendix A – ECA Air

1.0 INTRODUCTION

Golder Associates Ltd. (Golder) was retained by the City of Barrie (the City) to prepare a monitoring plan for the Landfill Gas (LFG) Barrier and Passive Venting System at the Historic Waste Site 6 (the Landfill) located on the north side of Dymont's Creek, at the west end of Frederick Street, between Innisfil Street and John Street (Figure 1). Implementation of the Barrier and Passive Venting System was recently approved by the Ministry of Environment, Parks and Climate Change (MECP) through issue of Environmental Compliance Approval for Air (ECA Air) No. 3118-BD5KTE, dated June 14, 2019 (Appendix A). Condition 2.1 of the ECA requires submission of a draft Monitoring Plan for the system not later than six months after the date of the approval.

2.0 BACKGROUND

Starting in 2011, Golder has completed environmental investigations at Historic Waste Site 6. The waste fill area is within the lowland area of Dymont's Creek and is suspected to extend onto residential properties on John Street, Frederick Street and Innisfil Street as shown in Figure 2 (Golder, 2018). These properties include 113 and 115 John Street, 15 and 20 Frederick Street and 134 and 136 Innisfil Street.

The Landfill was operated from approximately 1962 to 1963 and is currently an open space with public access from Frederick Street. There is no ECA for the landfill itself. The need for the landfill gas barrier/venting system relates to recent monitoring carried out by Golder for the Landfill, which identified an elevated risk of subsurface landfill gas migration onto adjacent off-Site private properties (Golder, 2017).

The waste fill thickness ranges from 0.05 m at several locations to a maximum of 4.37 m, and extends to a maximum depth of approximately 8 m below ground surface in the southwest portion of landfill. With the exception of a few areas of the landfill surface, there is a minimum of 1.0 m of soil fill above the top of the waste. For the most part, the waste identified in boreholes consists of non-degradable materials (e.g., glass, plastic, bricks and metal), however, putrescible materials, including animal hides were encountered in a few boreholes. It is noted that in the northwest part of the landfill, the waste material consists largely of inorganic debris.

In 2017, Golder undertook an investigation to assess the risk of LFG migration to adjacent private properties (Golder, 2017). The investigation included monitoring of landfill gas concentrations at a number of gas probes installed along the Landfill boundary. The monitoring indicated elevated (above 5% by volume) methane concentrations along the north and east boundaries. Golder recommended that remediation of landfill gas migration from the landfill be undertaken to limit the City's risk of impacting off-site properties; ultimately a barrier and passive venting system was selected as the most feasible alternative. The Landfill Gas Barrier and Passive Venting System was approved by the MECP through issue of Environmental Compliance Approval for Air (ECA Air) No. 5412-BE7KES, dated June 14, 2019 (Appendix A). Construction is scheduled for the Fall of 2019.

The Landfill Gas Barrier and Passive Venting System will operate 24 hours per day, 365 days per year. The system is passive and therefore there are no sources of noise (e.g. fans/blowers) associated with its operation. Emissions vent passively through turbine ventilators that are powered primarily by the wind.

3.0 LANDFILL GAS BARRIER AND PASSIVE VENTING SYSTEM DESIGN

The proposed landfill gas barrier consists of a 202 m length of interlocking steel sheet piles (Waterloo Barrier™), installed on City land bordering the adjacent private properties on Frederick Street and John Street (Figure 2). The vertical barrier wall will protect against lateral migration of landfill gas via the unsaturated zone onto these private properties.

To collect and vent landfill gas that accumulates along the landfill side of the barrier wall, a shallow 1.2 m deep x 0.75 m wide trench backfilled with processed medium sand (OPSS 1002 – Concrete Sand) and 150 mm nominal diameter perforated tubing is proposed along the full length of the barrier wall. The perforated tubing will connect to a vent pole at three locations adjacent the trench (GVP1 to GVP3), as shown in Figure 2. The vent poles will consist of a 6.0 m high hollow/tapered galvanized steel pole fitted with a 100 mm diameter wind turbine at the top and will be founded on a concrete pier. Each vent pole will have a port covered with a removable steel plate to allow monitoring of landfill gas concentrations.

4.0 MONITORING PLAN

4.1 Field Measurements, Sampling and Laboratory Analysis

The proposed monitoring plan for the LFG barrier/venting system, including requirements for monitoring frequency, field measurements and laboratory analyses is provided in Table 1 below. A semi-annual monitoring frequency is proposed at eleven existing LFG monitoring wells (GP-D1, GP-D2, GP-D3, GP-D8, GPD-13, GPD-14, GP-D20, GP-D21, GP-D22, GP-D23 and GP-D24) and three gas venting poles (GVP1 to GVP3). One of the monitoring rounds should be completed under frozen ground conditions (February/March). These monitoring locations are shown on Figure 2. Monitoring of the landfill gas probes and vent poles is required in order to confirm that the landfill gas barrier/venting system is effective in intercepting and venting lateral migration of landfill gas.

Table 1: LFG Sampling and Monitoring Program

Location	Frequency	Parameters
Gas Probes: GP-D1, GP-D2, GP-D3, GP-D8, GPD-13, GPD-14, GP-D20, GP-D21, GP-D22, GP-D23 and GP-D24	Semi-Annually (one in frozen ground conditions)	Field Measurement: Concentration of methane (% volume and % Lower Explosive Limit (LEL)), carbon dioxide (% volume) and oxygen (% volume) and groundwater level
Vertical Passive Gas Vent System Poles: GVP1, GVP2, GVP3 (sampling port at lower portion of pole)	Semi-Annually (one under frozen ground conditions)	Field Measurement: Concentration of methane (% volume and % Lower Explosive Limit (LEL)), carbon dioxide (% volume) and oxygen (% volume) Flow Rate: Flow rate of landfill gas venting upward within the vent system pole as measured using VelociCalc ventilation meter
	Semi-Annually (one under frozen ground conditions)	Laboratory Analysis: Concentration of methane, hydrogen sulphide, oxygen, carbon monoxide, carbon dioxide and volatile organic compounds (collected via Tedlar Bag)

Measurement of the depth to the groundwater level below the top of pipe will be obtained at each gas probe prior to gas sampling and used to calculate the volume of air to be purged prior to sampling. The minimum purging volumes will be three times the volume of air initially present in the monitoring probe. The gas readings will include the concentrations of carbon dioxide (CO₂), methane (CH₄), and oxygen (O₂) recorded using a calibrated Landtec Gas Analyzer and Extraction Monitor (GEM 2000 or GEM 5000).

The methane gas concentration (%LEL and %volume) and gas flow rate will be measured in the field at each gas venting pole. The flow rate will be measured using a VelociCalc ventilation meter. In addition, a sample at each venting pole will be collected in a Tedlar bag and sent to the laboratory for analysis of methane, hydrogen sulphide, oxygen, carbon monoxide, carbon dioxide and volatile organic compounds. Emission rates will be calculated using the maximum measured concentration (ppb or µg/m³) of each contaminant in any of the vents during each sampling round and the average volumetric flow rate (m³/s) to determine an emission rate (g/s).

4.2 Additional Observations - Wind Speed / Direction and Odours

The meteorological data at the time of monitoring, including the wind speed and direction and barometric pressure should be recorded. Meteorological data will be collected from the nearby City of Barrie Landfill Weather Station. This station is located approximately 3 km northwest of the Site, and therefore this weather station is considered to be adequate to represent Site weather conditions during the monitoring events. Should the Barrie Landfill Weather Station be unavailable at the time of monitoring, weather data from the nearby Environment Canada Barrie-Oro Weather Station will be used.

Any landfill gas odours observed at the time of monitoring will also be recorded. If odours are noted, the technician will identify and record the source of the odour.

4.3 Reporting

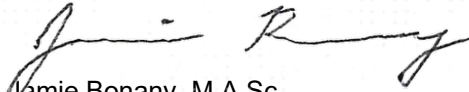
Section 2.2 of the ECA Air requires an annual report to be submitted by March 31 of each year. The annual report for the barrier and passive venting system will be submitted as part of the Annual Monitoring Report for the Dymont's Creek Historic Waste Sites and will include, as a minimum:

- the frequency of monitoring adopted;
- the measured volumetric flow rates of the landfill gas discharging up the vertical vent poles and the concentrations of contaminants in the gas discharging to the atmosphere via the vent poles;
- the wind speeds and wind directions recorded at the time of monitoring; and,
- the results of dispersion calculations, using one of the approved dispersion models listed in Section 6 of O. Reg 419/05, indicating the maximum point of impingement concentrations of contaminants in the gas discharging to air.

We trust that this proposed Monitoring Plan meets your immediate needs. Should you require any additional information or clarification, please do not hesitate to contact the undersigned.

Yours truly,

GOLDER ASSOCIATES LTD.



Jamie Bonany, M.A.Sc.
Project Scientist



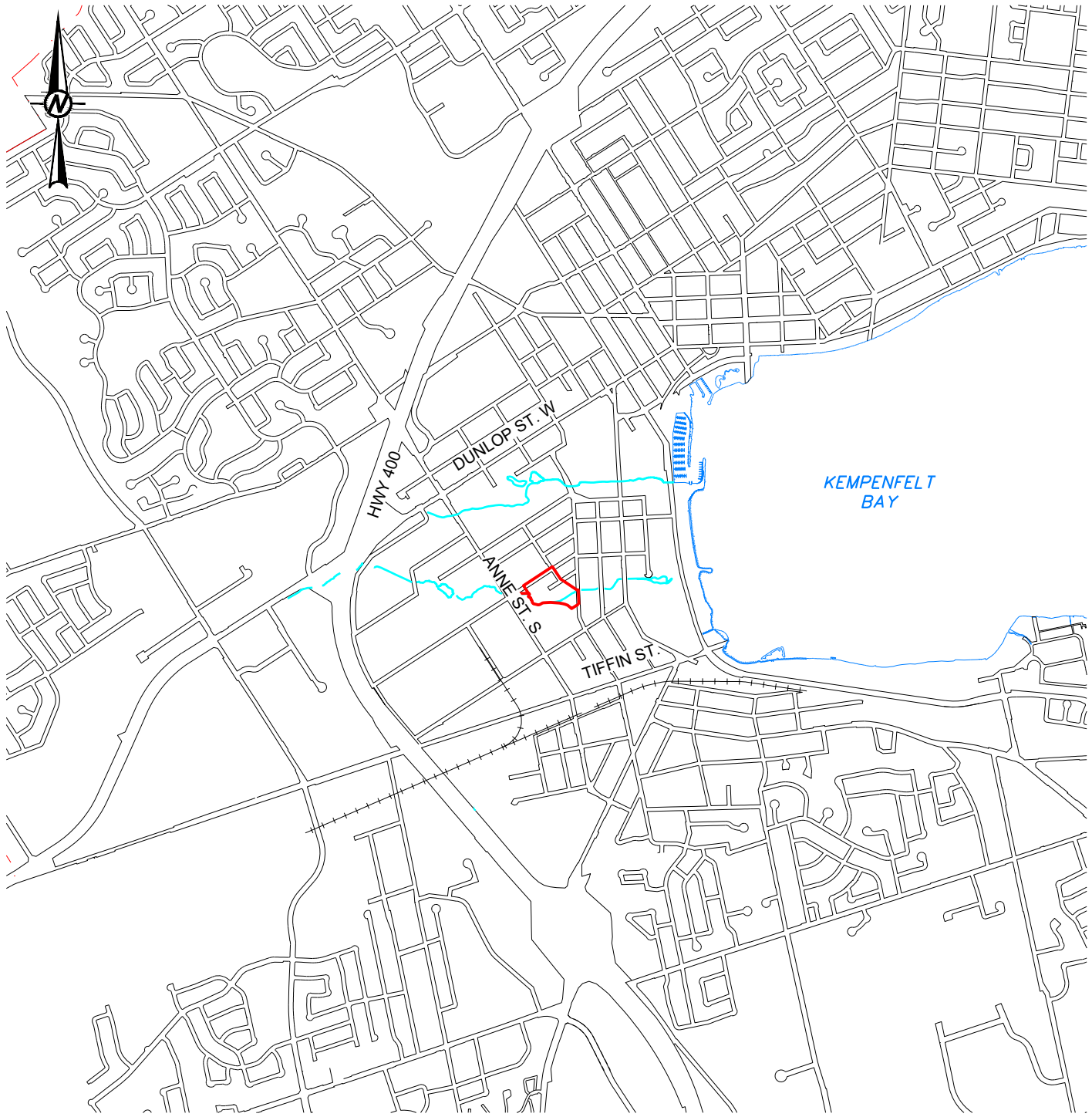
Frank Barone, Ph.D., P.Eng.
Principal, Senior Geo-Environmental Engineer

JEB/FB/cmd

Golder and the G logo are trademarks of Golder Associates Ltd.

FIGURES

Last Edited By: showerman Date: 2019-09-18 Time: 10:24:48 AM | Printed By: Showerman Date: 2019-09-18 Time: 11:20:48 AM
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LEGEND

— SITE LOCATION

NOTE(S)

1. DATUM IS NAD UTM 83 ZONE 17
2. MAPPING BASED ON COUNTY OF SIMCOE MUNICIPAL BASE



CLIENT
CITY OF BARRIE

PROJECT
SITE 06 HISTORIC LANDFILL
PASSIVE LANDFILL GAS BARRIER / VENTING SYSTEM

CONSULTANT

YYYY-MM-DD 2019-09-18

DESIGNED

PREPARED STB

REVIEWED JEB

APPROVED

TITLE
KEY PLAN

PROJECT NO.
18109243

CONTROL
0006

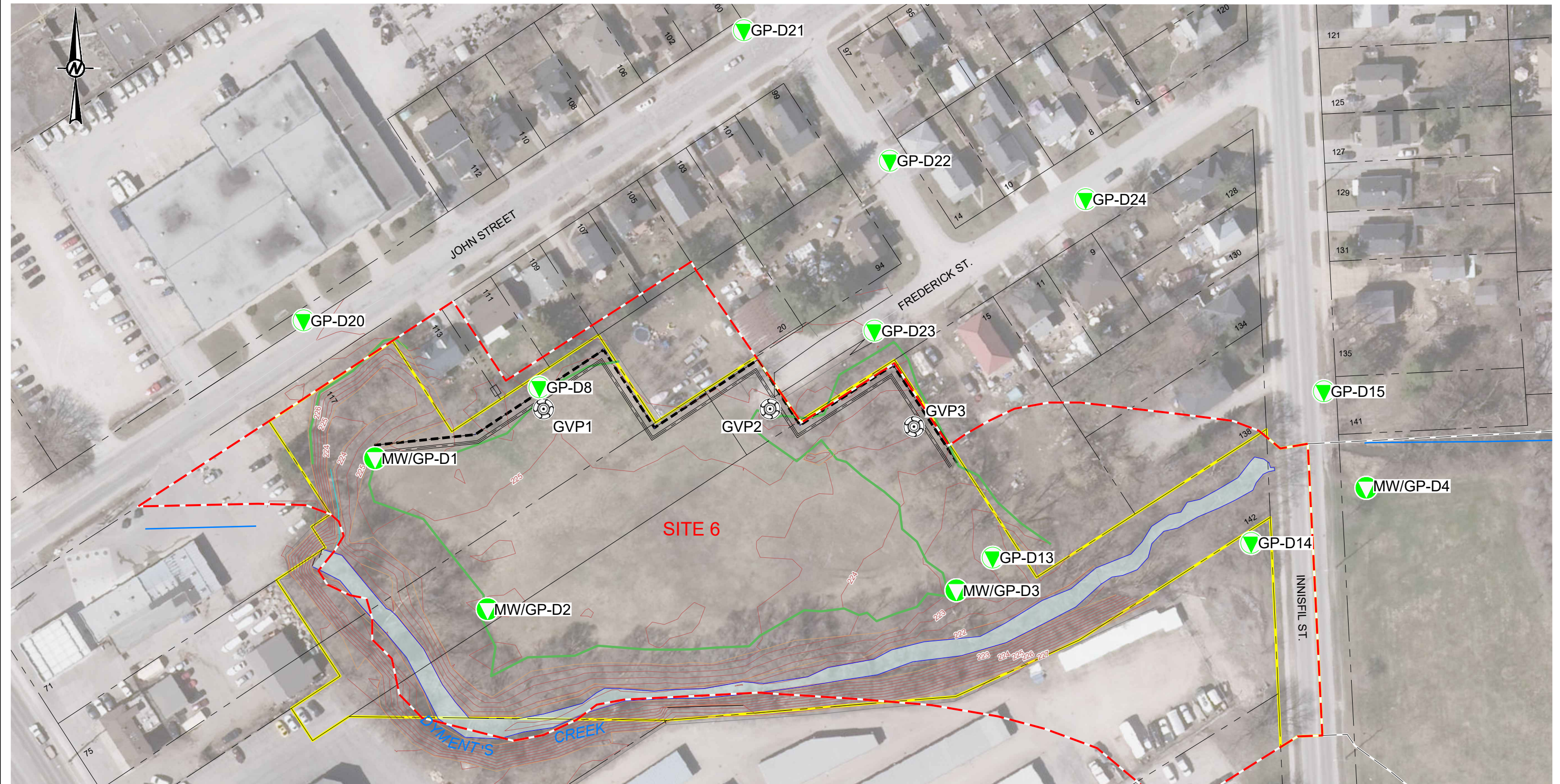
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FIGURE
1

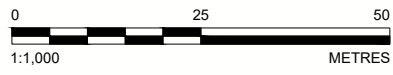


IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSIA 26 mm

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LEGEND	
	ESTIMATED WASTE LIMIT
	CITY OF BARRIE OWNED LANDS
	PROPERTY LINE (CITY OF BARRIE PARCEL FABRIC)
	SURVEYED TREE LINE
	PROPOSED ALIGNMENT OF SHEET PILE WALL
	LAYOUT CONTROL POINT ALONG SHEET PILE BARRIER WALL
	PROPOSED GAS VENT TRENCH
	EXISTING GAS PROBE / MONITORING WELL
	PROPOSED GAS VENTING POLE
	EXISTING GROUND SURFACE CONTOURS (SEE REFERENCE 2)



NOTE(S)

- DATUM IS NAD83 ZONE 17
- ALL MAPPED BOUNDARIES, LIMITS, AND INTERPOLATED FEATURES ARE APPROXIMATE
- FIGURE ISSUED FOR ECA AIR APPLICATION

CLIENT
CITY OF BARRIE

CONSULTANT	DATE
DESIGNED	2019-01-04
PREPARED	STB
REVIEWED	JEB
APPROVED	



REFERENCE(S)

- BASE MAP COURTESY CITY OF BARRIE DIGITAL 1:2000 MUNICIPAL MAPPING
- TOPOGRAPHIC SURVEY OF LANDFILL BY SMC GEOMATICS, DECEMBER 2018
- HISTORICAL LANDFILLS ANNUAL MONITORING REPORT, GOLDRER, 2018. 2017 ANNUAL MONITORING PROGRAM - DYMENT'S CREEK HISTORICAL LANDFILLS, JANUARY, 2018
- ORTHOIMAGE FROM DISCOVER SIMCOE, 2016 IMAGERY ACCESSED JANUARY 2019

PROJECT
SITE 06 HISTORIC LANDFILL
PASSIVE LANDFILL GAS BARRIER / VENTING SYSTEM

TITLE
SYSTEM LAYOUT / MONITORING LOCATIONS

PROJECT NO.	CONTROL	REV.	FIGURE
18109243	0006	A	2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM A3/B3

APPENDIX A
ECA Air

ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 3118-BD5KTE
Issue Date: June 14, 2019

The Corporation of the City of Barrie
70 Collier Street
Post Office Box, No. 400
Barrie, Ontario
L4M 4T5

Site Location: Part of Lots 33, 34, 63 to 67, Part of Lots 32, 68 and 69,
Part of Lots 25, 81 to 88, and Part of Lots 77 to 80,
Reference Plan 493
City of Barrie, County of Simcoe

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

- one (1) passive landfill gas venting system, discharging to the air through three (3) passive vents each equipped with wind turbines, and each having an exit diameter of 0.10 metre and extending approximately 6.0 metres above grade;

all in accordance with the Environmental Compliance Approval Application submitted by The Corporation of the City of Barrie, dated February 11, 2019 and signed by Sandra Brunet, Manager; and the supporting information including the Emission Summary and Dispersion Modelling Report, submitted by Golder Associates Ltd., dated February 13, 2019 and signed by Katherine Armstrong; and e-mails dated June 3 and June 6, 2019 from Katherine Armstrong of Golder Associates Ltd.

For the purpose of this environmental compliance approval, the following definitions apply:

1. "*Annual Report*" means a report containing the results of the *Monitoring Plan* implementation for the preceding year;
2. "*Approval*" means this Environmental Compliance Approval, including the application and supporting documentation listed above;

3. "*Company*" means The Corporation of the City of Barrie, that is responsible for the construction or operation of the *Facility* and includes any successors and assigns;
4. "*Director*" means a person appointed for the purpose of section 20.3 of the *EPA* by the *Minister* pursuant to section 5 of the *EPA*;
5. "*District Manager*" means the District Manager of the appropriate local district office of the *Ministry* where the *Facility* is geographically located;
6. "*EPA*" means the Environmental Protection Act, R.S.O. 1990, c.E.19, as amended;
7. "*Equipment*" means the equipment and processes described in the *Company*'s application, this *Approval* and in the supporting documentation submitted with the application, to the extent approved by this *Approval*;
8. "*Facility*" means the entire operation located on the property where the *Equipment* is located;
9. "*Manual*" means a document or a set of documents that provide written instructions to staff of the *Company*;
10. "*Monitoring Plan*" means a written plan developed to monitor the landfill gas collected and discharged from the *Equipment* at the site;
11. "*Ministry*" means the ministry of the government of Ontario responsible for the *EPA* and includes all officials, employees or other persons acting on its behalf;
12. "*Publication NPC-300*" means the *Ministry* Publication NPC-300, "Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning, Publication NPC-300", August 2013, as amended.

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. OPERATION AND MAINTENANCE

1. The *Company* shall ensure that the *Equipment* is properly operated and maintained at all times. The *Company* shall:
 - a. prepare, not later than three (3) months after the date of this *Approval*, and update, as necessary, a *Manual* outlining the operating procedures and a maintenance program for the *Equipment*, including:

- i. routine operating and maintenance procedures in accordance with good engineering practices and as recommended by the *Equipment* suppliers;
 - ii. emergency procedures;
 - iii. procedures for any record keeping activities relating to operation and maintenance of the *Equipment*; and
 - iv. all appropriate measures to minimize noise and odorous emissions from all potential sources;
- b. implement the recommendations of the *Manual*.

2. MONITORING AND REPORTING

1. The *Company* shall submit to the *District Manager*, not later than one (1) month prior to the commencement of operations at the site, a draft *Monitoring Plan* for the gas collected and discharged from the *Equipment*. The *Company* shall finalize the *Monitoring Plan* in consultation with the *District Manager*. The finalized *Monitoring Plan* shall be implemented upon commencement of operations at the site and include, as a minimum, the following:
 - a. the frequency of monitoring agreed upon by the *District Manager*;
 - b. a methodology to measure the concentrations of contaminants in the gas discharging to the air; and
 - c. procedures to measure and record the wind speed and wind direction at the location where the *Equipment* is installed, at times of monitoring.
2. The *Company* shall submit, not later than **March 31, 2021** and each subsequent year thereafter, to the *District Manager* an *Annual Report* on the results of the *Monitoring Plan* implementation for the preceding year. Each *Annual Report* shall include, as a minimum, the following:
 - a. the frequency of monitoring adopted;
 - b. the concentrations of contaminants in the gas discharging to the air;
 - c. the wind speeds and wind directions recorded at the times of monitoring; and
 - d. the results of dispersion calculations, using one of the approved dispersion models listed in section 6 of O. Reg. 419/05 applicable to the *Facility*, indicating the maximum point of impingement concentrations of contaminants in the gas discharging to the air using the results of monitoring.
3. The *Company*, upon submission of the third *Annual Report*, with approval from the *District Manager*, may amend the monitoring and reporting requirements of this *Approval*.

3. RECORD RETENTION

1. The *Company* shall retain, for a minimum of two (2) years from the date of their creation, all records and information related to or resulting from the recording activities required by this *Approval*, and make these records available for review by staff of the *Ministry* upon request. The *Company* shall retain:
 - a. all records on the maintenance, repair and inspection of the *Equipment*; and
 - b. all records of any environmental complaints, including:
 - i. a description, time and date of each incident to which the complaint relates;
 - ii. wind direction at the time of the incident to which the complaint relates; and
 - iii. a description of the measures taken to address the cause of the incident to which the complaint relates and to prevent a similar occurrence in the future.

4. NOTIFICATION OF COMPLAINTS

1. The *Company* shall notify the *District Manager*, in writing, of each environmental complaint within two (2) business days of the complaint. The notification shall include:
 - a. a description of the nature of the complaint; and
 - b. the time and date of the incident to which the complaint relates.

5. NOISE

1. The *Company* shall, at all times, ensure that the noise emissions from the *Facility* comply with the limits set out in *Ministry Publication NPC-300*.

The reasons for the imposition of these terms and conditions are as follows:

1. Condition No. 1 is included to emphasize that the *Equipment* must be maintained and operated according to a procedure that will result in compliance with the *EPA*, the Regulations and this *Approval*.
2. Condition No. 2 is included to require the *Company* to gather accurate information so that compliance with the *EPA*, the regulations and this *Approval* can be verified.
3. Condition No. 3 is included to require the *Company* to keep records and to provide information to staff of the *Ministry* so that compliance with the *EPA*, the Regulations and this *Approval* can be verified.
4. Condition No. 4 is included to require the *Company* to notify staff of the *Ministry* so as to assist the *Ministry* with the review of the site's compliance.

5. Condition No. 5 is included to provide the minimum performance requirements considered necessary to prevent an adverse effect resulting from the operation of the *Facility*.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

- a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
- b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

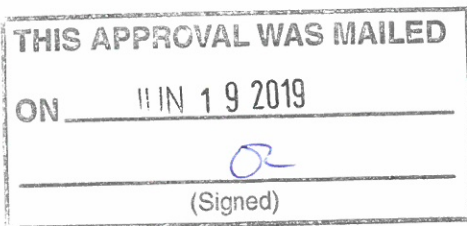
AND

The Director appointed for the purposes of
Part II.1 of the Environmental Protection Act
Ministry of the Environment,
Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 14th day of June, 2019



Jeffrey McKerrall, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

BR/

c: District Manager, MECP Barrie

Katherine Armstrong, Golder Associates Ltd.



golder.com

**Ministry of the Environment,
Conservation and Parks**
*Drinking Water and Environmental
Compliance Division*

**Ministère de l'Environnement de la
Protection de la nature et des Parcs**
*Division de la conformité en matière d'eau
potable et d'environnement*



Central Region

Région du Centre

Barrie District Office
1201-54 Cedar Pointe Drive
Barrie ON L4N 5R7
Tel: (705) 739-6441
Toll Free: 1-800-890-8511
Fax: (705) 739-6440

Bureau du district de Barrie
1201-54 chemin Cedar Pointe
Barrie ON L4N 5R7
Téléphone: (705) 739-6441
Sans frais: 1-800-890-8511
Télec: (705) 739-6440

June 7, 2023

The Corporation of the City of Barrie
70 Collier Street
Post Office Box No. 400
Barrie, Ontario
L4M 4T5

Attention: Stephanie Huysen

Re: **Landfill Gas Barrie and Passive Venting System
Proposed Amendments to Landfill Gas Monitoring Plan – ECA No. 3118-BD5KTE
Dyment's Creek Historic Waste Site No. 6, Barrie, Ontario**

This letter is in response to the City of Barrie's ("City") April 28, 2023 request to the ministry for modifications to the monitoring and reporting requirements for the landfill gas cut-off wall and passive venting system located at historic waste Site No. 6 along Dyment's Creek near John and Frederick Streets, all as approved under Environmental Compliance Approval No. 3118-BD5KTE ("ECA"). Specifically, this request is to reduce the monitoring and reporting requirements as originally approved under Item 2.0 of the ECA.

The original landfill gas barrier and passive venting monitoring and reporting program was approved by the District Manager on February 24, 2020 in accordance with Condition 2.1 of the ECA.

Condition 2.3 of the ECA allows for the City upon the submission of the third Annual Report, with approval of the District Manager, to amend the monitoring and reporting requirements under the ECA. With the submission of the 2022 Annual Monitoring Report in March 2023 being the third Annual Report, the City requested amendments to the monitoring and reporting requirements as originally approved under Condition 2.1 of the ECA.

In support of this request the City provided the following documents:

- the letter dated April 28, 2023 from Stephanie Huysen of the City of Barrie to Chris Hyde of the ministry entitled "Notification of Operation Under ECA 3118-BD5KTE & Sampling Modification Request, West End – Frederick St, Part of Lots 33, 34, 63 to 67, Part of Lots 32, 68 and 69, Part of Lots 25, 81 to 88, and Part of Lots 77 to 80, Reference Plan 493, City of Barrie, County of Simcoe";

- the report entitled “Dyment’s Creek Historic Waste Sites, 2022 Annual Monitoring Report” by WSP dated March 30, 2023 which provides a summary of the monitoring program for the Dyment’s Creek historic waste sites, including the monitoring required under the above noted ECA; and
- the email dated May 12, 2023 from Stephanie Huysen of the City of Barrie to John Kaasalainen of the ministry confirming that soil gas probe GP-D23 will be included as part of the on-going landfill gas monitoring program.

As outlined in the supporting information, over the last three years monitoring of the landfill gas passive venting system has shown that the measured levels of all contaminants have been consistently low and that the modelled concentrations of all the measured contaminants have also been consistently less than 1% of their respective O.Reg. 419/05 air quality limits at the point of impingement (“POI”) locations. As a result, this is indicating that the system has and is operating in compliance with the requirements under O.Reg. 419/05 and the ECA.

Based on the ministry’s review of the aforementioned request and supporting information, and pursuant to Condition 2.3 of the ECA, I hereby amend the monitoring and reporting requirements under Condition 2.0 of the ECA to remove the requirements for on-going modelling of the air quality under Condition 2.2 of the ECA and to reduce the landfill gas monitoring and reporting requirements to the following:

Probe Location	Frequency	Parameter
Probes located within Waste: GP-D1; GP-D2; GP-D3; GP-D8; GP-D13; GP-D14	Semi- Annual Sampling (one frozen ground)	Methane Carbon Dioxide Oxygen Ground Water level
Probes located outside of Waste: GP-D20; GP-D21; GP-D23	Semi- Annual Sampling (one frozen ground)	Methane Carbon Dioxide Oxygen Ground Water level
Passive Gas Venting System: GVP1; GVP2; GVP3	Semi- Annual Sampling (one frozen ground)	Methane Carbon Dioxide Oxygen

In addition, the results of the on-going landfill gas monitoring program as outlined above shall be included in an annual report summarizing the results for the preceding year and be submitted to the District Manager by March 31 of each following year. This information can be included as part of the overall annual monitoring and reporting program being completed for the Dyment’s Creek Historic Waste Sites.

If you have any questions or require additional information/clarification please contact John Kaasalainen, P.Eng. of this office at (705) 309-4304 or by email at john.kaasalainen@ontario.ca.

Sincerely,

A handwritten signature in blue ink, appearing to read "Chris Hyde", written in a cursive style.

Chris Hyde
District Manager
Barrie District Office

wsp

wsp.com