2024 Annual Monitoring Report
Lake St. Peter Waste Disposal Site
Environmental Compliance Approval
No. A361116

Prepared for:

The Corporation of the Municipality of Hastings Highlands
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(Provided on USB Drive for Hard Copy)

1 Introduction

BluMetric Environmental Inc. (BluMetric®) was retained by the Corporation of the Municipality of Hastings Highlands (MHHs or Municipality) to conduct the 2024 environmental monitoring and sampling program and prepare the 2024 Annual Report. This report provides a summary and analysis of environmental monitoring activities at the Lake St. Peter Waste Disposal Site (WDS), in Maynooth, Ontario. The WDS, as shown in Figure 01 is herein after referred to as "the Site".

This report is prepared in accordance with Condition 6 of the Environmental Compliance Approval (ECA) A361116 for the Site, dated October 25, 2021, a copy of which is included in **Appendix A**. The report covers all work and activities carried out for the period from January 1, 2024, to December 31, 2024.

The intent of this report is to be consistent with the general requirements of the Ontario Ministry of Environment, Conservation and Parks (MECP) document titled; *Monitoring and Reporting for Waste Disposal Sites (WDS), Groundwater and Surface Water: Technical Guidance Document (MOE November 2010)*, referred to as the "WDS Technical Guidance". The Monitoring and Screening Checklist from the WDS Technical Guidance has been completed and is included as **Appendix B** of this report. The screening checklist was completed with the Operational Status set as "open" as the Site operated throughout 2024.

1.1 Location

The WDS is located on the west side of Route 127, approximately 1.5 km north of the intersection of Route 127 and Fosters Road and the community of Lake St. Peter (Figure 01). The civic address is 2825 Highway 127, Lake St. Peter, Ontario and is located approximately 13 km north of Maynooth, Ontario. The total site area mentioned on the ECA is 17 hectares (ha) located on Part of Lots 10 and 11, Concessions 12 and 13 (formerly McClure Township), now part of the Municipality of Hastings Highlands. The facility layout, road network, and Site features are shown on Figure 02.

The Site is approved as a 2.2-hectare (ha) waste disposal site and transfer site within a total site area of 17 ha, however the portion of the Site property owned by the Municipality only covers 1.6 ha. The Crown owns the land surrounding the 1.6 ha area. There is currently no buffer or additional lands designated as a Contaminant Attenuation Zone (CAZ) within the total 17 ha WDS area. The Municipality had submitted a request to the Ministry of Natural Resources (MNR) to add additional buffer and CAZ lands to the Site. In February 2025, MNR issued a Grant of Easement for the CAZ to the Municipality for signature which is provided in **Appendix A**. MNR is currently working on registering the easement with the Land Registry Office and will provide the Municipality with a copy of the registered easement once the process is complete. This is likely to be completed in 2025.

1.2 Ownership and Key Personnel

The facility is operated by the MHHs, with the municipal office located in Maynooth, Ontario. In May of 2018, the MNR, on behalf of the Crown, advised that their records show the Municipality holds a land patent for 1.6 ha (PINS 400010001 and 400010002), dated November 6, 1986. In addition, the Municipality owns a right of way which divides the 1.6 ha into two separate parcels. The 1.6 ha of landfilling area is depicted on Figure 02. As mentioned above, the MNR is in the process of transferring ownership and easement rights to the Municipality for the required buffer and CAZ lands.

The facility's operational representative is responsible for all activities on-site. The Site contact is David Stewart and the Competent Environmental Practitioner (CEP) for both groundwater and surface water is Jaclyn Kalesnikoff, B.Sc., P.Geo., of BluMetric. Ms. Kalesnikoff is a Professional Geoscientist as designated by Professional Geoscientist Ontario (PGO).

Contact information is outlined in Table 1.

Table 1: Contact Information

	Name	Address	Phone Number	Email
Site Owner / Contact	The Corporation of the Municipality of Hastings Highlands	P.O. Box 130 33011 Highway No. 62 Maynooth, ON K0L 2S0	(613) 338-2811 ext. 289	dstewart@hastingshighlands.ca

	Name	Address	Phone Number	Email
	CAO – David Stewart			
CEP	Jaclyn Kalesnikoff, B.Sc., P.Geo., BluMetric Environmental	1682 Woodward Dr, Ottawa, ON K2C 3R8	(877) 487-8436 ext. 339	jkalesnikoff@blumetric.ca

1.3 Description and Development of the WDS

The Site is approved for a 2.2 ha landfilling and transfer area within a total area of 17 ha, however only 1.6 ha is currently owned by the Municipality. In addition to domestic waste, the Lake St. Peter WDS includes recycling bins for metal, plastic, paper, and cardboard products, as well as segregated areas for scrap metal, tires, and brush. The Ontario Electronic Stewardship (OES) has approved the Lake St. Peter WDS for the collection of Waste Electrical and Electronic Equipment (WEEE) wastes. Regulations came into effect in 2020 with respect to this material, now referred to as Electrical and Electronic Equipment (EEE). This regulation with respect to EEE falls under the Resource Recovery and Circular Economy Act, 2016, and the regulation was filed on September 21, 2020. Historically, domestic wastes were disposed of in trenches; however, the Site is currently using an area-fill method of operation.

A Development and Operations (D&O) Plan for the Site was prepared and finalized in September 2020. The D&O Plan was approved under the amended ECA (October 25, 2021).

1.4 Monitoring and Reporting Program and Objectives and Requirements

The objectives of the monitoring and reporting program are to identify and mitigate impacts to the environment caused by the municipal solid WDS. The monitoring and reporting program has been developed with these objectives in mind. In addition, the monitoring and reporting program are designed to adhere to the MECP's Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water-Technical Guidance Document (November 2010) and the ECA for the Site.

2 Physical Setting

2.1 Geology and Hydrogeology

2.1.1 Surficial Geology

The surficial geology of the area is glaciofluvial outwash deposits such as gravel and sand (MNDM, 1991). The immediate area of the Site is characterized by generally sandy overburden with a thickness ranging from 1 to 40 metres (m). Monitoring well borehole logs for the nine monitoring wells on-site confirm that the overburden is a sand and gravel unit to depths of over 9 m below ground surface (m bgs). Three new wells were drilled at the Site in 2023 to depths between 7.89 m bgs and 9.14 m bgs through sand and gravel units. The monitoring well logs are provided in **Appendix C.**

Well records for five private water wells located within 1.5 km of the Site were obtained from the MECP website. The well records indicate the overburden ranges from approximately 10 m bgs to 40 m bgs and generally consists of sand and gravel, with numerous boulders at some locations. Well records indicate wells are screened in granite bedrock at depths from 10 m bgs to 122 m bgs.

2.1.2 Overburden Hydrogeology

In October 2019, slug tests were conducted on monitoring wells LSP4-19 and LSP5-19, and the results were analysed using the Hvorslev method. The hydraulic conductivity for the sand unit at monitoring well LSP4-19 was calculated to be 5.57 x 10^{-4} and 5.09 x 10^{-5} m/s. The hydraulic conductivity in the sand and gravel unit at monitoring well LSP5-19 was calculated to be 5.26 x 10^{-4} m/s.

2.1.3 Bedrock Geology

Bedrock in the area is classified as undifferentiated igneous and metamorphic rock, such as gneisses or granite, exposed at surface or covered by a discontinuous thin layer of drift (MNDM, 1991). Bedrock outcrops are visible in the vicinity of the Site.

2.2 Surface Water Features

Papineau Creek and a small lake along its route are located approximately 500 m northeast of the WDS, and Lake St. Peter is located approximately 900 m southeast of the WDS. A review of topographical mapping indicates that all surface water eventually flows east towards Papineau Creek and Lake St. Peter (the largest surface water feature in the area). The surface topography on Site generally slopes towards the east, with the northern portion of the Site sloping North and the southern portion of the Site sloping south. A small creek is located immediately north of the Site and flows east towards Papineau Creek. The existing Site topography and surface water flow directions are provided on Figure 03.

3 Monitoring Program

3.1 Site Inspections and Operations Monitoring

Site visits to the Lake St. Peter WDS were made in the spring on April 30, 2024, and in the fall on October 28, 2024. During the spring Site visit, it was noted that the active waste cell had been covered, the bulk waste pile was nearing capacity, and wind-blown plastic waste was observed around the Site including the entrance road and behind the attendants building. The recently excavated fill beyond approved limits (FBAL) area should be covered and properly sloped. The creek that flows eastward adjacent to the north side of the Site has diverted and now flows through the recently excavated FBAL area. Observations from the fall Site visit indicated that the active waste area was

moderately sized but needed to be packed and covered. Both the brush and bulk waste piles were large but neat. Select photographs taken during the Site visits are provided at the end of the report, following the tables and figures. Field inspection forms for the spring and fall 2024 inspections are provided in **Appendix D (D1)**.

3.2 Monitoring Locations, Frequency and Monitoring Parameters

3.2.1 Groundwater Monitoring

There are currently nine groundwater monitoring wells located at the Site. Three of the monitoring wells (LSP1-03, LSP2-03, LSP3-03) have been part of the annual monitoring program since 2003. Two wells, LSP4-19 and LSP5-19 were installed on July 16, 2019, and three new wells, LSP6-23, LSP7-23 and LSP8-23, were installed on September 21, 2023. LSP6-23 and LSP7-23 assist in determining the required buffer and CAZ for the Site, and with the purchasing or leasing requirements for the land areas from the Crown (MNR). A ninth groundwater monitoring location, in the form of a drive-point well (LSP-DP-1-21), was installed in 2021 at the request of the MECP Technical Surface Water Reviewer. The purpose of this drive-point well is to monitor potential impacts to the creek located northeast of the WDS. Schedule B of ECA No. classified LSP-DP-1-21 as a surface water monitoring location. During the 2021 and 2022 monitoring programs, LSP-DP-1-21 was treated as a groundwater monitoring location rather than a surface water location. To be consistent with historical reporting, LSP-DP-1-21 has been included as a groundwater monitoring location below and as a surface water monitoring location in Section 3.2.2.

Each well is screened in a water-bearing medium-grained brown sand and gravel unit, except for LSP5-19 which is predominantly screened in coarser gravel. No overburden unit was observed during the drive-point installation; however, it is assumed to be a sand and gravel unit as there was some resistance and location adjustments were required. The location and descriptions of the groundwater monitoring wells, along with the coordinates, and screened interval are provided in Table 2, while the monitoring well logs are provided in **Appendix C.**

Table 2: Groundwater Monitoring Well Details

Sample Location	Northing	Easting	Screened Interval (mbgs)	Location Description

LSP1-03	5022641	731481	5.18 to 8.23	Within the approved waste footprint near the east boundary, south of the approximate buried waste outline, site leachate well
LSP2-03	5022752	731383	4.57 to 7.62	Within the approved waste footprint near the north boundary, north of the approximate buried waste outline, site background well
LSP3-03	5022671	731462	4.57 to 7.62	Within the approved waste footprint near the east boundary, 28 m north of LSP1-03, site leachate well
LSP4-19	5022665	731554	5.94 to 9.00	67 m east of the approved waste footprint, 30 m north of the access road
LSP5-19	5022610	731498	4.88 to 7.92	Within the approved waste footprint near the southern point, 10 m south of access road
LSP-DP-1-21	5022790	731475	1.04 to 1.84	5 m north of the northeast corner of approved waste footprint
LSP6-23	5022808	731621	4.25 to 7.31	165 m east of the approved waste footprint along the eastern CAZ boundary
LSP7-23	5022709	731657	5.30 to 8.38	175 m east of the approved waste footprint, 105 m south of LSP6-23 along the eastern CAZ boundary
LSP8-23	5022717	731451	6.15 to 9.14	Within the approved waste footprint near the east boundary, 45 m north of LSP3-03, site leachate well

Note: UTM Zone 17, NAD 83

Groundwater samples were collected during the spring and fall 2024 sampling events and analysed to characterize the groundwater quality at the Site. Historically, the semi-annual groundwater sampling was conducted voluntarily; however, it is now stipulated in Schedule B of the Amended ECA (October 2021). Table 3 lists the groundwater quality monitoring parameters that were analysed.

Table 3: Groundwater Quality Monitoring Parameters

Category	Parameters
Organic Parameters	Dissolved Organic Carbon (DOC), Volatile Organic Compounds (VOCs)
Inorganic Parameters	Nitrate, Ammonia, Chloride, Major Ions (Sodium, Calcium, Magnesium, Sulphate, Alkalinity)
Soluble Metals (dissolved)	Iron, Boron, Barium, Manganese

Category	Parameters
Physical/Chemical Parameters	pH, Conductivity, Total Dissolved Solids (TDS), Total Suspended Solids (TSS)

In 2021, the MECP requested additional analysis of VOCs outside of Schedule B of the Amended ECA. If no VOCs were evident, then sampling of VOCs every five years would be acceptable. During the 2024 spring sampling event, groundwater samples were analysed for VOCs voluntarily.

Field measurements of groundwater pH, temperature, conductivity, and oxidation reduction potential (ORP) were collected at the time of sampling.

During the spring and fall site visits, the groundwater monitoring wells were inspected and any repairs such as new locks, labels or well caps, were made as necessary. Watertight casings and seals remain in place at all wells to ensure that surface water or foreign materials cannot enter groundwater monitoring wells. All groundwater monitoring wells are fitted with a vermin-proof cap to meet the requirements of Ontario Regulation 903 and are locked to provide protection against vandalism.

3.2.1.1 Groundwater Elevations

During each monitoring event, groundwater elevations were collected from the monitoring wells. Groundwater level measurements were collected using an electronic water level meter prior to purging/sampling activity. Groundwater elevation data are summarized in Table 4.

Table 4: Groundwater Elevation Data

Groundwater Monitoring Wells	Top of PVC Elevation (masl)	Water Level 30-Apr-24 (mbtpvc)[1]	Water Level 28-Oct-24 (mbtpvc)	Groundwater Elevation 30-Apr-24 (masl)	Groundwater Elevation 28-Oct-24 (masl)
LSP1-03	412.63	5.33	6.12	407.3	406.51
LSP2-03	412.73	4.23	4.875	408.5	407.855
LSP3-03	412.53	5.175	5.96	407.355	406.57
LSP4-19	412.55	5.98	6.47	406.57	406.08
LSP5-19	412.76	5.485	6.285	407.275	406.475
LSP6-23	406.53	0.90	1.075	405.63	405.455
LSP7-23	408.93	3.01	3.23	405.92	405.7
LSP8-23	413.68	6.20	6.88	407.48	406.8
LSP-DP-1-21	407.38	0.57	0.93	406.81	406.45

Note:

[1] mbtpvc = metres below top of PVC

3.2.1.2 Groundwater Gradients and Flow Direction

During the spring, groundwater flow at the Site generally flows northeast toward Papineau Creek/Lake St. Peter. Based on the April 30, 2024, groundwater elevation data, the hydraulic gradient for the groundwater flow ranges from approximately 0.015 m/m in the northern section of the site to approximately 0.013 m/m in the southern section.

Similar to the spring, the groundwater in the fall generally flows northeast. Data from the October 28, 2024, event indicates that the groundwater flow has a hydraulic gradient that ranges from approximately 0.016 m/m in the northern part of the Site, to approximately 0.0057 m/m in the southern part of the Site, and to approximately 0.0041 m/m in the eastern section of the Site. The groundwater elevations and calculated equipotential lines for the spring and fall are provided on Figures 04 and 05, respectively.

3.2.2 Surface Water Monitoring

Surface water sampling was conducted during the spring and fall sampling events on April 30, 2024 and October 28, 2024, respectively. The surface water sampling locations are shown on Figure 02 and the coordinates are included in Table 5. Surface water samples were analysed for the parameters listed in Table 6. Photographs are provided at the end of the text following the Tables and Figures.

Table 5: Surface-Water Monitoring Locations

Location	Northing	Easting	Location Description
LSP-SW1	5022757	731357	Upstream, background location located along the northern property boundary
LSP-SW2	5022809	731474	Downstream, located approximately 130m east-northeast of LSP-SW1
LSP-DP-1-21	5022790	731475	5 m north of the northeast corner of approved waste footprint

Note: UTM Zone 17, NAD 83

Table 6: Lake St. Peter Surface Water Quality Monitoring Parameters

Category	Parameters
Biological Parameters	BOD_5, COD

Category	Parameters
Organic Parameters	Phenols
Inorganic Parameters	Alkalinity, Chloride, Nitrite, Nitrate, Sulphate, Phosphorous (Total), Total Kjeldahl Nitrogen (TKN), Ammonia (N)-Total, Total metals (unless otherwise noted) including: Calcium, Aluminum (Dissolved), Arsenic, Boron, Cadmium, Chromium, Cobalt, Copper, Iron, Magnesium, Nickel, Potassium, Selenium, Silver, Sodium, Zinc, Lead, Barium, Beryllium, Molybdenum, Manganese, Mercury (Dissolved), Silicon, Strontium, Thallium, Titanium, Vanadium
Physical/Chemical Parameters	pH, Conductivity, TDS, TSS, Colour, Hardness ($CaCO_3$), Turbidity (NTU)

There were no changes to the surface water parameter list included in the Amended ECA. Schedule B of ECA No. A361116 classified LSP-DP-1-21 as a surface water monitoring location; however, during the 2021 and 2022 monitoring programs, LSP-DP-1-21 was not analysed for the surface water parameters listed in Table 6. Starting in 2023, LSP-DP-1-21 was analysed for the surface water parameters listed in Table 6 in accordance with the ECA, in addition to the groundwater parameters listed in Table 3 to allow for a historical comparison to previous results.

Surface water velocity measurements were collected using a Global Water Flow Probe. Table 7 summarizes the collected measurements and presents the calculated discharge for each location.

Table 7: Surface Water Sampling Observations

Date	Location	Discharge [1] (m^3/s)	Velocity & Channel Measurements [2]
30-Apr-24	LSP-SW1	0.1	Depth 0.10 m; width 4.0 m; velocity 0.25 m/s
	LSP-SW2	0.31	Depth 0.25 m; width 2.25 m; velocity 0.55 m/s
28-Oct-24	LSP-SW1	-	Dry
	LSP-SW2	-	Dry

Notes:
[1] Calculated assuming a simple channel with a rectangular cross section.
[2] All velocity and channel measurements collected at the point of sampling.

3.2.3 Landfill Gas Monitoring

The primary gas present at landfill sites is methane. Methane cannot cause an explosion unless it accumulates to a concentration above its lower explosive limit (LEL) in an enclosed area. The LEL for methane is 5% in air. The methane concentration limits, as per Regulation 232/98, are:

- Less than 2.5% methane gas (25,000 ppm, LEL=50%) in the subsurface at the property;
- Less than 1.0% methane gas (10,000 ppm, LEL=20%) in an on-site building, or its foundation; and
- Less than 0.05 % methane gas (500 ppm, LEL=1%) in a building, or its foundation, which is located off-site.

Routine landfill gas monitoring within any buildings or structures is required at the Site.

3.3 Monitoring Procedures and Methods

3.3.1 Groundwater Monitoring

Groundwater monitoring wells, including the drive-point well, were purged a minimum of three well volumes or until purged dry. In the case where a well was purged dry, samples were collected after sufficient water had returned for sampling purposes. Field temperature, pH, and conductivity measurements were recorded at the time of sampling using a YSI multi-meter. The instrument was calibrated as per the manufacturer's instructions prior to the Site visit. Samples were field filtered for dissolved organic carbon (DOC) and dissolved metals.

Samples were collected in laboratory-prepared and supplied bottles and submitted for analysis to Bureau Veritas (BV), in Mississauga, Ontario. BV is accredited by the Standards Council of Canada (SCC). Groundwater samples were stored at approximately 4° Celsius during shipment to BV. Hold times for samples conformed to CCME guidelines where applicable (CCME, 1993). Chain of custody forms accompanied the samples from shipment to the laboratory until the chemical results were provided to BluMetric. Laboratory reports and COC forms are compiled in **Appendix D (D-2)**.

3.3.2 Surface Water Monitoring

Field parameters are recorded in the field at the time of the sampling. During both sampling events, temperature, pH, conductivity, and dissolved oxygen measurements were recorded using a YSI multi-meter which was calibrated as per the manufacturer's instructions prior to the Site visits.

Surface water samples were collected in laboratory-prepared and supplied bottles and submitted for analysis to Bureau Veritas (BV) in Mississauga, Ontario for analysis. Surface water samples were stored at approximately 4° Celsius during shipment to BV. Hold times for samples conformed to CCME Standards where applicable (CCME, 1993). Chain of custody forms accompanied the samples from shipment to the laboratory until the chemical results were provided to BluMetric. Laboratory reports and chain of custody forms are compiled in **Appendix D (D-3)**.

3.3.3 Landfill Gas Monitoring

There are no sampling valves, ports, or vapour monitors on-site. Gas monitoring using a calibrated RKI Eagle gas monitor was collected from the on-site attendant's building and groundwater monitoring wells during the 2024 sampling events. Gas monitoring measurements were taken from the building by inserting the intake of the gas monitor through a small opening while the structure remained closed. Gas monitoring measurements from the groundwater monitoring wells were collected, prior to collecting groundwater levels or samples, by inserting the intake of the gas monitor in the monitoring well and creating a seal around the well opening and the gas intake.

3.3.4 Field QA/QC Program

The Quality Assurance/Quality Control (QA/QC) program for the Site included the collection of field duplicate samples to demonstrate that field sampling techniques utilized by BluMetric personnel are capable of yielding reproducible results. Field duplicates were collected concurrently with the original sample. Field duplicates were collected at a minimum 10% frequency during the sampling program at the WDS.

Precision is a measure of the reproducibility of analytical results and can be expressed quantitatively by the relative percent difference (RPD) between the original sample(s) and their corresponding field blind duplicate sample(s). The RPD is defined by the following equation:

$$RPD = 2 \times \frac{|(S - D)|}{(S + D)} \times 100$$

Where: S = concentration in the original sample
D = Concentration in the duplicate

An RPD is calculated where the average of the measured parameter concentrations of the original (S) and duplicate (D) samples are greater than 5X the laboratory readable detection limits (RDL), which represents the RPD qualification criteria. A lower level of precision is expected where the above criteria are not met. A high level of reproducibility with respect to sample results collected at the Site is indicated by an RPD value below 10% for electrical conductivity and 20% for metals and inorganics.

These criteria are used as a general guideline and correspond to those recommended within the O. Reg. 153/04 Analytical Protocol (MOE, 2011) and by the Ontario QA/QC Interpretation Guide – Environmental Services (Maxxam, 2015). An RPD below the recommended criteria is considered acceptable, indicating that the sampling methodology is capable of producing repeatable results.

One blind field duplicate per media was sampled and submitted for analyses per sampling event. The field duplicate bottles are filled simultaneously to the sample location selected for duplication. The laboratory prepared bottles (identified and duplicate) for each group of chemical parameters (e.g. metals, nutrients etc.) is first filled for the identified location and then the duplicate for that same group of chemical parameters is immediately filled. This continues until the two sample bottles for each group of parameters are filled.

4 Monitoring Results

4.1 Groundwater Quality

Groundwater quality has been compared to the Ontario Drinking Water Quality Standards (ODWQS), the calculated Reasonable Use Values (RUVs, described below), and the Provincial Water Quality Objectives (PWQO).

Field Measurements

The summary of the field measurements of groundwater pH, temperature, and conductivity are presented in Table 8.

Table 8: Groundwater Quality Field Measurements

Groundwater Monitor	pH		Temperature (°C)		Conductivity (µS/cm)	
	30-Apr-24	28-Oct-24	30-Apr-24	28-Oct-24	30-Apr-24	28-Oct-24
LSP1-03	5.87	6.40	7.0	8.4	1034	1081
LSP2-03 (background)	6.45	6.23	6.8	7.1	47	41.6
LSP3-03	6.00	6.51	7.2	8.4	359	620
LSP4-19	5.81	6.05	6.5	7.3	347	687
LSP5-19	5.55	6.40	5.7	7.2	36	34.4
LSP6-23	6.32	7.10	6.2	7.3	107	95.1
LSP7-23	5.29	5.62	6.0	7.4	86	77.1
LSP8-23	6.34	6.37	7.7	8.7	1085	841
LSP-DP-1-21	6.25	6.14	4.7	8.9	442	574

Ontario Drinking Water Quality Standards (ODWQS)

A summary of the 2024 groundwater parameters exceeding the ODWQS criteria is included in Table 9. The full laboratory results are presented in Table 16 and Table 17 at the end of the report.

Table 9: Groundwater Quality Parameters Exceeding ODWQS

Location	Parameters	2024 Sampling Event(s)
LSP1-03	VOC DOC TDS Iron Manganese	Spring Spring, Fall Spring Spring, Fall Spring, Fall
LSP2-03 (Background)	Alkalinity (below criteria) Manganese	Spring, Fall Spring
LSP3-03	DOC Iron Manganese	Spring, Fall Spring, Fall Spring, Fall
LSP4-19	DOC Manganese	Fall Spring, Fall
LSP5-19	Alkalinity (below criteria)	Spring, Fall
LSP6-23	Manganese	Fall
LSP7-23	Alkalinity (below criteria) Manganese	Spring, Fall Fall
LSP8-23	DOC Iron Manganese	Fall Fall Fall
LSP-DP-1-21	DOC Iron Manganese	Spring, Fall Spring, Fall Spring, Fall

Provincial Water Quality Objectives (PWQO)

At the request of the MECP, groundwater results were compared to the PWQO criteria. The only parameters that are tested at the Site and have surface water criteria under the PWQO are alkalinity, pH, total aluminum, boron, iron, lead, and zinc.

The PWQO exceedances are summarized in Table 10 below. The full laboratory results are presented in Table 16 at the end of the report.

Table 10: Groundwater Quality Parameters Exceeding PWQO

Location	Parameters	2024 Sampling Event(s)
LSP1-03	Boron Iron	Spring, Fall Spring, Fall
LSP2-03 (Background)	None	
LSP3-03	Iron	Spring, Fall
LSP4-19	Boron	Spring, Fall
LSP5-19	None	
LSP6-23	None	
LSP7-23	None	
LSP8-23	Boron Iron	Spring, Fall Spring, Fall
LSP-DP-1-21	Boron Iron	Spring, Fall Spring, Fall

Reasonable Use Values (RUVs)

The water quality results for background groundwater monitoring well LSP2-03 from 2006 to 2024 were used to calculate Reasonable Use Value (RUV), as per the guidance offered by MECP Procedures B-7 and B-7-1 using the following equation.

$$Cm = Cb + x\ (Cr - Cb)$$

Where:

- Cm: is the maximum allowable concentration in groundwater beneath adjacent property (Reasonable Use Value);
- Cb: is the median background concentration before any effects from human activity;
- Cr: is the maximum concentration that should be present based on use (ODWQS); and
- X: is the constant that reduces the contamination to a level considered by the MECP to have only a negligible effect on the use of the water (0.25 for a health-related parameter and 0.5 for an aesthetic or physical parameter).

Table 11 summarizes the data that were used to calculate Cm values (RUV), for the parameters of interest.

Table 11: Reasonable Use Calculations

Parameter	Units	ODWQS		Historical Median	x	RUV
		Type	Cr	Cb		Cm
Alkalinity as CaCO3 (upper)	mg/L	OG	500	12.5	0.5	256.3
Chloride	mg/L	AO	250	0.5	0.5	125.3
DOC	mg/L	AO	5	3.6	0.5	4.3
Iron	mg/L	AO	0.30	0.114	0.5	0.21
Manganese	mg/L	AO	0.05	0.052	0.5	0.051
N-NO3 (Nitrate)	mg/L	MAC	10	0.025	0.25	2.5
Sodium	mg/L	AO	200	1.53	0.5	100.8
Sulphate	mg/L	AO	500	5.28	0.5	252.6
TDS	mg/L	AO	500	34	0.5	267

Note: The background water quality at LSP2-03 and the regional groundwater is generally below the lower criterion for alkalinity. Therefore, there is no lower RUV for alkalinity.

A comparison of the groundwater chemistry results against the RUVs is provided in Table 16, at the end of the report. Table 12 below summarizes the parameters that exceeded the RUVs in 2024. It should be noted that the RUVs are used to assess compliance at the property boundary but have been used as an assessment tool at all monitoring wells.

Table 12: Groundwater Quality Parameters Exceeding the RUVs

Location	Parameters	2024 Sampling Event(s)
LSP3-03	DOC TDS Iron Manganese	Spring, Fall Fall Spring, Fall Spring, Fall
LSP1-03	Alkalinity DOC TDS Iron Manganese	Spring, Fall Spring, Fall Spring, Fall Spring, Fall Spring, Fall
LSP2-03 (background)	None	None
LSP4-19	Nitrate DOC TDS Manganese	Spring, Fall Spring, Fall Spring, Fall Spring, Fall

Location	Parameters	2024 Sampling Event(s)
LSP5-19	None	None
LSP6-23	TDS Manganese	Spring Spring, Fall
LSP7-23	Manganese	Spring
LSP8-23	Alkalinity DOC TDS Iron Manganese	Spring Spring, Fall Spring, Fall Spring, Fall Spring, Fall
LSP-DP-1-21	DOC TDS Iron Manganese	Spring, Fall Fall Spring, Fall Spring, Fall

4.2 Surface Water Quality

Surface water quality results for the spring and fall sampling events were compared to PWQO and the Table A and Table B criteria of the WDS Technical Guidance. Table 13 below summarizes the criteria exceedances. The full laboratory results are presented in Table 18 at the end of the report.

Table 13: Surface Water Quality Parameter Exceedances

Location	Exceeded PWQO	Exceeded Table A	Exceeded Table B	2024 Sampling Event(s)
LSP-SW1	Aluminum (dissolved) Copper (total)	None	None	Spring Spring
LSP-SW2	pH (upper) Aluminum (dissolved) Lead	None	None	Spring Spring Spring

Note: Laboratory reporting detection limits for cadmium exceeds MECP Table B.

4.3 Landfill Gas Monitoring

Landfill gas readings collected during the 2024 spring and fall sampling events are presented in Table 14 below.

Table 14: 2024 Landfill Gas Field Data

Location	Description of Reading Location	Spring 2024 Reading (ppm)	Fall 2024 Reading (ppm)
Attendant's Building	Probe inserted through main door	0	0
LSP1-03	Well head	0	5
LSP2-03	Well head	0	10

Location	Description of Reading Location	Spring 2024 Reading (ppm)	Fall 2024 Reading (ppm)
LSP3-03	Well head	0	5
LSP4-19	Well head	0	5
LSP5-19	Well head	0	10
LSP6-23	Well head	0	0
LSP7-23	Well head	0	0
LSP8-23	Well head	170	60
LSP-DP-1-21	Well head	5	15

4.4 QA/QC Results

One groundwater duplicate sample and one surface water duplicate sample was collected during each sampling event in 2024. The consistency of the results was evaluated based on the relative percentage difference (RPD) of each field duplicate pair.

No parameters exceeded the recommended RPD in the groundwater sample/duplicate pairs collected during both spring and fall sampling events. No parameters exceeded the recommended RPD in the groundwater sample/duplicate pairs collected in the spring sampling event. The results for the duplicate pairs are presented in **Appendix D (D-4 and D-5)**.

5 Assessment, Interpretation and Discussion

5.1 Groundwater Assessment

The groundwater chemistry results for the nine monitoring wells sampled during the two monitoring events are summarized in Table 16 at the end of text. Parameters with concentrations that fell outside the RUVs, ODWQS, and/or PWQO criteria are highlighted.

The historical groundwater quality results from the Lake St Peter WDS are presented in **Appendix E (E-1 and E-2)**, and chemistry trend graphs for select parameters are provided following the tables, figures, and photographs at the end of this report. Graphs demonstrate parameter concentrations that are within historical ranges for alkalinity, dissolved barium, dissolved boron, chloride, DOC, dissolved iron, dissolved manganese, and TDS. Some seasonal fluctuations are in present in dissolved manganese, TDS, and chloride between the spring and fall sampling events. However, following the evident rise in concentrations between 2014 and 2017, all parameters appear to have stabilized

and now fluctuate between seasonal highs and lows. No apparent evidence of increasing or decreasing trends is shown in the graphs. Use of a Mann-Kendall trend-analysis is recommended for future trend analysis to assist in interpreting the large historical data sets. Results at background well LSP2-03 remained constant with low concentrations for all parameters. Due to insufficient data, trends cannot be assessed at the monitoring wells installed in 2021 (LSP-DP-1-21) and in 2023 (LSP6-23, LSP7-23, and LSP8-23). It is anticipated that at least five years of semi-annual data will be required prior to analysing trends at these newer wells. A preliminary evaluation of the data of the newly installed monitoring wells indicates a similar seasonal trend in parameters concentrations between spring and fall sampling events.

Monitoring well LSP2-03 is located north of the waste area just south of the northern property boundary and is considered the background well for the Site. Groundwater quality parameters met the ODWQS during both spring and fall sampling events except for alkalinity and manganese, which is consistent with historical results. The alkalinity concentrations were below the lower limit of the ODWQS range, and the manganese results only slightly exceeded the allowable concentration. This monitoring well is considered to best represent background conditions, therefore low alkalinity and slightly elevated manganese are considered to be naturally occurring.
Monitoring well LSP3-03 is located downgradient of the waste area along the eastern property boundary and is considered to be a leachate well. The groundwater analytical results indicated exceedances of the RUV criteria and the ODWQS for the spring and fall monitoring events for DOC, TDS, dissolved iron, and dissolved manganese. Although dissolved manganese is naturally occurring at the Site in low concentrations, the exceeding concentrations at this location are likely due to landfill impacts based on the downgradient location. A PWQO exceedance of dissolved boron was also reported at LSP-03 during the spring and fall sampling event. In the fall of 2022, a sudden rise in chloride concentration was observed, and although the 2023 and 2024 concentrations were lower and comparable to some recent years they are still elevated compared to the historical fluctuations.

Monitoring well LSP1-03 is located downgradient of the waste area along the eastern property boundary, just south of LSP3-03, and is considered to be a leachate well. The groundwater quality was compared to the RUV for the Site, and five parameters exceeded for the spring and fall sampling events (alkalinity, DOC, TDS, dissolved iron, and dissolved manganese). The concentrations at this well also exceeded the ODWQS for DOC, dissolved iron, and dissolved manganese during both 2024 sampling events.

PWQO exceedances were also indicated in the spring and fall sampling events for dissolved iron and dissolved boron. The PWQO exceedances are likely due to landfill impacts. The dissolved iron and dissolved manganese concentrations appear to be decreasing, while DOC and TDS concentrations appear to have stabilized and are fluctuating within their typical range. Chloride concentrations were elevated in 2022 compared to the past two years of monitoring results but appear to have returned to historical ranges.

An exceedance of the ODWQS for benzene was also i at monitoring well LSP1-03. Samples for the analysis of VOCs were inadvertently collected from LSP1-03 during the 2024 spring sampling event despite the 5-year sampling frequency permitted by the MECP. The original sampling frequency will be reinstated going forward(i.e., the next VOC sampling event would occur in 2027). The 2024 VOC results are summarized in Table 17 at the end of the text, and the historical VOC results can be found in **Appendix E (E-2)**.

Monitoring well LSP5-19 is located near the southeastern corner of the property boundary. The groundwater results met all RUV during both sampling events, which is generally consistent with the historical results. Except for alkalinity (spring and fall), all groundwater quality parameters also met the ODWQS during both spring and fall sampling events. No PWQO exceedances were observed in 2024. The alkalinity and pH results that did not meet the guideline were both below the lower limit of their respective ODWQS/PWQO ranges which is considered to be naturally occurring and associated with background water quality. This well is not considered to be leachate-impacted.

Monitoring well LSP4-19 is located off-site to the east of LSP1-03 and LSP3-03 and is downgradient of the waste area. Like the two previous monitoring years, RUV exceedances for nitrate and dissolved manganese were reported during the spring and fall sampling events. DOC and TDS also exceeded in the spring and fall of 2024. This location also had ODWQS exceedances for DOC and dissolved manganese in the spring and fall, as well as a PWQO exceedance for dissolved boron. Seasonal fluctuation of dissolved manganese also appears to be a recurring trend with higher concentrations observed in the fall. These elevated parameters are likely due to landfill impacts.

The LSP-DP-1-21 drive point well is located off-site, northeast of the waste area. The groundwater chemistry was compared to the RUV criteria for the Site and exceedances were reported during the spring and fall sampling events for DOC, dissolved iron, and dissolved manganese. TDS exceeded RUV in the fall only. Exceedances of the ODWQS were also reported during both sampling events for DOC, dissolved iron and dissolved manganese, while exceedances of the PWQO were reported for both sampling events for dissolved iron and dissolved boron. Results for all parameters appear to fluctuate within their typical ranges, however trends regarding these exceedances cannot be properly established until five years of bi-annual monitoring data is acquired. Note that based on the screen elevation and the water levels collected, LSP-SP-1-21 is considered to be representative of groundwater-surface water interaction but not of groundwater quality, therefore the LSP-DP-1-21 results were not considered for compliance with Guideline B-7.

LSP8-23 is located within the Phase 1 footprint (Cell #11) near its eastern boundary and is the nearest downgradient well to the background location. This monitoring well was installed in September 2023 and is considered to be a leachate well. The fall 2023 sampling event was the first monitoring event for this location. The groundwater quality was compared to the RUV criteria for the site, and four parameters (DOC, TDS, dissolved iron, and dissolved manganese) exceeded during the fall and spring sampling events and alkalinity exceeded only in the spring sampling event. The analytical results also indicated exceedances to the ODWQS for DOC, dissolved iron and dissolved manganese and exceedances to the PWQO for dissolved iron and dissolved boron during both the spring and fall sampling events. The reported concentrations of DOC, dissolved iron and dissolved manganese at LSP8-23 appear to be elevated compared to the two other leachate wells on site, LSP1-03 and LSP3-03, while concentrations for the remaining parameters seem comparable to their historical fluctuations. Trends can not be established d, as five years of semi-annual data is required prior to observe trends. Some fluctuations in parameter concentrations appear between the spring and fall sampling events, which is consistent with other monitoring wells on-site.

LSP6-23 is located downgradient of the Site along the eastern CAZ boundary near the northeast corner of the approved 17 ha waste site. This monitoring well was installed in September 2023 to assess Guideline B-7 compliance. The fall 2023 sampling event was the first monitoring event for this location. In 2024 , dissolved manganese exceeded the calculated RUV for the Site for the spring and fall sampling events, and TDS exceeded for the spring event only. The concentration of dissolved manganese also exceeded the

ODWQS for the spring and fall events. No PWQO exceedances were identified. The concentration of dissolved manganese was higher than the concentrations reported at the background monitoring well but lower than at the leachate affected wells. It is difficult to determine if the dissolved manganese concentration reported is naturally occurring due to the lack of data. It is anticipated that at least five years of semi-annual data will be required prior to analysing trends.

LSP7-23 is located downgradient from the Site south of LSP6-23 along the eastern CAZ boundary. This monitoring well was installed in September 2023 to assess Guideline B-7 compliance. The fall 2023 sampling event was the first monitoring event for this location. Similarly to LSP6-23, dissolved manganese exceeded the calculated RUV for the site for the spring sampling event. Dissolved manganese and alkalinity also exceeded their respective ODWQS, however the dissolved manganese exceedance was only observed in the spring. Low alkalinity is considered to be naturally occurring on the Site. No PWQO exceedances were reported. Similar to LSP6-23, it is difficult to determine if the elevated dissolved manganese at this well is naturally occurring due to the lack of data. It is anticipated that at least five years of semi-annual data will be required prior to analysing trends.

Groundwater alkalinity concentrations at the Site are naturally low. The average concentration at the background location using data from 2006 to 2023 is 12.5 mg/L. PWQO criteria states that alkalinity cannot be decreased by more than 25% of the natural concentration. Impacts from the WDS have been observed to increase the alkalinity concentration at the Site, therefore the downgradient wells do not exceed the PWQO for this parameter.

Analytical results from groundwater monitoring wells have indicated Guideline B-7 compliance along the northern property boundary and southern property boundary. There are no western property boundary monitoring wells, but the western property boundary is assumed to be compliant with Guideline B-7 based on the inferred direction of groundwater flow to the northeast. The WDS is not compliant with Guideline B-7 along the eastern property boundary. The MNR has agreed to and is processing additional buffer and CAZ land to the east and south of the Site. The proposed CAZ is shown on Figure 02. Sufficient natural attenuation is anticipated to occur for the Site to be compliant with Guideline B-7 along the new property boundaries. Two monitoring wells, LSP6-23 and LSP7-23 were installed along the eastern CAZ boundary in September 2023 to assess Guideline B-7 compliance, however there is minimal data to

determine compliance on the eastern boundary as there is only three data sets. Further monitoring is required at these locations to determine if sufficient natural attenuation can occur within the new proposed boundaries.

5.2 Surface Water Assessment

The analytical results for the two surface water locations sampled during the spring and fall monitoring events are summarized in Table 18 at the end of the report. Parameters with concentrations outside the PWQO and the MECP WDS Technical Guidance Table A and Table B criteria are highlighted.

The historical surface water quality results from the Lake St Peter WDS are presented in **Appendix E (E-3)**, and trend graphs for select parameters are provided following the tables, figures, and photographs, at the end of this report.

Based on the local topography, surface water on-site generally flows east towards Papineau Creek and Lake St. Peter. The surface water sampling location LSP-SW1, located along the northern property boundary, is upstream of LSP-SW2 which is located further east. Both surface water monitoring locations were dry at the time of the fall 2024 sampling event, therefore no samples were collected.

The graphs demonstrate historically higher concentrations of alkalinity, TDS, total boron, chloride, total iron and total manganese downstream at LSP-SW2, compared to the upstream location LSP-SW1. This may indicate that the landfill is impacting the small creek located immediately north of the Site running between the two surface water sampling locations. The other parameters monitored at these locations show typical fluctuations with no evidence of increasing or decreasing trends.

The spring 2024 surface water results for the upstream (and therefore background) location LSP-SW1 were compared to the PWQO and the MECP Table A and Table B standards. Dissolved aluminum and total copper were the only parameters to exceed the PWQO, and no MECP Table A and Table B exceedances were indicated. The elevated dissolved aluminum present in the surface water is considered to be associated with background water quality of the area.

For the downstream surface water location LSP-SW2, exceedances of the PWQO include dissolved aluminum, total copper, and pH (upper limit). No MECP Table A and Table B exceedances were indicated. As mentioned above, the dissolved aluminum in the surface water is associated with background water quality, however the lead exceedance is likely due to landfill impacts.

Aluminum is elevated at the Site and is considered to be representative of background water quality. The average concentration at the background location LSP-SW1 is 0.148 mg/L, which was calculated using data from 2019 to 2023. The PWQO criteria states that if natural background aluminum concentrations in water bodies exceed the PWQO value, no condition is permitted that would increase the aluminum concentration by more than 10% of the natural background level (calculated to be 0.163 mg/L for the Lake St. Peter Site). Limited impacts from the WDS have been observed at the downstream location LSP-SW2 as reported aluminum concentrations are stable or slightly lower than those reported upstream, therefore the downstream surface water monitoring location does not exceed the PWQO for this parameter.

5.3 Groundwater and Surface Water Interaction

In 2024, groundwater depths at the monitoring wells ranged from 0.38 to 6.28 m bgs. Based on Site topography and groundwater elevations, groundwater discharge to surface water was determined to be possible to the east of the WDS. The creek located north of the WDS has shown elevated concentrations of leachate-related parameters when comparing the 2024 sampling results from the downstream location (LSP-SW2) to the upstream location (LSP-SW1).

As per the MECP's recommendation to monitor potential groundwater impacts to the creek, drive-point well LSP-DP-1-21 was installed northeast of the property. In the correspondence from the MECP's Technical Surface Water Reviewer (July 2021), LSP-DP-1-21 is referred to as a groundwater monitoring well installed between the mound and SW2 to verify groundwater flow direction and assess landfill impacts to surface water. The samples from LSP-DP-1-21 have been analysed for the list of groundwater and surface water parameters in Table E-1 and Table E-2 of Schedule B of the ECA and then compared to the PWQO to assess potential impacts.

Upon comparison of the historical data available (fall 2021 to fall 2024), groundwater interaction between LSP-DP-1-21 and LSP-SW2 was determined to be unlikely. PWQO exceedances at LSP-DP-1-21 during both spring and fall sampling events included DOC, boron, and iron, none of which were reported as exceedances at LSP-SW2. Although no other PWQO exceedances were present at LSP-DP-1-21, the concentrations for all analysed parameters were significantly higher in the groundwater sample versus the surface water sample.

As recommended in the 2022 annual monitoring report, the elevation of both surface water monitoring locations was measured and compared to groundwater elevations during each semi-annual monitoring event to improve the assessment of potential groundwater and surface water interaction. Surface water elevations were only measured in the spring of 2024 since both monitoring locations were dry during the fall event. The elevation of the surface water at LSP-SW1 was measured to be 409.60 masl, compared to the groundwater elevation of 409.18 masl in downgradient monitoring well LSP2-03, the nearest well. The upstream surface water level is 0.42 m higher than the groundwater level. Similarly, SW2 was measured at 406.31 masl compared to a groundwater elevation of 406.96 in the upgradient drive point well, LSP-DP-1-21. The surface water level at the downstream location LSP-SW2 was 0.65 m below the groundwater level. These surface water elevations confirm the possibility of interaction, however the surface water concentrations recorded during the 2023 sampling event do not reflect groundwater discharge impacts and interaction was determined to be unlikely. However, groundwater interaction with surface water further downgradient of LSP-SW2 cannot be disproven.

5.4 Landfill Gas Assessment

The RKI Eagle gas monitoring results for 2024 (170 ppm or less) indicated that methane gas concentrations are well below the concentrations of concern (<10,000 ppm) for the subsurface, buildings and structures on-site.

5.5 Trigger Mechanisms and Contingency Plans

The Site Trigger Mechanisms and Contingency Plan for groundwater and surface water was approved by the MECP in the fall of 2021 and is referenced in the amended ECA dated October 25, 2021. A copy of the approved Trigger Mechanisms and Contingency Plan is appended to this report as **Appendix F**.

The trigger assessment points for surface water are LSP-SW2 and LSP-DP-1-21, and the assessment criteria include alkalinity, total boron, un-ionized ammonia, chloride, total iron, total manganese, and nitrate. The Contingency Plan is triggered if two or more of the trigger parameters exceed the trigger limit, which is equal to the PWQO or CCME CWQG, for an assessment point for two consecutive samples. The Contingency Plan was triggered at LSP-DP-1-21 during both spring and fall 2024 sampling events with trigger parameter exceedances of total boron, total iron, and total manganese. The trigger exceedances activated Tier 1 of the Contingency Plan, and a toxicity sample was collected from the creek downstream of the assessment point on June 3, 2024, following the spring trigger and on November 26, 2024, following the fall trigger. The test results indicated the percent mortality for Daphnia Magna and Rainbow Trout were 0% for both sampling events. As a result, Tier 2 contingency action was not required in spring and in the fall. The toxicity laboratory results are included in **Appendix D (D-6)**.

The groundwater Trigger Mechanisms and Contingency plan was implemented on-site following the installation of monitoring wells LSP6-23 and LSP7-23 in September 2023. The wells are located along the eastern CAZ limit and act as the assessment points for the Site Trigger Mechanisms and Contingency Plan. The assessment criteria include dissolved barium, DOC, TDS and chloride. The groundwater Contingency Plan is activated if one or more of the trigger parameters exceed the trigger limit, which is equal to the RUV, for an assessment point for two consecutive samples. No eexceedances were reported during the fall 2024 sampling event.

5.6 CAZ Assessment

BluMetric worked with the Municipality in 2020 to confirm the boundaries for a CAZ around the Site and to prepare a D&O Plan. Detailed discussion on the CAZ assessment was provided in the 2020 monitoring report for the Site. In summary, it was concluded that an area extending 140 m east (downgradient) of the Site is required for natural attenuation. The Municipality made a request to the MNR to purchase additional buffer and CAZ lands to own the total Site area of 17 ha of the WDS; this process is ongoing. The proposed CAZ and total Site area boundaries are shown on Figure 02.

These boundaries are vital with respect to the Site's compliance issues (e.g., Guideline B-7). Monitoring wells LSP6-23 and LSP7-23 were installed along the eastern limit of the CAZ in September 2023 to confirm Site compliance. These monitoring wells are also used as the assessment point for the groundwater Site Trigger Mechanisms and Contingency Plan.

As part of the CAZ assessment work and in historical monitoring reports, BluMetric has considered LSP1-03 and LSP3-03 as leachate wells. These wells are installed near the southeast corner of the approximate waste footprint. A third leachate well, LSP8-23, was installed in September 2023 within the Phase 1 footprint near its eastern boundary, as required by the amended ECA. We recommend these three wells continue to be used as the primary leachate wells in 2025.

6 Site Operations

The Lake St. Peter WDS currently collects waste in covered waste bins (8 cubic yard). The waste is periodically transferred to the active waste area and covered. The Site has segregated areas for scrap metal, tires, large bulky items (e.g., couches and mattresses), electronic waste, and a recycling transfer station (8 cubic yard bin) for household blue box recyclable containers (e.g., aluminum cans, metal cans, plastic bottles) and fibre (e.g., paper and cardboard). The Municipality implemented a clear-bag policy in October 2014 to facilitate increased waste diversion in an effort to extend the operational life of their municipal landfill sites. This bylaw was revised in 2018. The clear-bag policy applies to both recyclable and household waste, with non-compliant bags to be refused unless residents remove recyclables from the bag.

6.1 Annual Waste Summary

Although access to the Site is controlled via a locked security steel gate, some residents deposit garbage at the disposal site outside of the landfill's normal operating hours. This contribution is collected by site personnel, recorded, and included in the total waste volumes identified for the Site.

Estimated volumes for the Site are based on Contractors' tonnages and estimations of the number of bags deposited at the Site. An average of 15 kg per bag, provided by the Municipality, is used in the waste calculations. The quantities below include recyclables and waste from both the residential and commercial sources within the municipality.

The waste report for 2024 indicates that approximately 29.9 tonnes of recyclables (R) and 243 tonnes of waste (W) were deposited in the Lake St. Peter WDS. Based on these reported quantities, the mass of recyclables collected in 2024 was 13.5% lower than what was collected in 2023, while the quantity of waste received at the Site was 2.5% lower than what was received in 2023. Based on those numbers, 12.3% of the total waste was recycled in 2024, marginally higher than the 12.2% calculated in 2023. The quarterly breakdown is shown below in Table 15.

Table 15: Annual Recycling and Wastes Tonnages

Q1		Q2		Q3		Q4		Total Annual	
R	W	R	W	R	W	R	W	R	W
2023									
6.7	38.9	10.8	54.5	11.34	99.9	5.8	56.0	**34.6**	**249.4**
2024									
5.8	43.3	6.97	59.46	11.79	89.5	5.4	50.84	**30.0**	**243.2**

In addition, segregated materials were collected at each of the nine WDSs/WTSs in Hastings Highlands. The 2024 breakdown of theses wastes at the Lake St. Peter site was:

- Scrap metal – 0 tonnes;
- Bulky wastes – 0 tonnes;
- Leaf and yard waste – 701 truck/trailer loads;
- Electrical and Electronic Equipment – 0 tonnes;
- Household batteries – 0 tonnes; and
- 49 tires.

There were no documented complaints for rejected waste, or emergency situations at the Lake St Peter WDS in 2024.

6.2 Site Capacity and Life Expectancy

The Lake St Peter WDS has a total area of 17 hectares (ha), of which 2.2 ha is designated as approved landfilling area. The final volumetric capacity of the Site, excluding final cover, is 73,383 cubic metres (m^3).

The last five annual monitoring reports for the Site have recorded annual waste generation rates of 263.6 (2020), 293.5 (2021), 254.04 (2022), 249.39 (2023), and 243.2 (2024) tonnes; resulting in an average waste generation rate of 261 tonnes per year.

The 261 tonnes are estimated to equate to 522 m^3 of compacted waste per year (no soil cover), assuming a compaction density of 500 kg/m^3. Clean fill which is to be applied as daily cover between waste layers is estimated at 25% of the waste volume. Therefore, the total average annual fill rate is expected to be approximately 652 m^3 per year.

A topographic survey was completed at the Site on June 30, 2023, and determined the net cut for the Phase 1 footprint design contours to be 2,897 m^3. Considering the estimated net fill volume for Phase 2 of 71,763 m^3 as stated in the 2020 D&O Plan, the remaining capacity for the Site was calculated to be 68,866 m^3.

According to the 2023 waste data obtained from the MHHs, it is estimated that 399 tonnes, or 798 m^3, of waste (residential and commercial) was deposited at the Site following the 2023 topographic survey, from July 1st, 2023, to December 31st 3024. Taking soil cover into consideration, this volume is estimated at 390 m^3.

The Fill Beyond Approved Limits (FBAL) waste placed outside of the approved waste footprint to the north of Cell #2 was also excavated on September 18, 2023, as required by the amended ECA, and placed within the Phase 1 footprint. The quantity of waste excavated was not captured in the June 2023 survey, but it was estimated in the field to be around 300 m^3, which was factored into the remaining capacity and life expectancy calculations. The site will be resurveyed in 2025 to provide updated volumes reflective of the FBAL excavation.

The remaining volumetric capacity and life expectancy for the Lake St. Peter WDS was calculated as follows:

Net fill available on June 30, 2023:	68,866 m^3
Waste and cover deposited from July 1 to Dec 31, 2023:	798 m^3
FBAL waste deposited on September 18, 2023:	300 m^3
Remaining Capacity (2023):	67,768 m^3
Average annual fill rate:	652 m^3/year
Life Expectancy:	**104 years**

Based on the remaining volumetric capacity at the Site, the life expectancy is 104 years. The life expectancy can vary due to limited environmental attenuation as well as changes in fill rates due to events such as floods, fires, or other natural disasters.

The remaining capacity and estimated life expectancy are slight overestimates as the two 300 mm layers of intermediate soil cover required over Phase 1 and Phase 2 as per the ECA were not considered.

According to the volumes captured during the 2023 topographical survey and the quantity of waste deposited at the Site in the following months, it is currently estimated that the Phase 1 footprint has surpassed its capacity by 3,587 m^3. The development of Phase 2 was required in 2024. As stated in the 2020 D&O Plan, a large portion of the Phase 1 footprint along the eastern boundary (shown on Figure 2) is forested and should be cleared to allow distribution of the waste over the entire Phase 1 area. This should be done in preparation for the development of Phase 2. As per the ECA, the waste contours of the Phase 1 footprint should be leveled to an elevation of 414.5 masl. A 300 mm layer of clean fill should then be applied over the leveled area as intermediate cover prior to the development of Phase 2. Refer to the 2020 D&O Plan for the Phase 2 – Level 1 landfilling approach.

7 Summary Statements, Conclusions, and Recommendations

The following recommendations are based on the results of the 2023 monitoring program:

7.1 Site Operations

- A D&O Plan for the Site was prepared and finalized in September 2020. The D&O Plan was approved under the amended ECA (October 25, 2021).
- There were no records of public concerns/complaints and emergency situations occurrences in 2024 at the Lake St Peter WDS. Should they occur in the future, the complaint and the Municipality's response is to be documented.
- It is recommended that periodic inspections be performed and documented by the Municipality to ensure proper burning practices are being followed.
- It is recommended that waste transferred to the Site continues to be accounted for and documented by tracking the number of loads of waste and/or bags deposited at the Site. Detailed descriptions and quantities of rejected waste should continue to be documented.
- Public education with respect to waste reduction and recycling should be an ongoing effort by the Municipality.

7.2 Groundwater

- Groundwater monitoring should continue on a semi-annual basis for the Lake St. Peter WDS (spring and fall) for the parameters identified in Table 3, or Table E-2 of the Amended ECA.
- Graphs demonstrate slightly higher concentrations of alkalinity, boron, chloride and TDS relative to the 2024 sampling results in leachate well LSP1-03 and of barium in both leachate wells, LSP1-03 and LSP3-03. Seasonal fluctuations of manganese also appear to be a recurring trend at monitoring well LSP4-19 with higher concentrations observed in the fall. However, following the evident rise in concentrations between 2014 and 2017, all parameters (except for chloride) appear to have stabilized and fluctuate within their typical range. Chloride concentrations were lower and comparable to some recent years; however, they are still elevated compared to the historical fluctuations. No apparent evidence of increasing or decreasing trends is shown in the graphs. Concentrations of indicator parameters at background well LSP2-03 remain constant with low concentrations for all parameters.
- There is insufficient data to assess trends at the monitoring wells installed in 2021 (LSP-DP-1-21) and 2023 (LSP6-23, LSP7-23 and LSP8-23). It is anticipated that at least five years of semi-annual data will be required prior to analysing trends at these newer wells.
- Analytical results from groundwater monitoring wells have indicated Guideline B-7 compliance along the northern property boundary and southern property boundary. There are no western property boundary monitoring wells, but the western property boundary is assumed to be compliant with Guideline B-7 based on the inferred direction of groundwater flow to the northeast. The WDS is not compliant with Guideline B-7 along the eastern property boundary. The MNR has agreed to and is processing additional buffer and CAZ land to the east and south of the Site. Sufficient natural attenuation is anticipated to occur for the Site to be compliant with Guideline B-7 along the new property boundaries.
- Two monitoring wells, LSP6-23 and LSP7-23 were installed along the eastern CAZ boundary in September 2023 to assess Guideline B-7 compliance, however there is minimal data to determine Site compliance on the eastern boundary as there is only three data sets. Further monitoring is required at these locations to determine if sufficient natural attenuation can occur within the new proposed boundaries.

- The groundwater Trigger Mechanisms and Contingency plan was was approved by the MECP in October 2021 and implemented on site following the installation of monitoring wells LSP6-23 and LSP7-23 in September 2023. The wells located along the eastern CAZ limit act as the assessment points for the Site Trigger Mechanisms and Contingency Plan. No exceedances of the trigger parameters were reported during the fall event.

7.3 Surface Water

- Surface water monitoring should continue on a semi-annual basis for the Lake St. Peter WDS (spring and fall), for the parameters identified in Table 6, or Table E-1 of the Amended ECA.
- LSP-DP-1-21 is analysed for surface water parameters in addition to groundwater parameters as required by the ECA.
- The graphs demonstrate historically higher concentrations of alkalinity, TDS, total boron, chloride, total iron, and total manganese downstream at LSP-SW2, compared to LSP-SW1. This may indicate that the landfill is impacting the small creek located immediately north of the Site running between the two surface water sampling locations. The other parameters reported at these locations show typical fluctuations with no evidence of increasing or decreasing trends.
- The Site Trigger Mechanisms and Contingency Plan for surface water was approved by the MECP in October 2021. The surface water Contingency Plan was triggered during the 2023 spring and fall sampling events at LSP-DP-1-21. Tier 1 contingency sampling was conducted following both sampling events. Based on the results of tier 1, tier 2 contingency sampling was not required.

7.4 Groundwater and Surface Water Interaction

- As per the MECP's recommendation to monitor potential groundwater impacts to the creek, a drive-point well LSP-DP-1-21 was installed northeast of the property between the mound and SW2 to verify groundwater flow direction and assess landfill impacts to the surface water.
- As recommended in the 2022 annual monitoring report, the elevation of both surface water monitoring locations was measured and compared to groundwater elevations during each semi-annual monitoring event to improve the assessment of potential groundwater and surface water interaction.

- Groundwater interaction between LSP-DP-1-21 and LSP-SW2 was determined to be unlikely. The surface water concentrations recorded during 2024 do not reflect groundwater discharge impacts.

7.5 Landfill Gas

- The RKI Eagle gas monitoring results for 2024 (0 to 170 ppm) indicated methane gas concentrations are well below the concentrations of concern as identified above for the subsurface, buildings and structures on-site.
- Landfill gas should continue to be monitored during the semi-annual monitoring events.

7.6 CAZ Assessment

- BluMetric worked with the Municipality in 2020 to confirm the boundaries for a CAZ around the Site and to prepare a D&O Plan. It was concluded that an area extending 140 m east (downgradient) of the Site is required for natural attenuation.
- The Municipality made a request to the MNR to purchase additional buffer and CAZ lands to own the total Site area of 17 ha of the WDS. This process is ongoing.

7.7 Site Capacity and Life Expectancy

- The remaining capacity of the site is 67,786 m^3, which gives an estimated volumetric life expectancy of 104 years. This was calculated using the June 2023 topographical survey data and a 5-year average annual fill rate of 652 m^3/year including interim cover, which was assumed to be 25% of the deposited waste.
- The estimated life expectancy is an overestimate as it does not consider the two 300 mm layers of intermediate soil cover required over Phase 1 and Phase 2 as per the ECA.
- The ability of the Site to act as a natural attenuation site may limit the volumetric capacity of the Site. Future monitoring will determine if the leachate plume has reached the proposed east CAZ boundaries at LSP6-23 and LSP7-23.

- Following the June 2023 topographical survey and the quantity of waste deposited at the Site in the following months, it is currently estimated that the Phase 1 area has surpassed its capacity by 3,587 m^3. The development of Phase 2 is required in 2025.
- As stated in the 2020 D&O Plan, a large portion of the Phase 1 footprint along the eastern boundary is forested and should be cleared to allow distribution of the waste over the entire Phase 1 area. This should be done in preparation for the development of Phase 2.
- The Fill Beyond Approved Limits (FBAL) waste placed outside of the approved waste footprint to the north of Cell #2 was excavated on September 18, 2023, as required by the amended ECA and placed within the Phase 1 footprint. The quantity of waste excavated was not captured in the June 2023 survey, but a field estimate of 300 m^3 was factored into the remaining capacity and life expectancy calculations. The Site will be resurveyed in 2025 to provide updated volumes reflective of the FBAL excavation.

8 Limiting Conditions

The conclusions presented in this report represent our professional opinion and are based upon the work described in this report and any limiting conditions in the terms of reference, scope of work, or conditions noted herein.

The findings presented in this report are based on conditions observed at the specified dates and locations, the analysis of samples for the specified parameters, and information obtained for this project. Unless otherwise stated, the findings cannot be extended to previous or future Site conditions, locations that were not investigated directly, or types of analysis not performed.

BluMetric Environmental Inc. makes no warranty as to the accuracy or completeness of the information provided by others, or of conclusions and recommendations predicated on the accuracy of that information.

This report has been prepared for The Corporation of the Municipality of Hastings Highlands. Any use a third party makes of this report, any reliance on the report, or decisions based upon the report, are the responsibility of those third parties unless authorization is received from BluMetric Environmental Inc. in writing. BluMetric Environmental Inc. accepts no responsibility for any loss or damages suffered by any unauthorized third party as a result of decisions made or actions taken based on this report.

Respectfully submitted,
BluMetric Environmental Inc.

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Tables

Table 16: Municipality of Hastings Highlands Anions, Cations, General Chemistry and Metals in Groundwater						Site Name	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS
						Location	LSP1-03	LSP1-03	LSP2-03	LSP2-03	LSP3-03	LSP3-03	LSP4-19	LSP4-19	LSP4-19	LSP5-19	LSP5-19
Parameter	Units	ODWQS-ALL-MERGED	PWQO-GENERAL	PWQO-INTERIM	RUV-LSP	Sample ID	LSP1-03	LSP1-03	LSP2-03	LSP2-03	LSP3-03	LSP3-03	LSP4-19	LSP-QAQC-GW1 (LSP4-19)	LSP4-19	LSP5-19	LSP5-19
						Sample Date	2024-Apr-30	2024-Oct-28	2024-Apr-30	2024-Oct-28	2024-Apr-30	2024-Oct-28	2024-Apr-30	2024-Apr-30	2024-Oct-28	2024-Apr-30	2024-Oct-28
Anions						**Detection Limit**											
Chloride	mg/L	250	-	-	125.3	1	120	65	<1	<1	17	50	28	28	57	<1	<1
Nitrate as N	mg/L	10	-	-	2.5	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	2.9	2.93	6.45	0.12	<0.1
Sulphate	mg/L	500	-	-	252.6	1	6.5	5.8	3.3	3.7	11	7	7.7	7.6	6.8	2.7	3.3
Cations																	
Calcium (diss)	mg/L	-	-	-	-	0.2	95	92	3.6	3.2	37	41	35	34	64	2.7	2.8
Magnesium (diss)	mg/L	-	-	-	-	0.05	12	9.2	0.95	0.82	4.8	4.7	4.9	5	9	0.46	0.47
Sodium (diss)	mg/L	200	-	-	100.8	0.1	64	39	1.6	1.7	16	35	20	20	26	1.4	1.7
General Chemistry																	
Alkalinity (as CaCO3)	mg/L	30 - 500	See Factsheet	-	256.3	1	310	340	14	13	130	150	110	120	190	10	8.7
Ammonia as N	mg/L	-	-	-	-	0.05, 0.1, 0.25	9.6	17	<0.05	<0.05	0.73	5	1.8	1.8	6.5	<0.05	<0.05
Dissolved Organic Carbon	mg/L	5	-	-	4.3	0.4	14	21	2.7	3.5	5.9	11	5.5	5.5	7.2	1.8	1.8
Electrical Conductivity	uS/cm	-	-	-	-	1	1000	890	36	38	340	500	370	370	650	26	31
pH	pH units	6.5 - 8.5	6.5 - 8.5	-	-		7.2	7.23	7.27	6.67	7.16	7.28	7.24	8.04	7.12	6.78	6.7
Total Dissolved Solids	mg/L	500	-	-	267	10	545	490	45	10	195	315	315	315	430	55	60
Total Suspended Solids	mg/L	-	-	-	-	10, 20, 50, 100, 200, 500	580	1500	240	380	5500	96	40000	35000	43000	2000	7100
Metals																	
Barium (diss)	mg/L	1	-	-	-	0.002	0.5	0.53	0.0094	0.013	0.17	0.28	0.099	0.097	0.19	0.01	0.012
Boron (diss)	mg/L	5	-	0.2	-	0.01	**0.55**	**0.71**	<0.01	<0.01	0.14	0.14	**0.39**	**0.37**	**0.45**	<0.01	<0.01
Iron (diss)	mg/L	0.3	0.3	-	0.21	0.1	13	67	0.12	0.11	6.2	6.2	<0.1	<0.1	<0.1	<0.1	<0.1
Manganese (diss)	mg/L	0.05	-	-	0.051	0.002	3.5	2.1	0.051	0.039	0.57	1.6	3.9	3.9	8.2	0.0022	0.0045

Notes:

Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds ODWQS-ALL-MERGED	Ontario Drinking Water Quality Standards All Types Merged
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds RUV-LSP	Reasonable Use Values Lake St Peter

Table 16: Municipality of Hastings Highlands Anions, Cations, General Chemistry and Metals in Groundwater						Site Name	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS
						Location	LSP6-23	LSP6-23	LSP6-23	LSP7-23	LSP7-23	LSP8-23	LSP8-23
Parameter	Units	ODWQS-ALL-MERGED	PWQO-GENERAL	PWQO-INTERIM	RUV-LSP	Sample ID	LSP6-23	LSP6-23	LSP-QAQC-GW1 (LSP6-23)	LSP7-23	LSP7-23	LSP8-23	LSP8-23
						Sample Date	2024-Apr-30	2024-Oct-28	2024-Oct-28	2024-Apr-30	2024-Oct-28	2024-Apr-30	2024-Oct-28
Anions						Detection Limit							
Chloride	mg/L	250	-	-	125.3	1	<1	<1	<1	11	10	48	29
Nitrate as N	mg/L	10	-	-	2.5	0.1	<0.1	<0.1	<0.1	0.14	0.13	<0.1	<0.1
Sulphate	mg/L	500	-	-	252.6	1	4.5	6.4	6.4	4.6	3.7	15	13
Cations													
Calcium (diss)	mg/L	-	-	-	-	0.2	10	9.1	9.2	6	5.1	79	51
Magnesium (diss)	mg/L	-	-	-	-	0.05	2.8	2.6	2.7	1.2	1	13	7.9
Sodium (diss)	mg/L	200	-	-	100.8	0.1	3	2.5	2.6	4.6	4.8	53	31
General Chemistry													
Alkalinity (as CaCO3)	mg/L	30 - 500	See Factsheet	-	256.3	1	59	41	40	15	8.4	350	240
Ammonia as N	mg/L	-	-	-	-	0.05, 0.1, 0.25	<0.05	<0.05	<0.05	<0.05	<0.05	19	12
Dissolved Organic Carbon	mg/L	5	-	-	4.3	0.4	1.1	1.2	1.4	1.5	1.8	37	28
Electrical Conductivity	uS/cm	-	-	-	-	1	100	100	100	77	72	900	580
pH	pH units	6.5 - 8.5	6.5 - 8.5	-	-		7.5	7.33	7.22	6.8	6.69	7.18	6.99
Total Dissolved Solids	mg/L	500	-	-	267	10	405	115	120	175	175	465	355
Total Suspended Solids	mg/L	-	-	-	-	10, 20, 50, 100, 200, 500	11000	4500	4500	14000	28000	1500	1900
Metals													
Barium (diss)	mg/L	1	-	-	-	0.002	0.01	0.0095	0.01	0.02	0.021	0.69	0.44
Boron (diss)	mg/L	5	-	0.2	-	0.01	0.017	0.017	0.016	<0.01	<0.01	**0.4**	**0.25**
Iron (diss)	mg/L	0.3	0.3	-	0.21	0.1	0.17	0.21	0.26	<0.1	0.14	91	80
Manganese (diss)	mg/L	0.05	-	-	0.051	0.002	0.58	0.45	0.45	0.093	0.033	4.9	4.9

Notes:

Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds ODWQS-ALL-MERGED	Ontario Drinking Water Quality Standards All Types Merged
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds RUV-LSP	Reasonable Use Values Lake St Peter

Table 17: Municipality of Hastings Highlands Volatile Organic Compounds in Groundwater					Site Name	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS
					Location	LSP-DP1-21	LSP1-03	LSP2-03	LSP3-03	LSP4-19	LSP4-19	LSP5-19	LSP6-23	LSP7-23	LSP8-23
					Interval	LSP-DP1-21-GW	LSP1-03	LSP2-03	LSP3-03	LSP4-19	LSP4-19	LSP5-19	LSP6-23	LSP7-23	LSP8-23
					Sample ID	Trip Blank	LSP1-03	LSP2-03	LSP3-03	LSP4-19	LSP-QAQC-GW1	LSP5-19	LSP6-23	LSP7-23	LSP8-23
Parameter	Units	ODWQS-ALL-MERGED	PWQO-INTERIM	PWQO-GENERAL	Sample Date	2024-Apr-30	2024-Apr-30	2024-Apr-30	2024-Apr-30	2024-Apr-30	2024-Apr-30	2024-Apr-30	2024-Apr-30	2024-Apr-30	2024-Apr-30
VOCs					**Detection Limit**										
1,1,1,2-Tetrachloroethane	mg/L	-	0.02	-	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
1,1,1-Trichloroethane	mg/L	-	0.01	-	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
1,1,2,2-Tetrachloroethane	mg/L	-	0.07	-	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
1,1,2-Trichloroethane	mg/L	-	0.8	-	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
1,1-Dichloroethane	mg/L	-	0.2	-	0.0002	<0.0002	0.00044	<0.0002	<0.0002	0.00021	0.00022	<0.0002	<0.0002	<0.0002	<0.0002
1,1-Dichloroethylene	mg/L	0.014	0.04	-	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
1,2-Dichlorobenzene	mg/L	0.003	-	0.0025	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
1,2-Dichloroethane	mg/L	0.005	0.1	-	0.00049	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049
1,2-Dichloropropane	mg/L	-	0.0007	-	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
1,3-Dichlorobenzene	mg/L	-	-	0.0025	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
1,4-Dichlorobenzene	mg/L	0.001	-	0.004	0.0004	<0.0004	0.0012	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	0.00042
Acetone	mg/L	-	-	-	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Benzene	mg/L	0.001	0.1	-	0.0002	<0.0002	0.0023	<0.0002	<0.0002	0.00029	0.00029	<0.0002	<0.0002	<0.0002	0.00094
Bromodichloromethane	mg/L	-	0.2	-	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Bromoform	mg/L	-	0.06	-	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromomethane	mg/L	-	0.0009	-	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Carbon Tetrachloride	mg/L	0.002	-	-	0.00019	<0.00019	<0.00019	<0.00019	<0.00019	<0.00019	<0.00019	<0.00019	<0.00019	<0.00019	<0.00019
Chlorobenzene	mg/L	-	-	0.015	0.0002	<0.0002	0.00037	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chloroform	mg/L	-	-	-	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
cis-1,2-Dichloroethylene	mg/L	-	-	-	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
cis-1,3-Dichloropropene	mg/L	-	-	-	0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Dibromochloromethane	mg/L	-	-	-	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Dichlorodifluoromethane	mg/L	-	-	-	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dichloromethane	mg/L	0.05	-	-	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Ethylbenzene	mg/L	0.0016	0.008	-	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Ethylene Dibromide	mg/L	-	0.005	-	0.00019	<0.00019	<0.00019	<0.00019	<0.00019	<0.00019	<0.00019	<0.00019	<0.00019	<0.00019	<0.00019
Hexane	mg/L	-	-	-	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Methyl Ethyl Ketone	mg/L	-	0.4	-	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Methyl Isobutyl Ketone	mg/L	-	-	-	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Methyl tertiary-butyl ether (MTBE)	mg/L	0.015	0.2	-	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
o-Xylene	mg/L	-	0.04	-	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Styrene	mg/L	-	0.004	-	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Tetrachloroethylene	mg/L	0.01	0.05	-	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Toluene	mg/L	0.024	0.0008	-	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
trans-1,2-Dichloroethylene	mg/L	-	-	-	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
trans-1,3-Dichloropropene	mg/L	-	-	-	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Trichloroethylene	mg/L	0.005	0.02	-	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Trichlorofluoromethane	mg/L	-	-	-	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Vinyl Chloride	mg/L	0.001	0.6	-	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Xylenes, m+p	mg/L	-	-	-	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Xylenes, total	mg/L	-	-	-	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Notes:

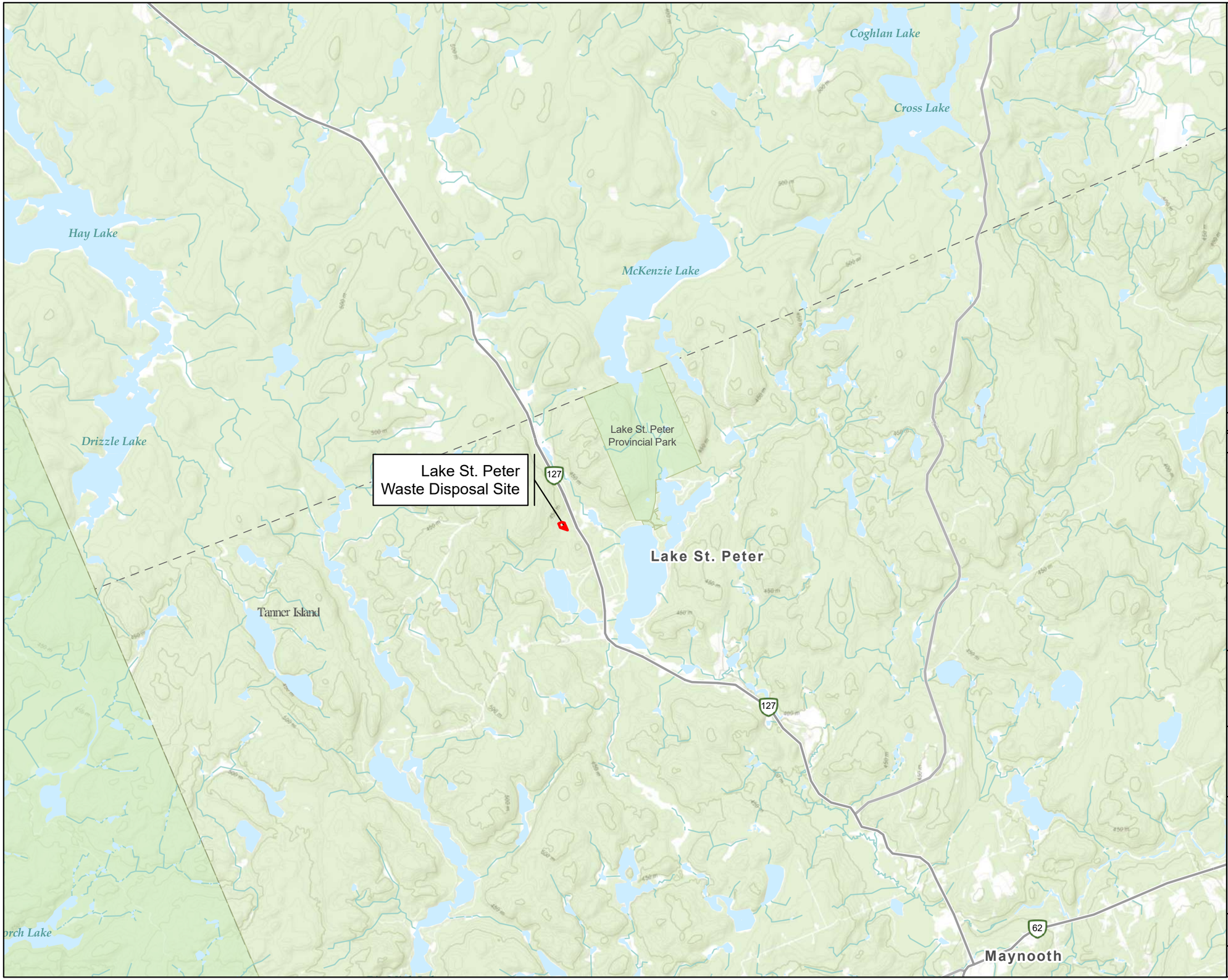
Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds ODWQS-ALL-MERGED	Ontario Drinking Water Quality Standards All Types Merged
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General

Table 18: Municipality of Hastings Highlands Anions, Cations, General Chemistry, Metals and Volatile Organic Compounds (VOCs) in Surface Water						Site Name	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS
						Location	LSP-DP1-21	LSP-DP1-21	LSP-SW1	LSP-SW1	LSP-SW2
						Interval	LSP-DP1-21-SW	LSP-DP1-21-SW	LSP-SW1	LSP-SW1	LSP-SW2
Parameter	Units	PWQO-GENERAL	PWQO-INTERIM	MECP-GD-TA	MECP-GD-TB	Sample ID	LSP-DP1-21	LSP-DP1-21	LSP-SW1	LSP-QAQC-SW1	LSP-SW2
						Sample Date	2024-Apr-30	2024-Oct-28	2024-Apr-30	2024-Apr-30	2024-Apr-30
Anions						**Detection Limit**					
Chloride	mg/L	-	-	180	128	1	9.7	16	<1	<1	<1
Nitrate + Nitrite	mg/L	-	-	-	-	0.1	<0.1	-	<0.1	<0.1	<0.1
Nitrate as N	mg/L	-	-	-	-	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrite as N	mg/L	-	-	-	-	0.01	0.023	-	<0.01	<0.01	<0.01
Sulphate	mg/L	-	-	100	-	1	33	25	4	3.9	4.4
Cations											
Calcium (diss)	mg/L	-	-	-	-	0.2	35	50	-	-	-
Calcium (tot)	mg/L	-	-	-	-	0.2	37	48	2.2	2.5	2.8
Magnesium (diss)	mg/L	-	-	-	-	0.05	6.2	8.2	-	-	-
Magnesium (tot)	mg/L	-	-	-	-	0.05	6.2	8.2	0.56	0.58	0.66
Potassium (tot)	mg/L	-	-	-	-	0.2	15	18	0.83	0.88	1
Sodium (diss)	mg/L	-	-	-	-	0.1	13	17	-	-	-
Sodium (tot)	mg/L	-	-	-	-	0.1	13	17	1.2	1.3	1.6
Field Parameters											
pH (Field)	pH units	-	-	-	-		5.94	-	5.94	6.25	6.1
Temperature	deg. C	-	-	-	-		6.4	-	6.4	4.7	6.9
General Chemistry											
Alkalinity (as CaCO3)	mg/L	See Factsheet	-	-	-	1	160	210	10	7.3	17
Ammonia as N	mg/L	-	-	-	-	0.05	5.8	6.3	<0.05	<0.05	<0.05
Biochemical Oxygen Demand	mg/L	-	-	-	-	2	9	<2	<2	<2	<2
Chemical Oxygen Demand	mg/L	-	-	-	-	4	46	24	11	16	15
Colour	TCU	-	-	-	-	2	6	41	32	29	34
Dissolved Organic Carbon	mg/L	-	-	-	-	0.4	11	11	-	-	-
Electrical Conductivity	uS/cm	-	-	-	-	1	390	510	24	24	47
Hardness (as CaCO3)	mg/L	-	-	-	-	1	110	160	8.2	8	10
pH	pH units	6.5 - 8.5	-	6 - 9	-		6.99	7.12	6.93	6.79	8.63
Phenols	mg/L	0.001	-	0.04	0.004	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Dissolved Solids	mg/L	-	-	-	-	10	250	280	60	60	35
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	0.1, 0.5	6.4	7.3	0.22	0.25	0.23
Total Phosphorus	mg/L	0.03	-	-	-	0.02	0.089	0.039	<0.02	<0.02	<0.02
Total Suspended Solids	mg/L	-	-	-	-	10	68	67	<10	<10	<10
Turbidity	NTU	-	-	-	-	0.1	89	160	0.3	0.4	0.3
Unionized Ammonia (Calc)	mg/L	-	-	-	-	0.00061	0.00085	0.0018	<0.00061	<0.00061	<0.00061
Metals											
Aluminum (diss, 0.2 µm)	mg/L	-	Calculated	-	-	0.005	<0.005	0.007	0.15	0.15	0.11
Arsenic (tot)	mg/L	-	0.005	-	-	0.001	0.0081	0.012	<0.001	<0.001	<0.001
Barium (diss)	mg/L	-	-	2.3	-	0.002	0.29	0.4	-	-	-
Barium (tot)	mg/L	-	-	2.3	-	0.002	0.31	0.37	0.0096	0.0096	0.0098
Beryllium (tot)	mg/L	Calculated	-	-	-	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Boron (diss)	mg/L	-	0.2	3.55	1.5	0.01	0.29	0.36	-	-	-
Boron (tot)	mg/L	-	0.2	3.55	1.5	0.01	0.29	0.37	<0.01	<0.01	<0.01
Cadmium (tot)	mg/L	-	Calculated	0.00021	0.000017	0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009
Chromium (tot)	mg/L	-	-	0.064	-	0.005	0.026	0.046	<0.005	<0.005	<0.005
Cobalt (tot)	mg/L	-	0.0009	-	-	0.0005	0.03	0.023	<0.0005	<0.0005	<0.0005
Copper (tot)	mg/L	-	Calculated	0.0069	-	0.0009	**0.019**	**0.02**	0.0011	0.0012	0.0012
Iron (diss)	mg/L	0.3	-	1	-	0.1	**26**	**27**	-	-	-
Iron (tot)	mg/L	0.3	-	1	-	0.1	**37**	**66**	<0.1	<0.1	0.12
Lead (tot)	mg/L	-	Calculated	0.002	-	0.0005	**0.0022**	0.00076	<0.0005	<0.0005	<0.0005
Manganese (diss)	mg/L	-	-	-	-	0.002	7.2	9.7	-	-	-
Manganese (tot)	mg/L	-	-	-	-	0.002, 0.01	7.4	11	0.0033	0.0033	0.011
Mercury (diss)	mg/L	0.0002	-	-	-	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum (tot)	mg/L	-	0.04	-	-	0.0005	0.0026	0.0028	<0.0005	<0.0005	<0.0005
Nickel (tot)	mg/L	0.025	-	-	-	0.001	0.029	0.03	<0.001	<0.001	<0.001
Selenium (tot)	mg/L	0.1	-	-	-	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Silicon (tot)	mg/L	-	-	-	-	0.05	6.3	6.6	4.1	4.3	4.4
Silver (tot)	mg/L	0.0001	-	-	-	0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009
Strontium (tot)	mg/L	-	-	-	-	0.001	0.21	0.27	0.014	0.014	0.017
Thallium (tot)	mg/L	-	0.0003	-	-	0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Titanium (tot)	mg/L	-	-	-	-	0.005	0.028	0.0062	<0.005	<0.005	<0.005
Vanadium (tot)	mg/L	-	0.006	-	-	0.0005	0.0055	0.0045	<0.0005	0.00056	0.00061
Zinc (tot)	mg/L	-	0.02	0.089	0.03	0.005	0.2	0.37	<0.005	<0.005	<0.005
VOCs											
1,1,1,2-Tetrachloroethane	mg/L	-	0.02	-	-	0.0005	<0.0005	-	-	-	-
1,1,1-Trichloroethane	mg/L	-	0.01	-	-	0.0002	<0.0002	-	-	-	-
1,1,2,2-Tetrachloroethane	mg/L	-	0.07	-	-	0.0004	<0.0004	-	-	-	-
1,1,2-Trichloroethane	mg/L	-	0.8	-	-	0.0004	<0.0004	-	-	-	-
1,1-Dichloroethane	mg/L	-	0.2	-	-	0.0002	<0.0002	-	-	-	-
1,1-Dichloroethylene	mg/L	-	0.04	-	-	0.0002	<0.0002	-	-	-	-
1,2-Dichlorobenzene	mg/L	0.0025	-	-	-	0.0004	<0.0004	-	-	-	-
1,2-Dichloroethane	mg/L	-	0.1	-	-	0.00049	<0.00049	-	-	-	-
1,2-Dichloropropane	mg/L	-	0.0007	-	-	0.0002	<0.0002	-	-	-	-
1,3-Dichlorobenzene	mg/L	0.0025	-	-	-	0.0004	<0.0004	-	-	-	-
1,4-Dichlorobenzene	mg/L	0.004	-	-	-	0.0004	<0.0004	-	-	-	-
Acetone	mg/L	-	-	-	-	0.01	<0.01	-	-	-	-
Benzene	mg/L	-	0.1	-	-	0.0002	<0.0002	-	-	-	-
Bromodichloromethane	mg/L	-	0.2	-	-	0.0005	<0.0005	-	-	-	-
Bromoform	mg/L	-	0.06	-	-	0.001	<0.001	-	-	-	-
Bromomethane	mg/L	-	0.0009	-	-	0.0005	<0.0005	-	-	-	-
Carbon Tetrachloride	mg/L	-	-	-	-	0.00019	<0.00019	-	-	-	-
Chlorobenzene	mg/L	0.015	-	-	-	0.0002	<0.0002	-	-	-	-
Chloroform	mg/L	-	-	-	-	0.0002	<0.0002	-	-	-	-
cis-1,2-Dichloroethylene	mg/L	-	-	-	-	0.0005	0.0006	-	-	-	-
cis-1,3-Dichloropropene	mg/L	-	-	-	-	0.0003	<0.0003	-	-	-	-
Dibromochloromethane	mg/L	-	-	-	-	0.0005	<0.0005	-	-	-	-
Dichlorodifluoromethane	mg/L	-	-	-	-	0.001	<0.001	-	-	-	-
Dichloromethane	mg/L	-	-	-	-	0.002	<0.002	-	-	-	-
Ethylbenzene	mg/L	-	0.008	-	-	0.0002	<0.0002	-	-	-	-
Ethylene Dibromide	mg/L	-	0.005	-	-	0.00019	<0.00019	-	-	-	-
Hexane	mg/L	-	-	-	-	0.001	<0.001	-	-	-	-
Methyl Ethyl Ketone	mg/L	-	0.4	-	-	0.01	<0.01	-	-	-	-
Methyl Isobutyl Ketone	mg/L	-	-	-	-	0.005	<0.005	-	-	-	-
Methyl tertiary-butyl ether (MTBE)	mg/L	-	0.2	-	-	0.0005	<0.0005	-	-	-	-
o-Xylene	mg/L	-	0.04	-	-	0.0002	<0.0002	-	-	-	-
Styrene	mg/L	-	0.004	-	-	0.0004	<0.0004	-	-	-	-
Tetrachloroethylene	mg/L	-	0.05	-	-	0.0002	<0.0002	-	-	-	-
Toluene	mg/L	-	0.0008	-	-	0.0002	<0.0002	-	-	-	-
trans-1,2-Dichloroethylene	mg/L	-	-	-	-	0.0005	<0.0005	-	-	-	-
trans-1,3-Dichloropropene	mg/L	-	-	-	-	0.0004	<0.0004	-	-	-	-
Trichloroethylene	mg/L	-	0.02	-	-	0.0002	<0.0002	-	-	-	-
Trichlorofluoromethane	mg/L	-	-	-	-	0.0005	<0.0005	-	-	-	-
Vinyl Chloride	mg/L	-	0.6	-	-	0.0002	<0.0002	-	-	-	-
Xylenes, m+p	mg/L	-	-	-	-	0.0002	<0.0002	-	-	-	-
Xylenes, total	mg/L	-	-	-	-	0.0002	<0.0002	-	-	-	-

Notes:

Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds MECP-GD-TA	MECP Guidance Document Table A
Concentration exceeds MECP-GD-TB	MECP Guidance Document Table B

Figures



LEGEND

Property Boundary (As surveyed by P.A. Miller, 2012)

REV.	DESCRIPTION	YY/MM/DD	BY	CHK
1				

REFERENCES

N W E S

0 2,000 4,000 Metres

1:80,000

CLIENT

Municipality of Hasting Highlands

PROJECT

Lake St. Peter Waste Disposal Site

TITLE

Site Location Map

BluMetric Environmental

The Tower - The Woolen Mill,
4 Cataraqui St.,
Kingston, Ontario K7K 1Z7
TEL: (613) 531-2725
FAX: (613) 531-1852
Email: info@blumetric.ca
Web: http://www.blumetric.ca

PROJECT #	DATE
240205-04	**February 13, 2025**

DRAWN	CHECKED	FIG NO.	REV
PB	**NW**	**01**	**0**

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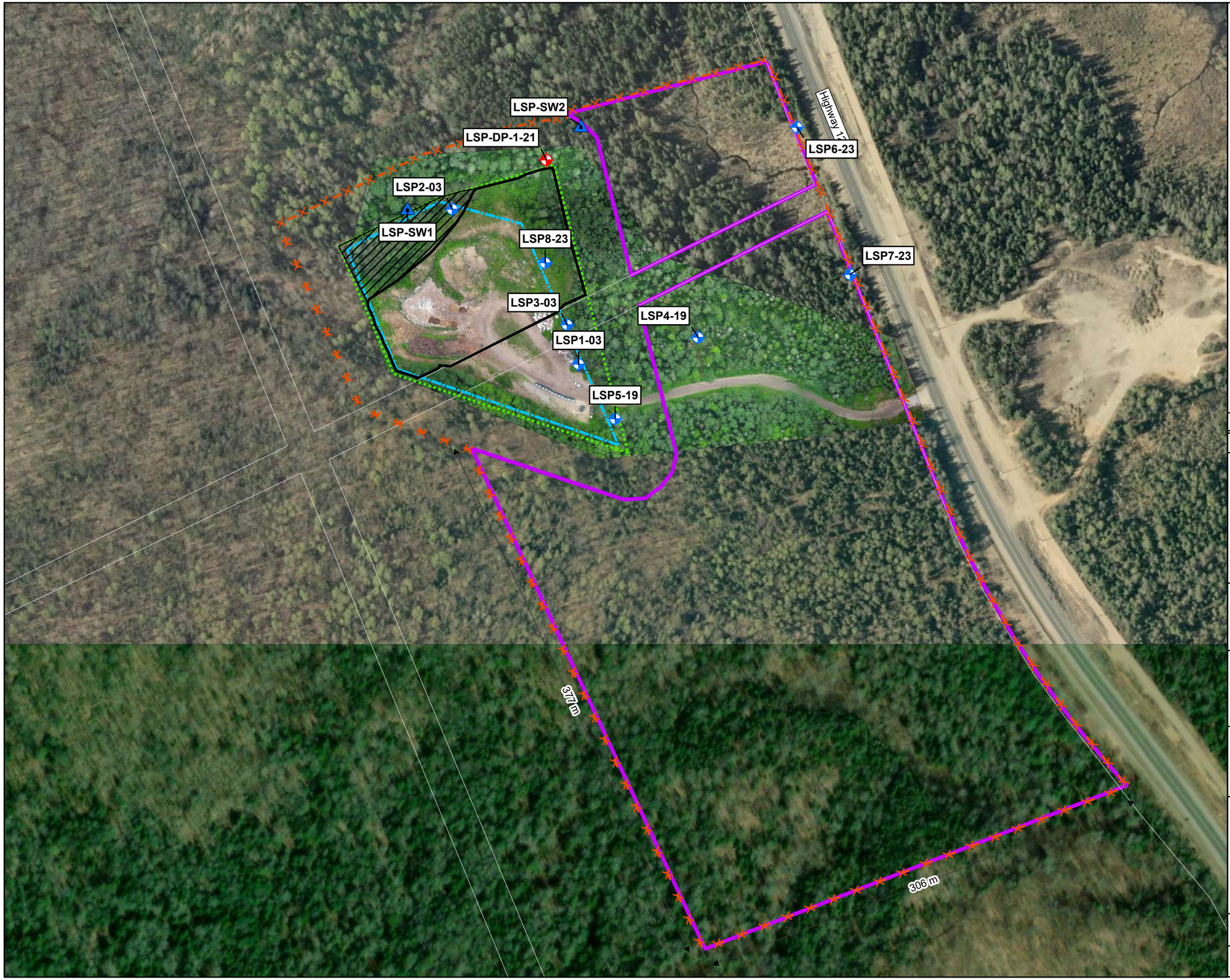

LEGEND

- Monitoring Well Location
- Drive-point Well Location
- Surface Water Location
- Phase 1 Footprint
- Approved Waste Footprint (2.2 ha)
- Lands Owned by Municipality (1.6 ha)
- Approved 17 ha Waste Site
- Proposed Contaminant Attenuation Zone (12.4 ha)
- Road Allowance Between Concessions
- No Future Waste to be Placed

NOTES:
Road Allowance Area within Waste Footprint (0.24 ha); within total Site Area (0.69 ha).

REV.	DESCRIPTION	YY/MM/DD	BY	CHK
1				

REFERENCES

DO NOT SCALE DRAWING.
THIS DRAWING MAY HAVE BEEN REDUCED. ALL SCALE NOTATIONS INDICATED ARE BASED ON 11"x17" FORMAT DRAWINGS.

N W E S

0 65 130 Metres

1:2,500

CLIENT

Municipality of Hasting Highlands

PROJECT

Lake St. Peter Waste Disposal Site

TITLE

Site Plan

BluMetric Environmental

The Tower - The Woolen Mill,
4 Cataraqui St.,
Kingston, Ontario K7K 1Z7
TEL: (613) 531-2725
FAX: (613) 531-1852
Email: info@blumetric.ca
Web: http://www.blumetric.ca

PROJECT #	DATE
240205-04	February 13, 2025

DRAWN	CHECKED	FIG NO.	REV
PB	NW	02	01

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LEGEND

- Monitoring Well Location
- Drive-point Well Location
- Surface Water Location
- Surface Water Flow Direction
- Approximate Location of Buried Waste (1.11 ha) (Cambium, 2014)
- Treeline
- Proposed Contaminant Attenuation Zone (12.4 ha)
- Approved 17 ha Waste Site
- Lands Owned by Municipality (1.6 ha)
- Approved Waste Footprint (2.2 ha)
- Phase One Cell Boundary
- No Future Waste to be Placed
- Road Allowance Between Concessions
- Forested Area to be Cleared
- Topographic Contour (0.5 masl) (June 30, 2023)
- Topographic Contour (1.0 masl) (June 30, 2023)

REV.	DESCRIPTION	YY/MM/DD	BY	CHK
1				

REFERENCES

THIS DRAWING MAY HAVE BEEN REDUCED. ALL SCALE NOTATIONS INDICATED ARE BASED ON 11"x17" FORMAT DRAWINGS.

N W E S

0 30 60 Metres

1:1,200

CLIENT

Municipality of Hasting Highlands

PROJECT

Lake St. Peter Waste Disposal Site

TITLE

Site Topography and Surface Water Flow Direction

The Tower - The Woolen Mill,
4 Cataraqui St.,
Kingston, Ontario K7K 1Z7
TEL: (613) 531-2725
FAX: (613) 531-1852
Email: info@blumetric.ca
Web: http://www.blumetric.ca

PROJECT #	DATE
240205-04	February 13, 2025

DRAWN	CHECKED	FIG NO.	REV
PB	NW	03	0

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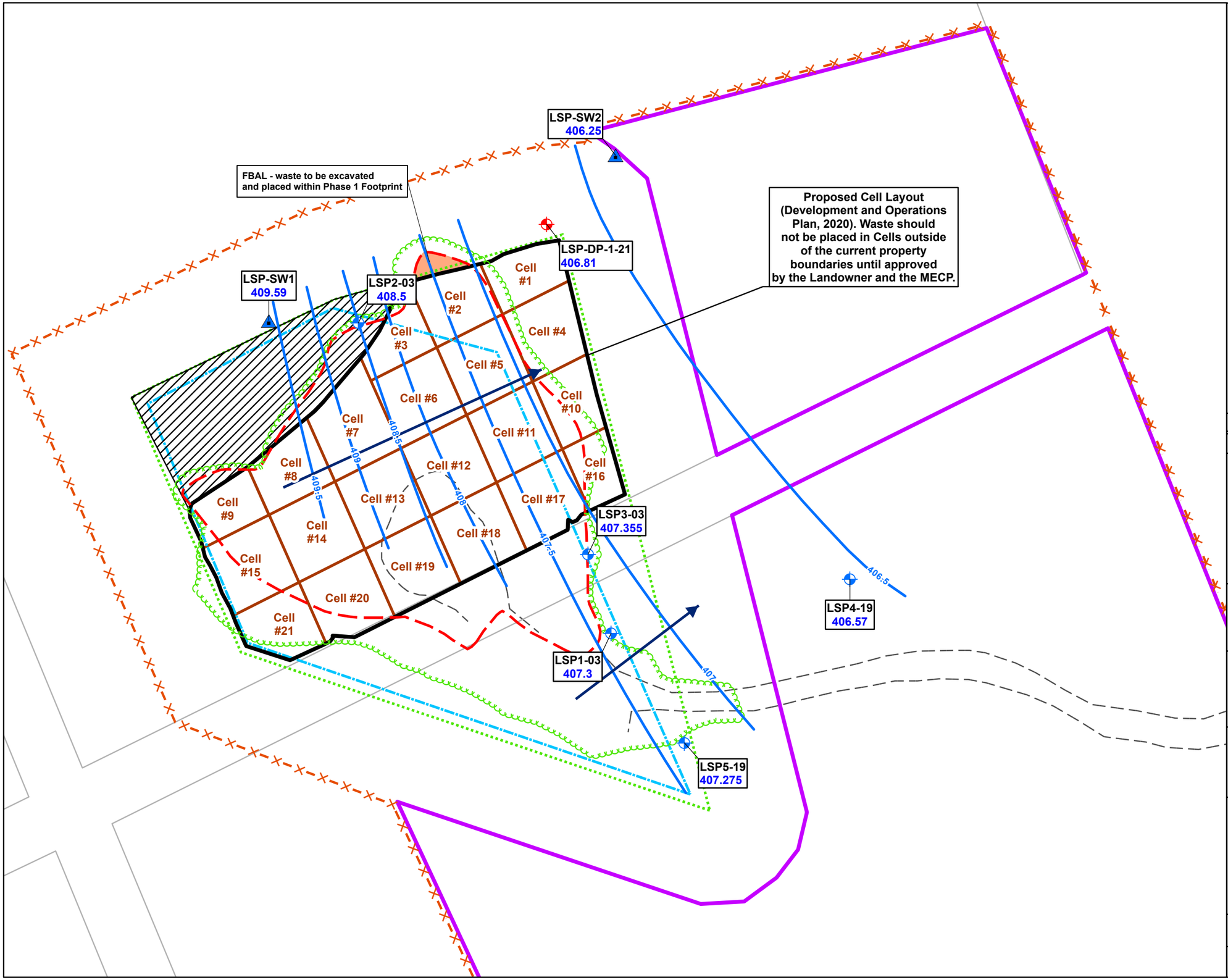

LEGEND

- Monitoring Well Location
- Drive-point Well Location
- Surface Water Location
- Lands Owned by Municipality (1.6 ha)
- Approved Waste Footprint (2.2 ha)
- No Future Waste to be Placed
- Proposed Contaminant Attenuation Zone (12.4 ha)
- Road Allowance Between Concessions
- Phase 1 Footprint
- Road
- Approved 17 ha Waste Site
- Approximate Location of Buried Waste (1.11 ha) (Cambium, 2014)
- Treeline
- FBAL
- Inferred Groundwater Flow Direction
- Groundwater Contour (0.5 m)
- 408.56 Groundwater and Surface Water Elevations (masl) (Spring, 2024)

REV.	DESCRIPTION	YY/MM/DD	BY	CHK
1				

REFERENCES

THIS DRAWING MAY HAVE BEEN REDUCED. ALL SCALE NOTATIONS INDICATED ARE BASED ON 11"x17" FORMAT DRAWINGS.

N W E S

0 30 60 Metres

1:1,250

CLIENT

Municipality of Hasting Highlands

PROJECT

Lake St. Peter Waste Disposal Site

TITLE

Groundwater Elevations and Contours Spring 2024

The Tower - The Woolen Mill,
4 Cataraqui St.,
Kingston, Ontario K7K 1Z7
TEL: (613) 531-2725
FAX: (613) 531-1852
Email: info@blumetric.ca
Web: http://www.blumetric.ca

PROJECT #	DATE
240205-04	March 06, 2025

DRAWN	CHECKED	FIG NO.	REV
PB	NW	04	0

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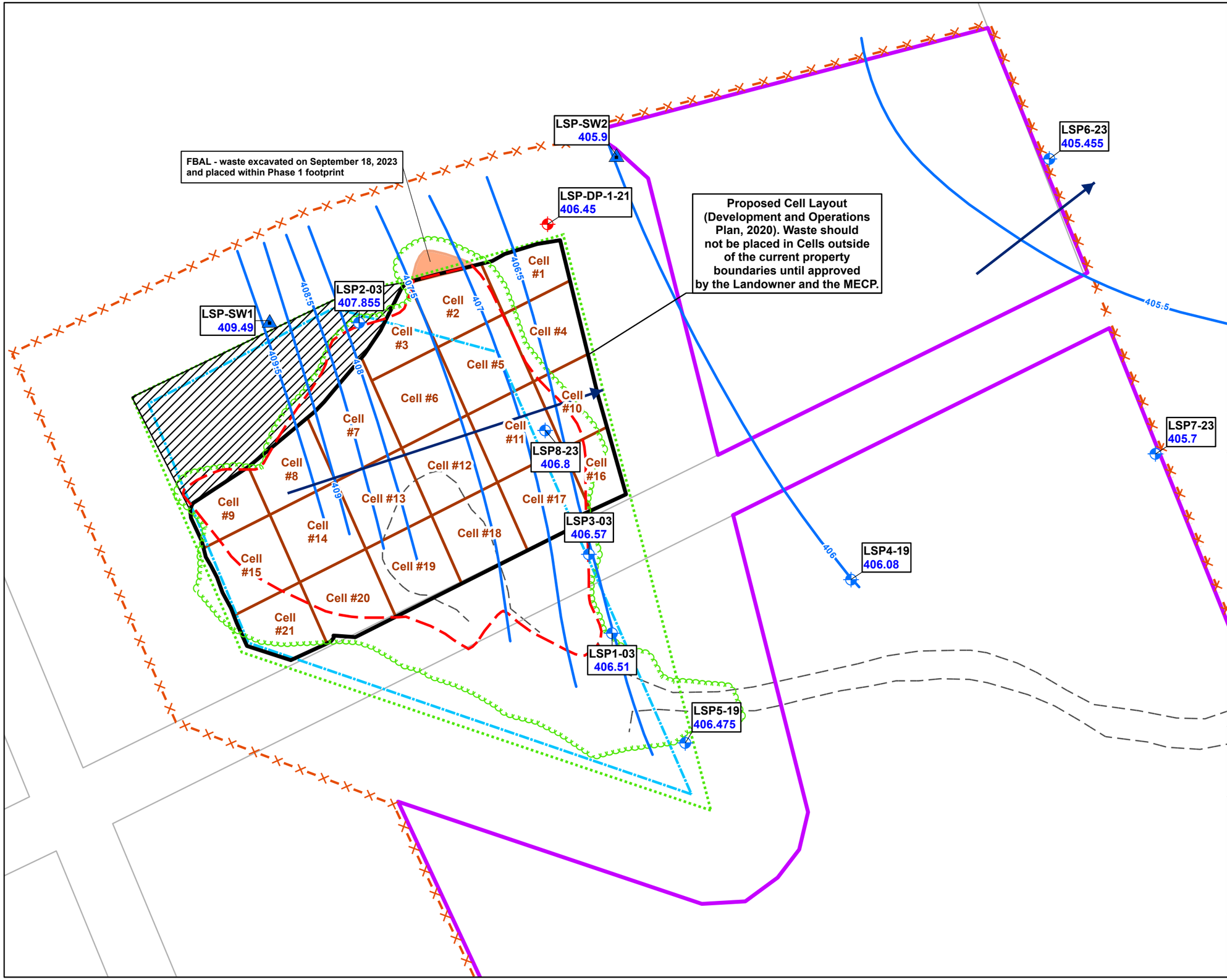

LEGEND

- Monitoring Well Location
- Drive-point Well Location
- Surface Water Location
- Lands Owned by Municipality (1.6 ha)
- Approved Waste Footprint (2.2 ha)
- Phase 1 Footprint
- No Future Waste to be Placed
- Proposed Contaminant Attenuation Zone (12.4 ha)
- Road Allowance Between Concessions
- Road
- Approved 17 ha Waste Site
- Treeline
- Approximate Location of Buried Waste (1.11 ha) (Cambium, 2014)
- FBAL
- Groundwater Contour (0.5 m)
- Inferred Groundwater Flow Direction
- 408.56 Groundwater and Surface Water Elevations (masl) (Fall, 2024)

REV.	DESCRIPTION	YY/MM/DD	BY	CHK
1				

REFERENCES

THIS DRAWING MAY HAVE BEEN REDUCED. ALL SCALE NOTATIONS INDICATED ARE BASED ON 11"x17" FORMAT DRAWINGS.

N, W, E, S

0 30 60 Metres

1:1,250

CLIENT

Municipality of Hasting Highlands

PROJECT

Lake St. Peter Waste Disposal Site

TITLE

Groundwater Elevations and Contours Fall 2024

BluMetric Environmental

The Tower - The Woolen Mill,
4 Cataraqui St.,
Kingston, Ontario K7K 1Z7
TEL: (613) 531-2725
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Web: http://www.blumetric.ca

PROJECT #	DATE
240205-04	March 06, 2025

DRAWN	CHECKED	FIG NO.	REV
PB	NW	05	0

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Site Photographs

Photo 1: Front signage – April 30, 2024

Photo 2: Front gate – April 30, 2024

Photo 3: Waste & recycling collection bins – April 30, 2024

Photo 4: Scrap metal – April 30, 2024

Photo 5: LSP-SW1 monitoring location – April 30, 2024

Photo 6: LSP-SW2 monitoring location – April 30, 2024

Photo 7: Segregated tires – April 30, 2024

Photo 8: Segregated bulky waste – April 30, 2024

Photo 9: Front signage – October 28, 2024

Photo 10: Front gate – October 28, 2024

Photo 11: Waste & recycling collection bins – October 28, 2024

Photo 12: Scrap metal – October 28, 2024

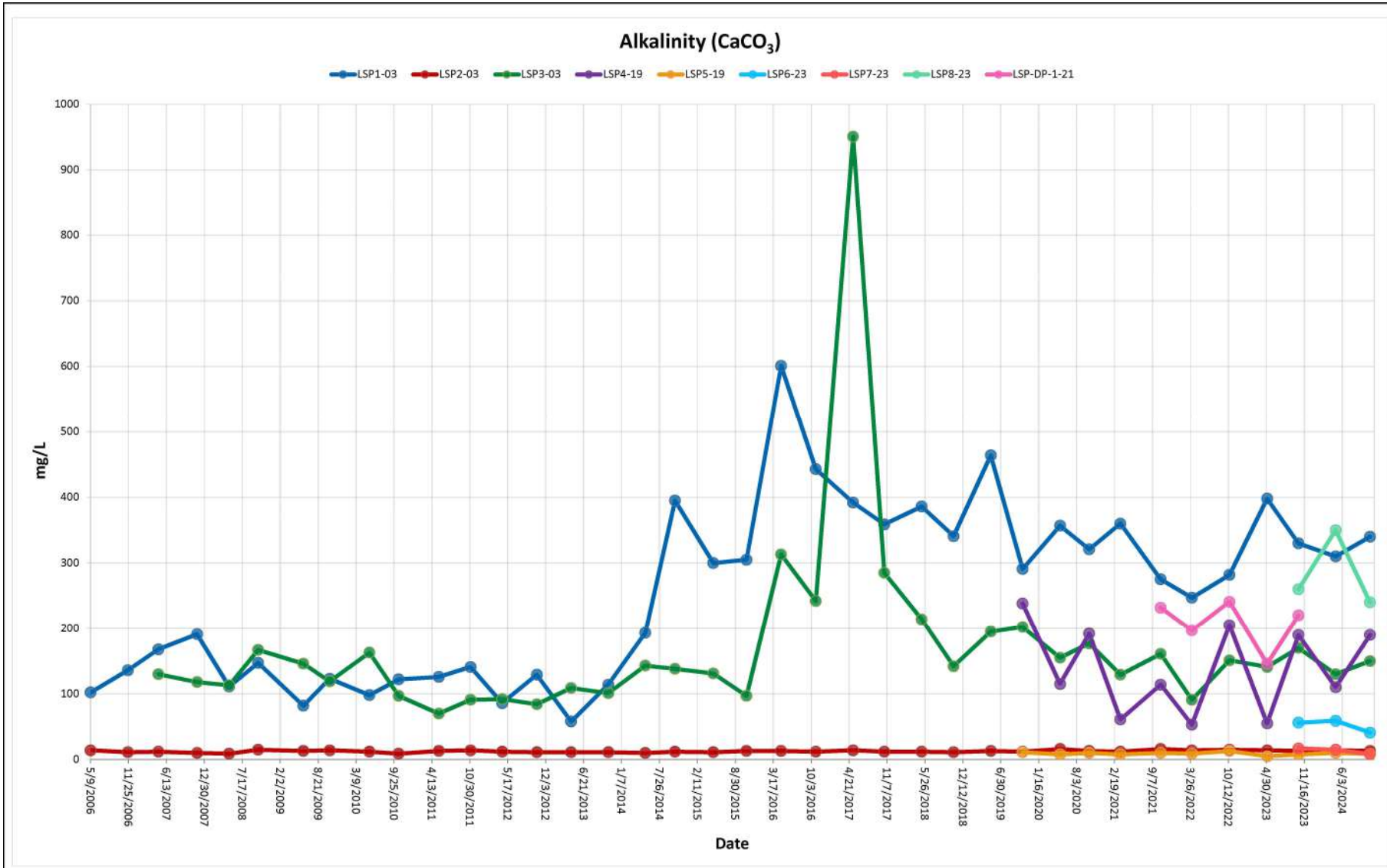
Photo 13: LSP-SW1 monitoring location – October 28, 2024

Photo 14: LSP-SW2 monitoring location – October 28, 2024

Photo 15: Segregated tires – October 28, 2024

Photo 16: Segregated bulky waste – October 28, 2024

Chemistry Trend Graphs



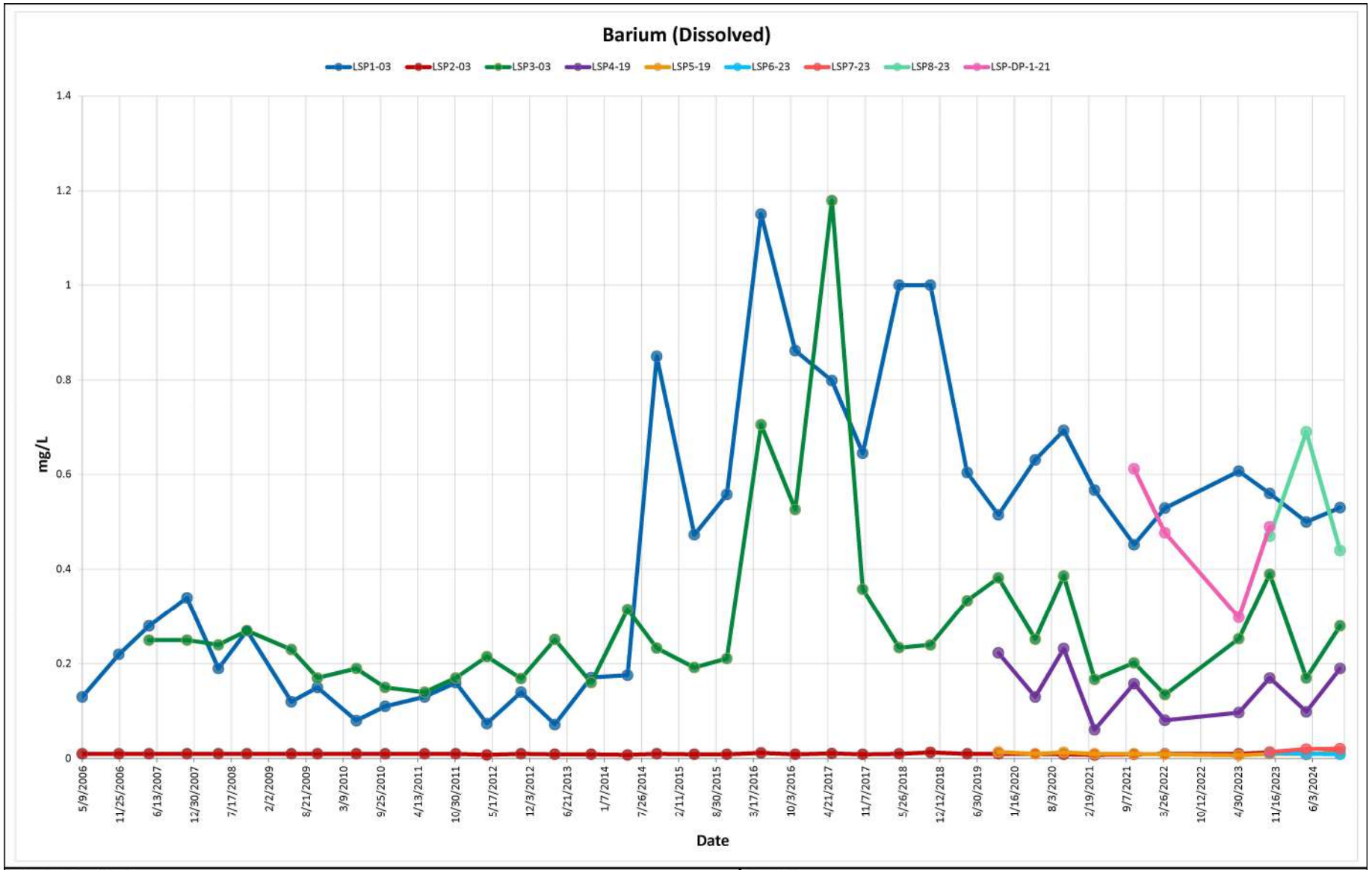
Lake St Peter WDS
Municipality of Hasting's Highlands

BluMetric Proj No: 240205
Date: March 17, 2025

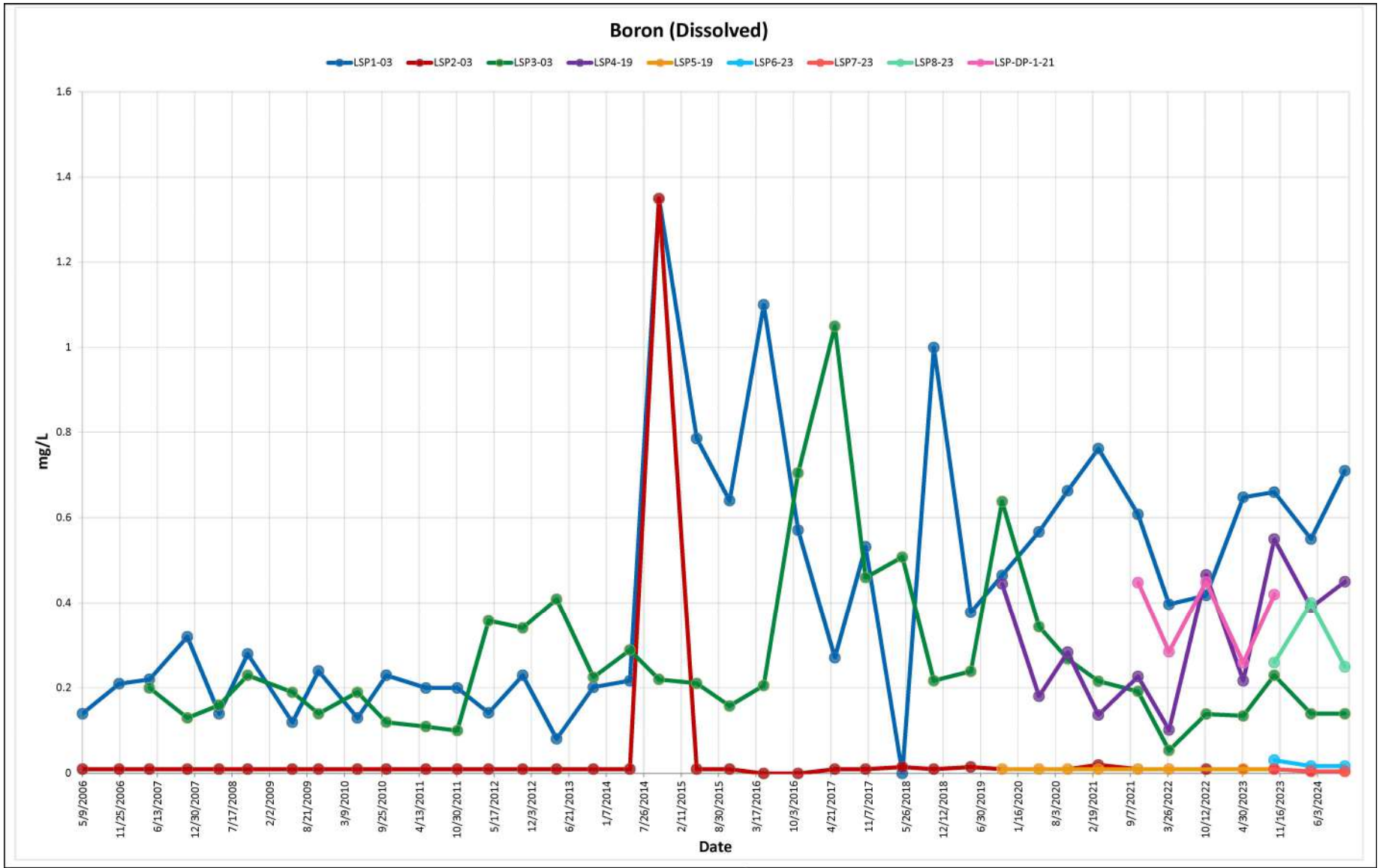
Graph 1
Alkalinity in Groundwater

Created by: JL
Checked by: CM

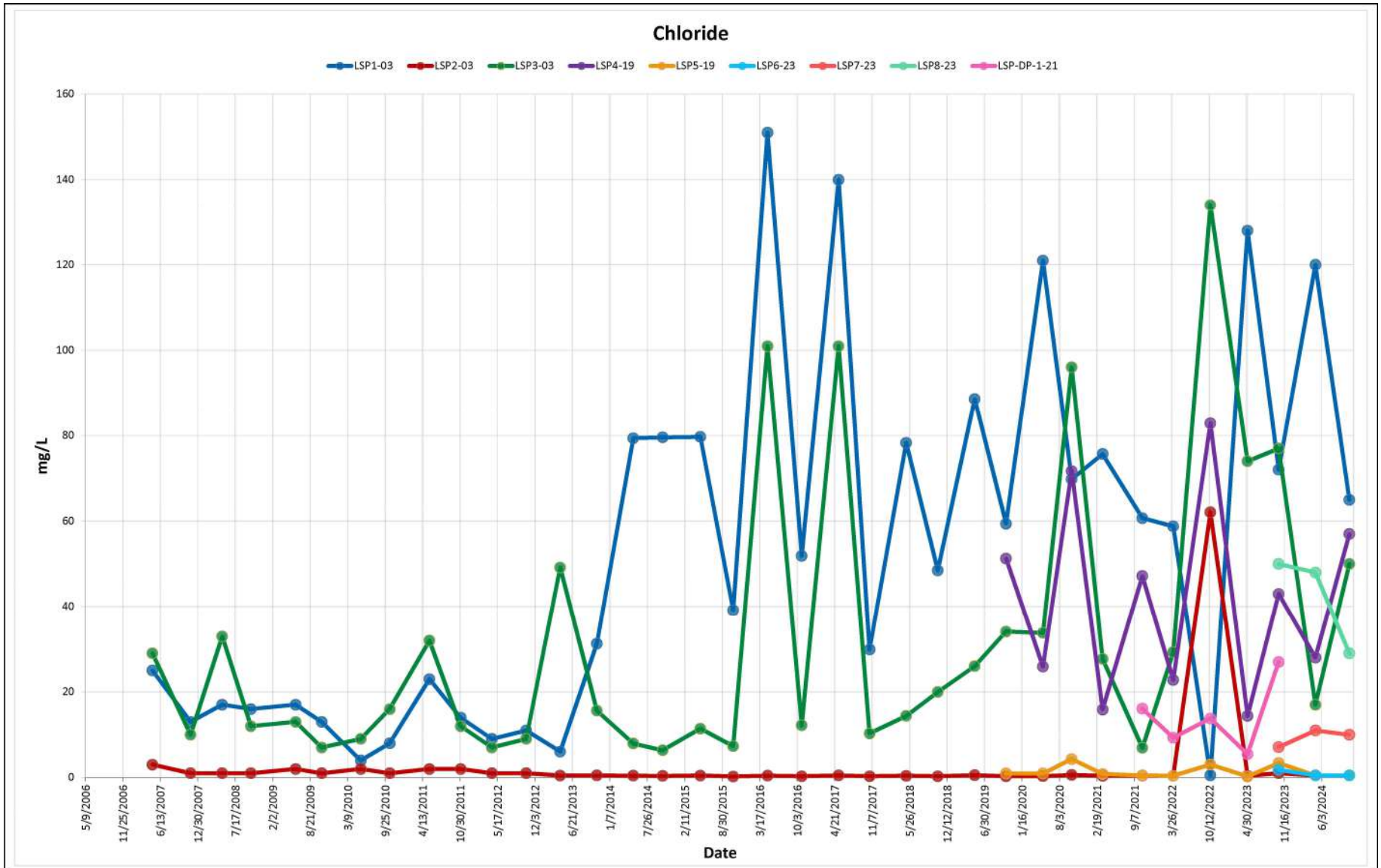
BluMetric™ Environmental



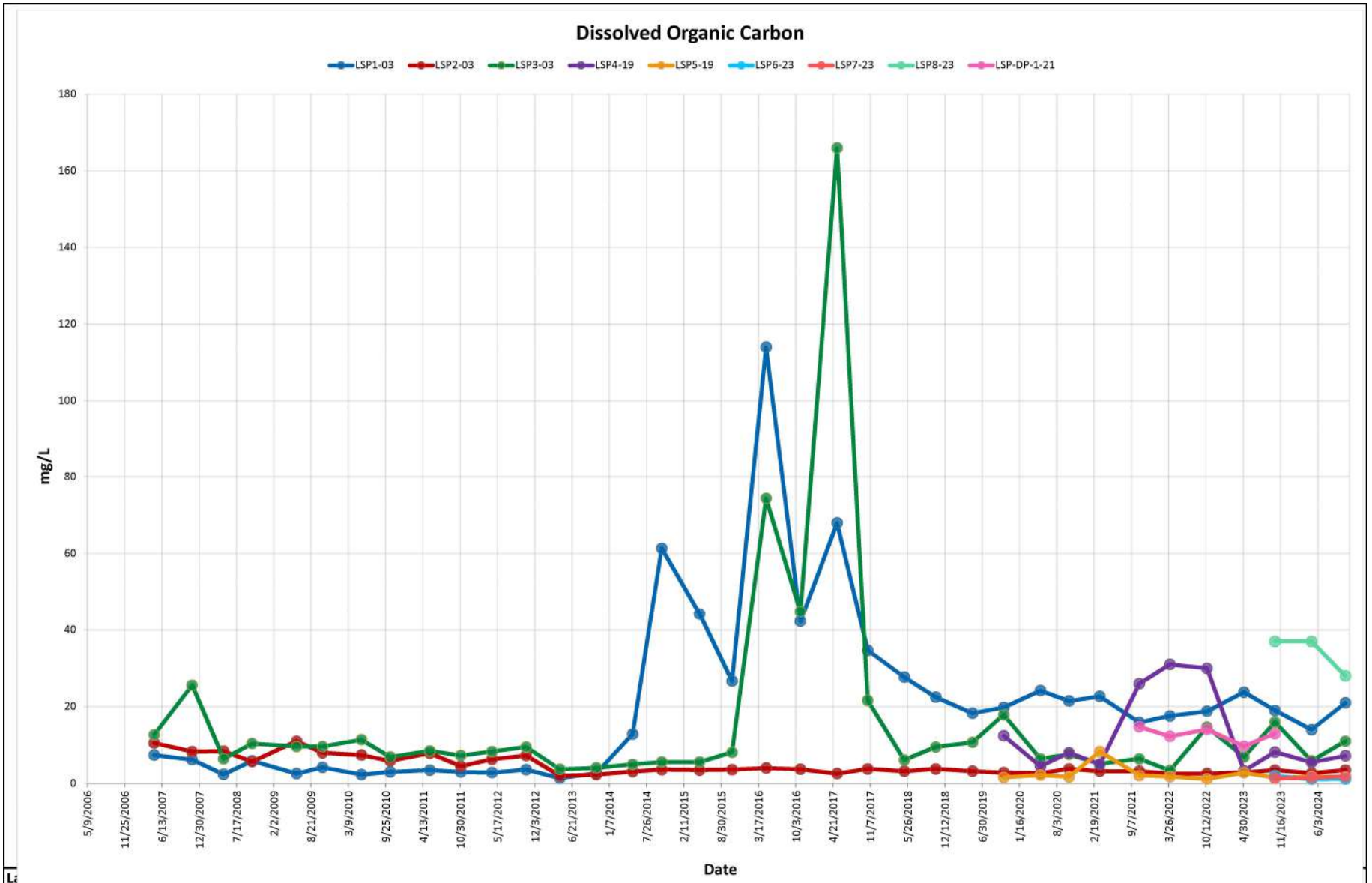
Lake St Peter WDS **Municipality of Hasting's Highlands**	**Graph 2** **Dissolved Barium in Groundwater**
BluMetric Proj No: 240205 **Date:** March 17, 2025	**Created by: JL** **Checked by: CM**



Lake St Peter WDS **Municipality of Hasting's Highlands**	**Graph 3** **Dissolved Boron in Groundwater**
BluMetric Proj No: 240205 **Date:** March 17, 2025	**Created by: JL** **Checked by: CM**



Lake St Peter WDS **Municipality of Hasting's Highlands**	**Graph 4** **Chloride in Groundwater**
BluMetric Proj No: 240205 **Date:** March 17, 2025	**Created by: JL** **Checked by: CM**

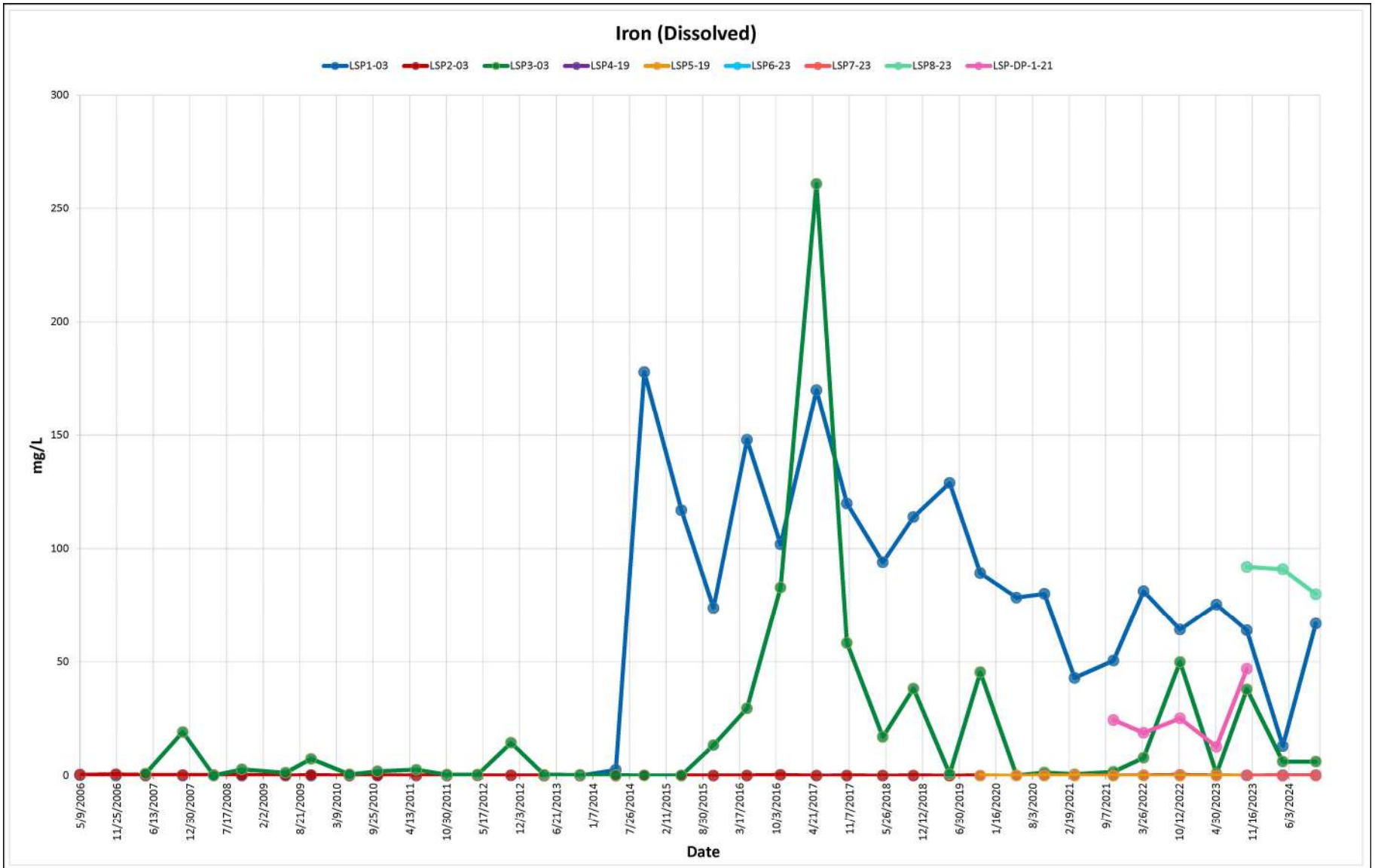


Municipality of Hasting's Highlands

Dissolved Organic Carbon in Groundwater

BluMetric Proj No: 240205
Date: March 17, 2025

Created by: JL
Checked by: CM



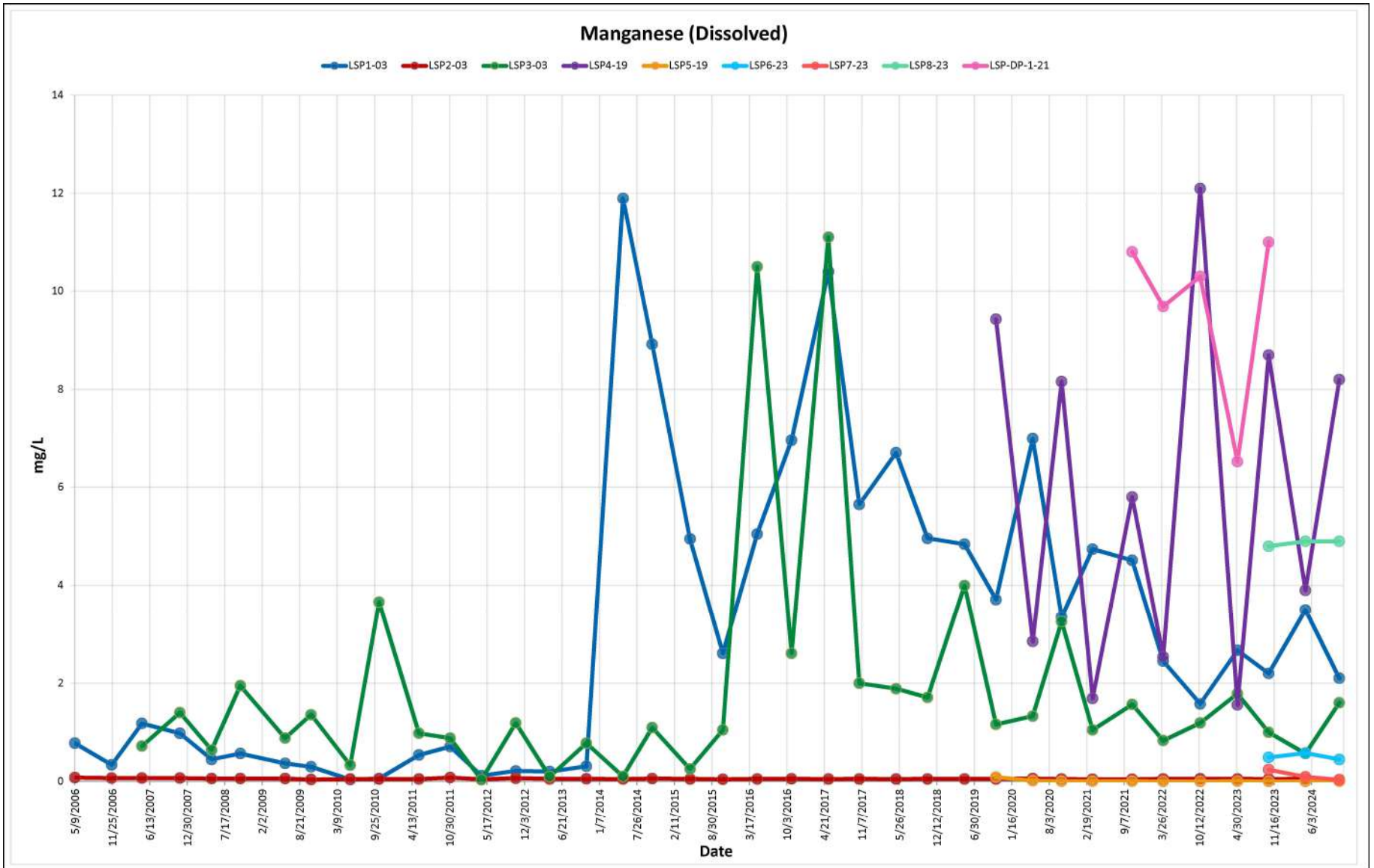
Lake St Peter WDS
Municipality of Hasting's Highlands

BluMetric Proj No: 240205
Date: March 17, 2025

Graph 6
Dissolved Iron in Groundwater

Created by: JL
Checked by: CM

BluMetric™ Environmental

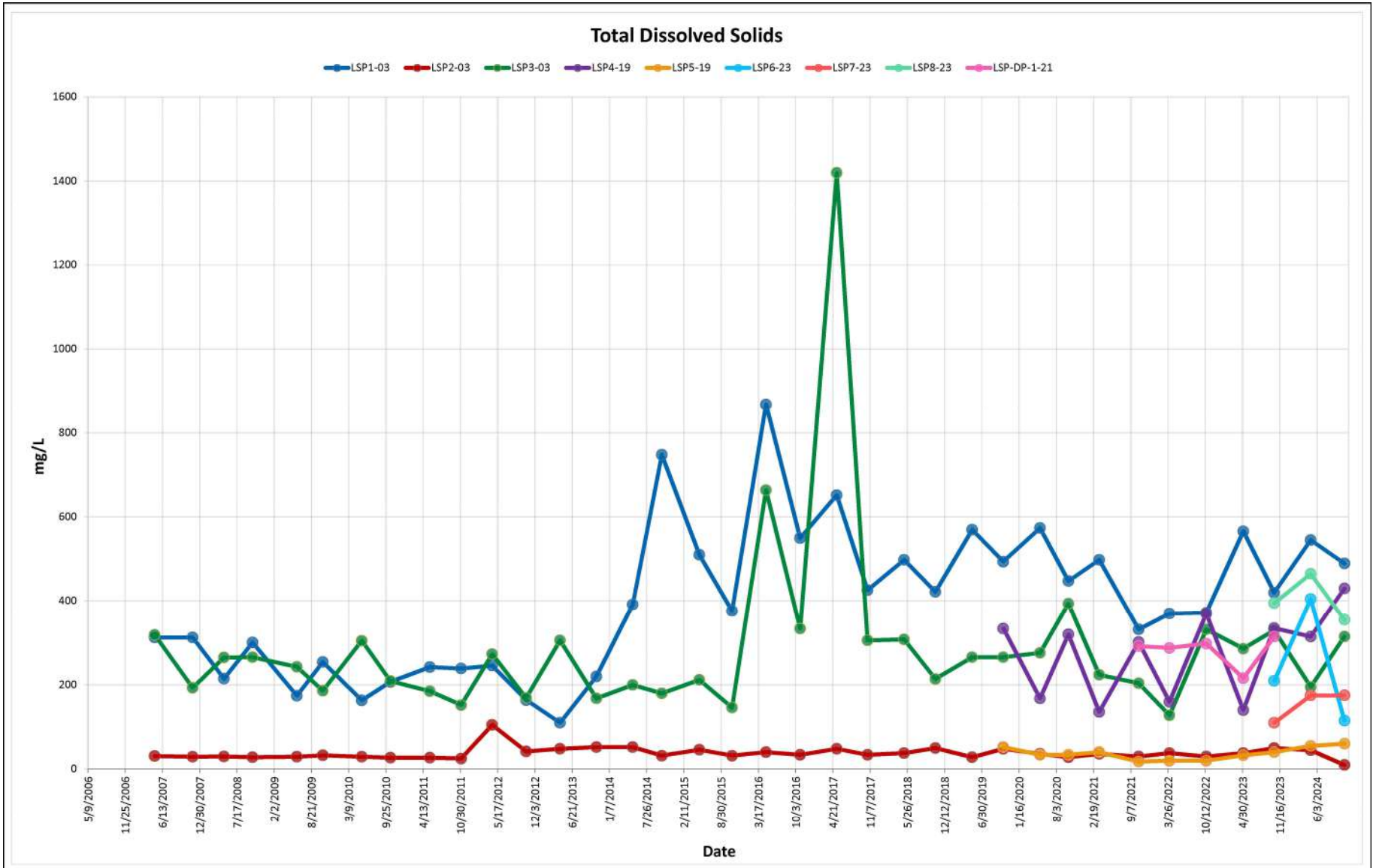


Lake St Peter WDS
Municipality of Hasting's Highlands

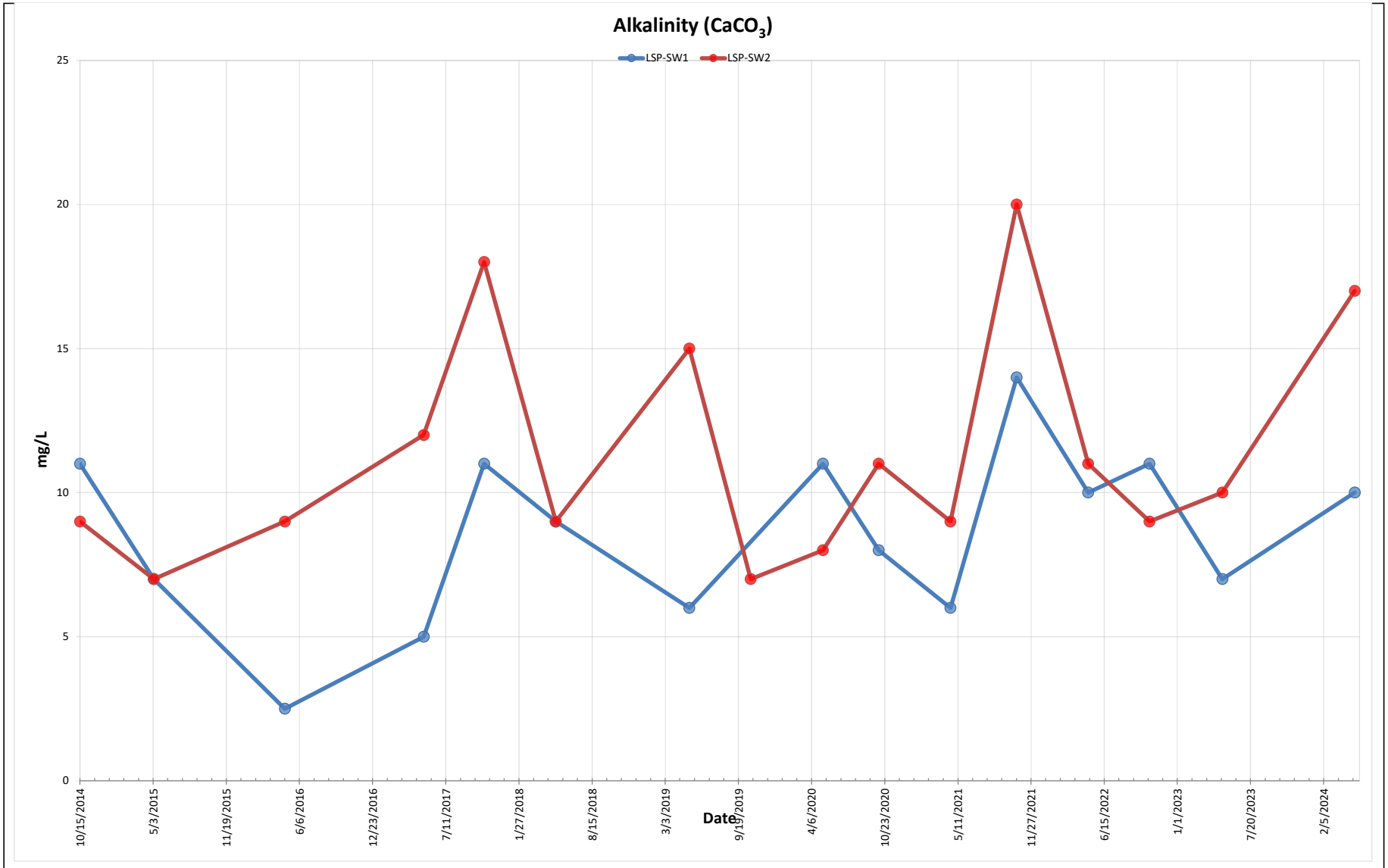
BluMetric Proj No: 240205
Date: March 17, 2025

Graph 7
Dissolved Manganese in Groundwater

Created by: JL
Checked by: CM



Lake St Peter WDS **Municipality of Hasting's Highlands**	**Graph 8** **Total Dissolved Solids in Groundwater**
BluMetric Proj No: 240205 **Date:** March 17, 2025	**Created by: JL** **Checked by: CM**

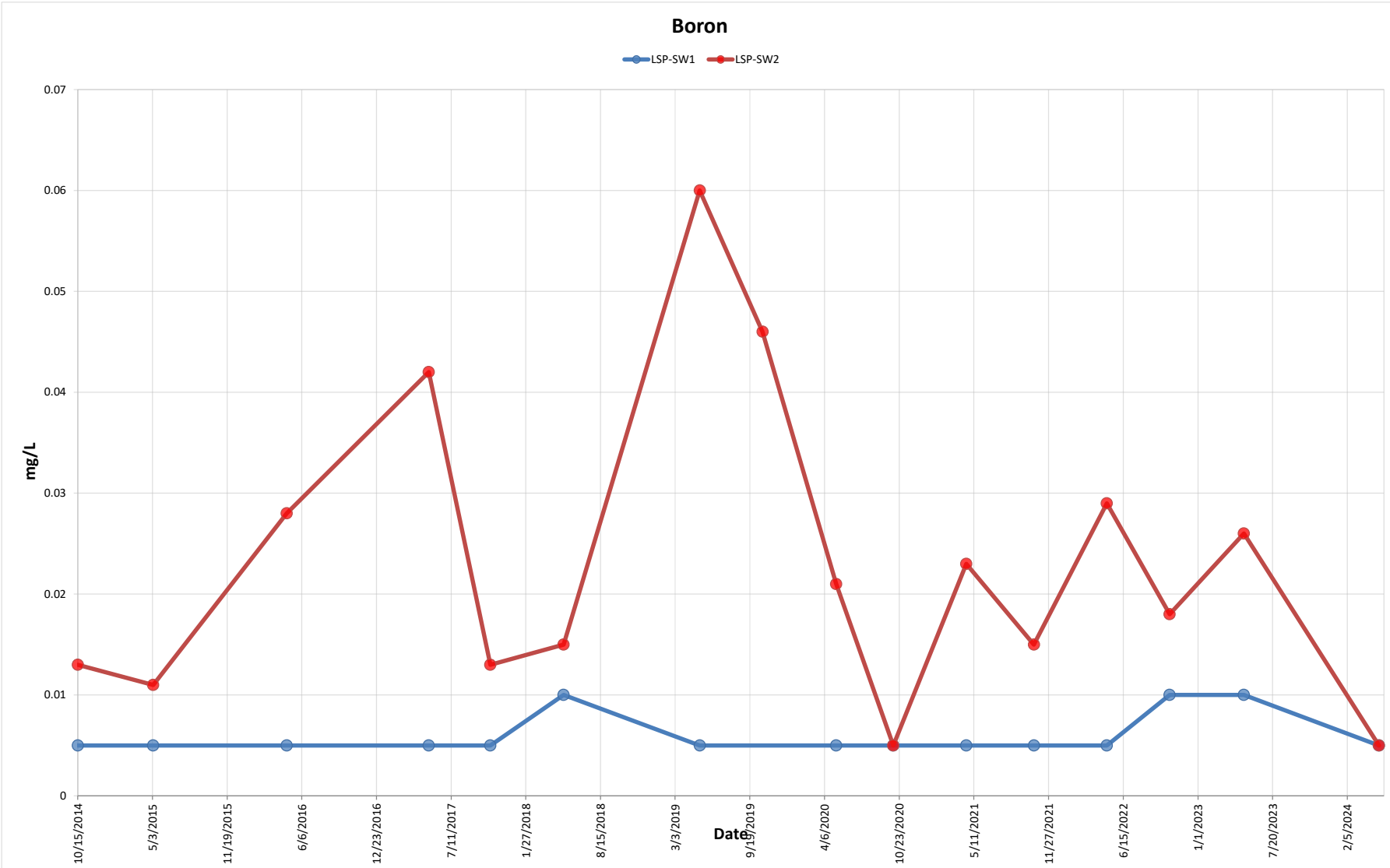


Lake St Peter WDS
Municipality of Hasting's Highlands

BluMetric Proj No: **240205**
Date: **March 17, 2025**

Graph 9
Alkalinity in Surface Water

Created by: JL
Checked by: CM

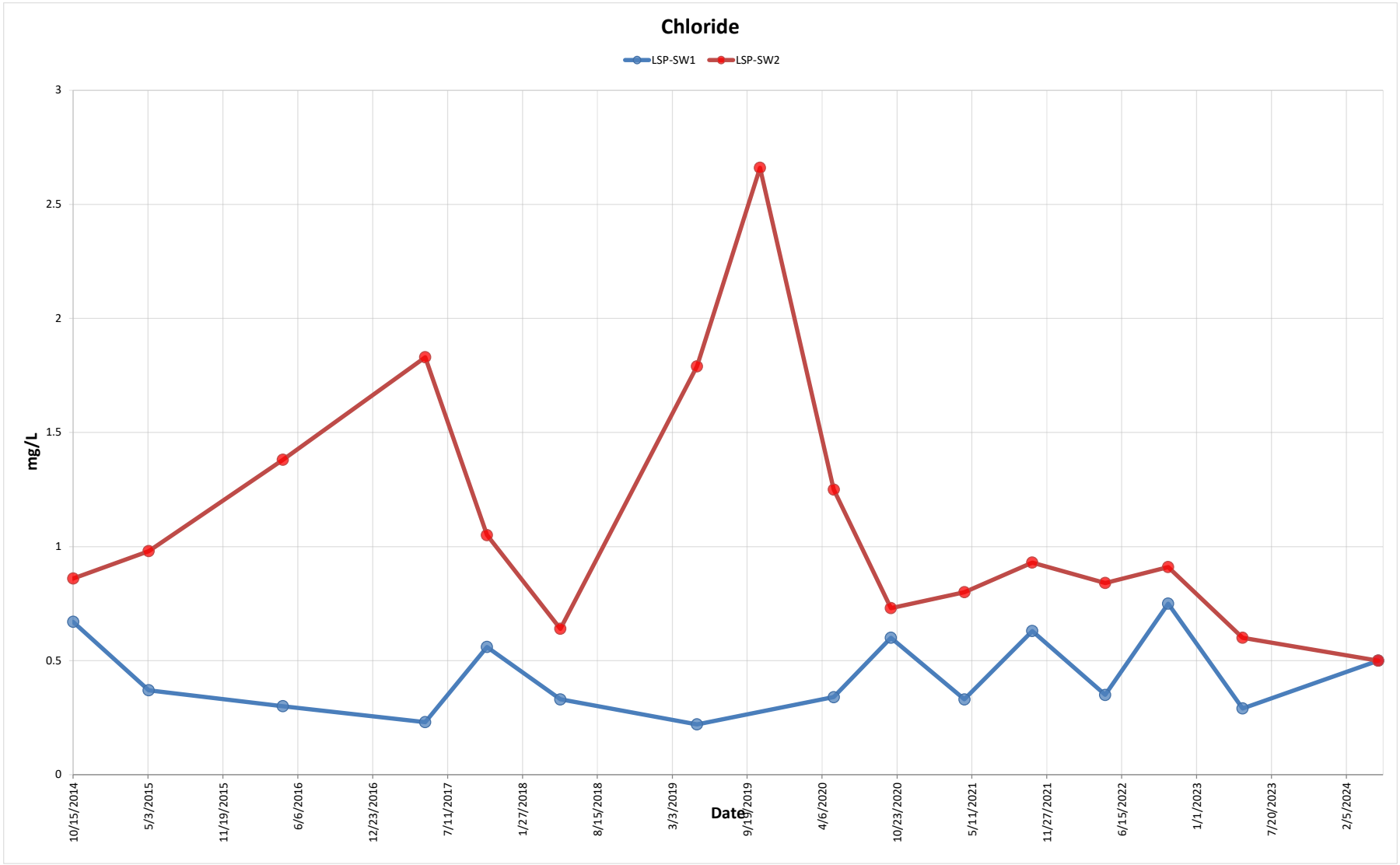


Lake St Peter WDS
Municipality of Hasting's Highlands

BluMetric Proj No: **240205**
Date: **March 17, 2025**

Graph 10
Boron in Surface Water

Created by: JL
Checked by: CM

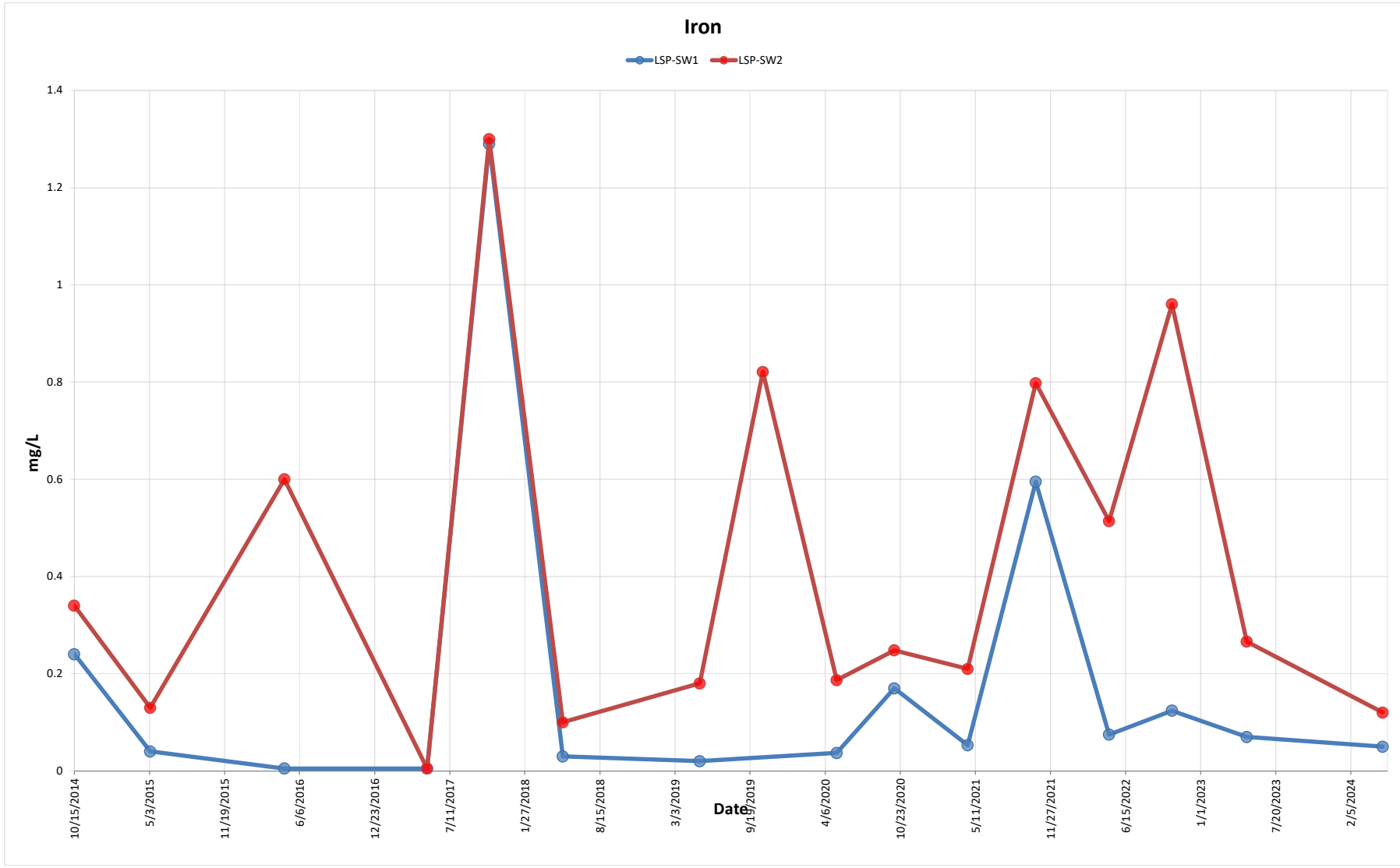


Lake St Peter WDS
Municipality of Hasting's Highlands

BluMetric Proj No: **240205**
Date: **March 17, 2025**

Graph 11
Chloride in Surface Water

Created by: JL
Checked by: CM

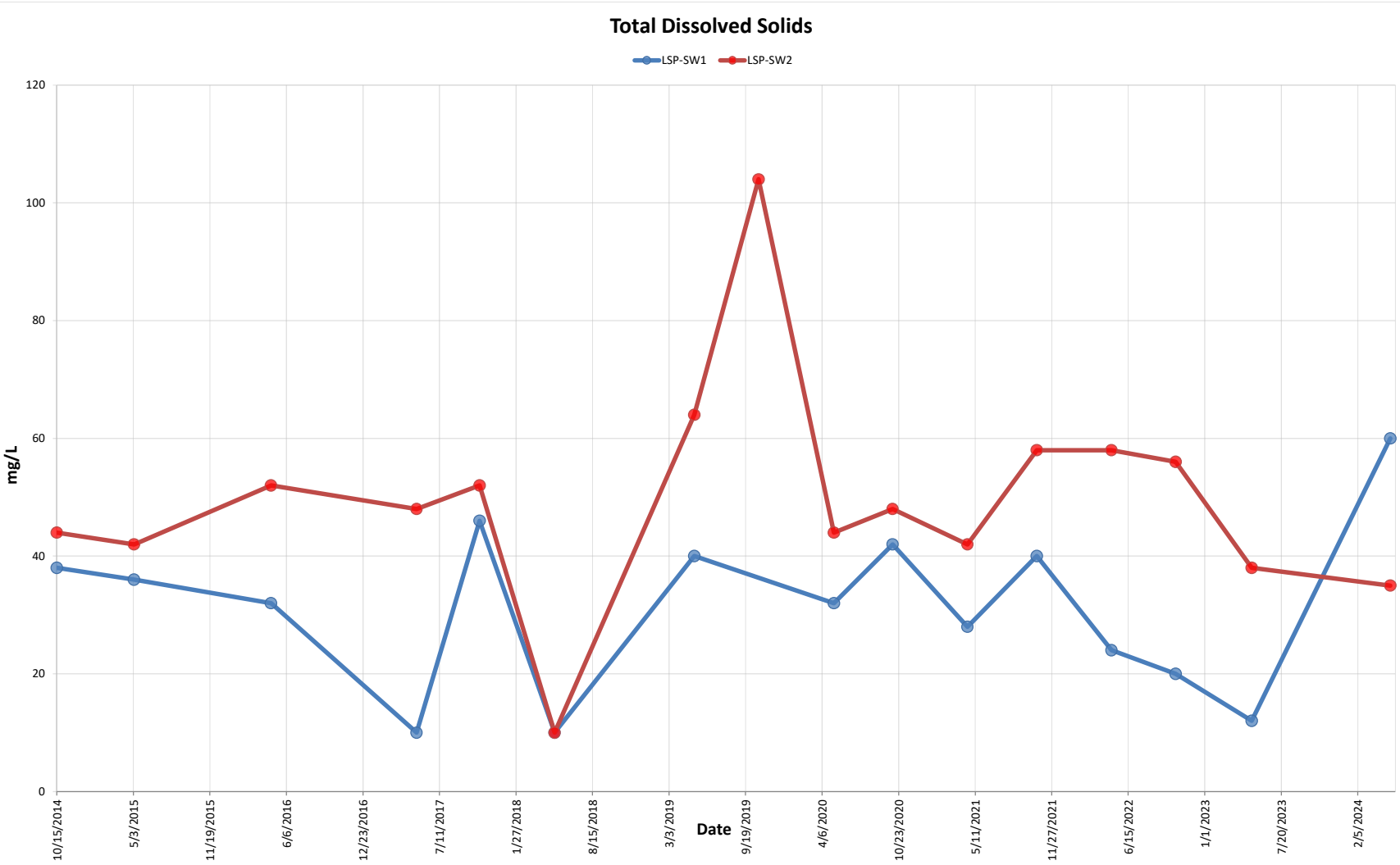


Lake St Peter WDS
Municipality of Hasting's Highlands

BluMetric Proj No: **240205**
Date: **March 17, 2025**

Graph 12
Iron in Surface Water

Created by: JL
Checked by: CM

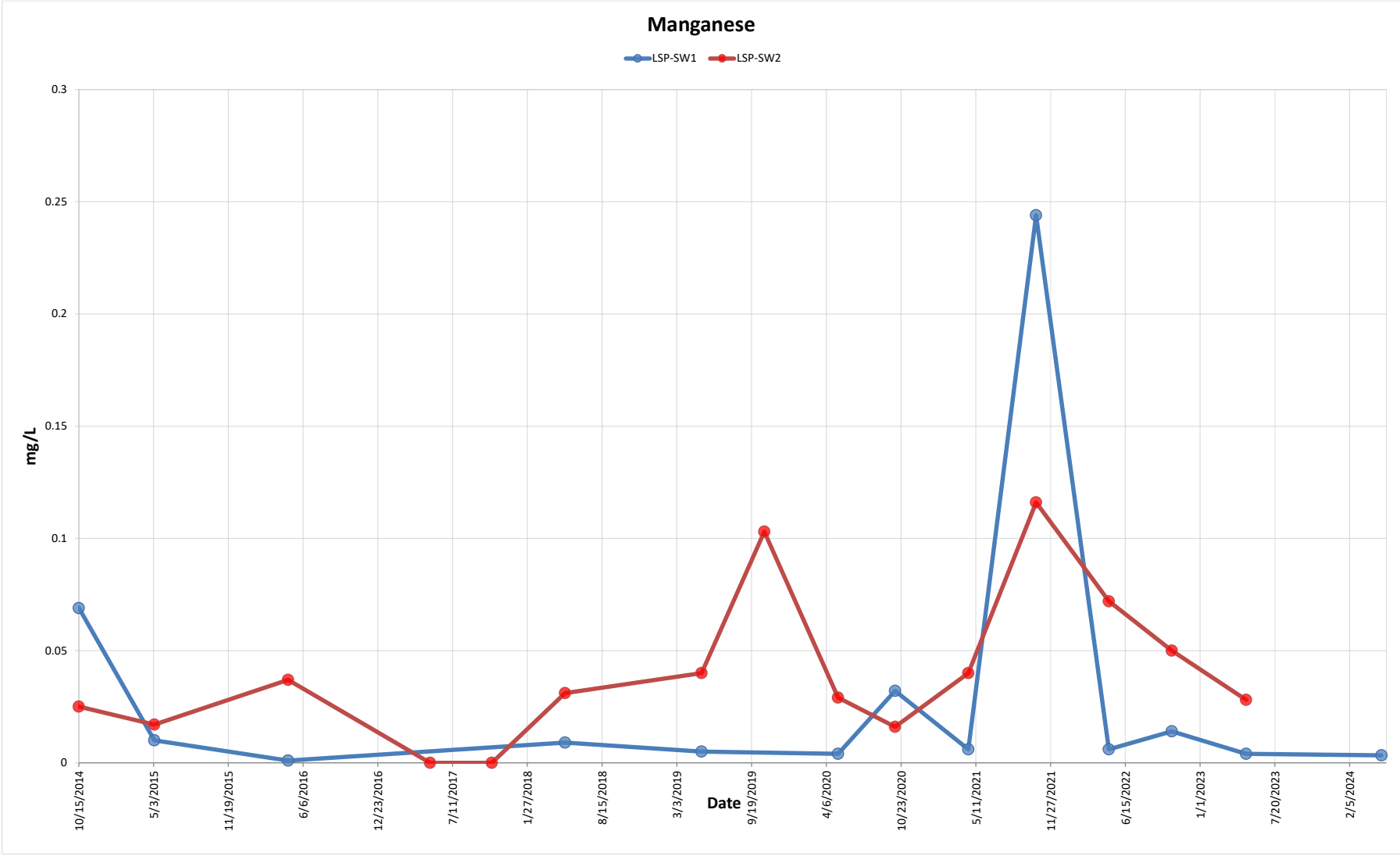


Lake St Peter WDS
Municipality of Hasting's Highlands

BluMetric Proj No: **240205**
Date: **March 17, 2025**

Graph 14
Total Dissolved Solids in Surface Water

Created by: JL
Checked by: CM

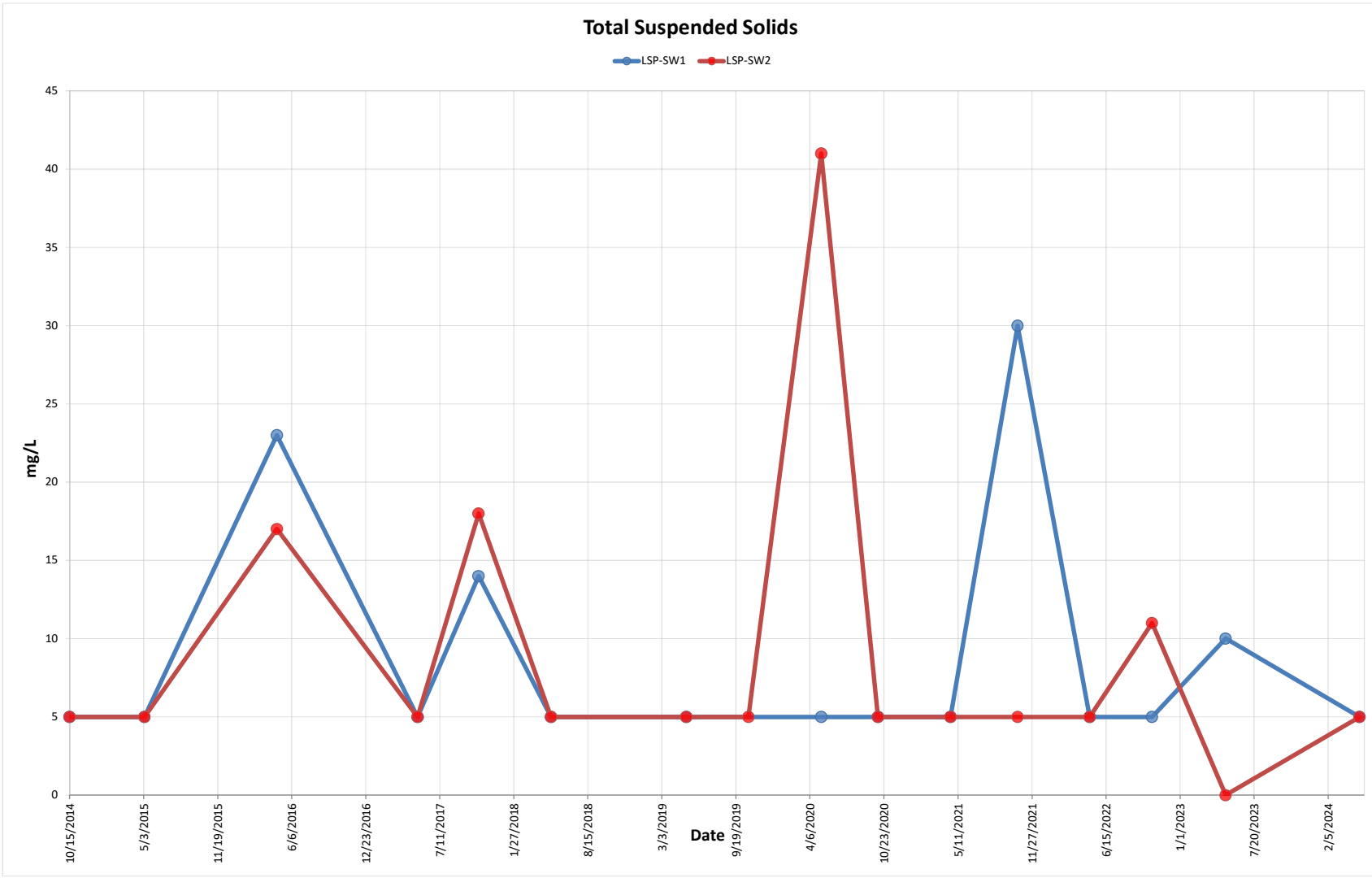


Lake St Peter WDS
Municipality of Hasting's Highlands

BluMetric Proj No: **240205**
Date: **March 17, 2025**

Graph 13
Manganese in Surface Water

Created by: JL
Checked by: CM

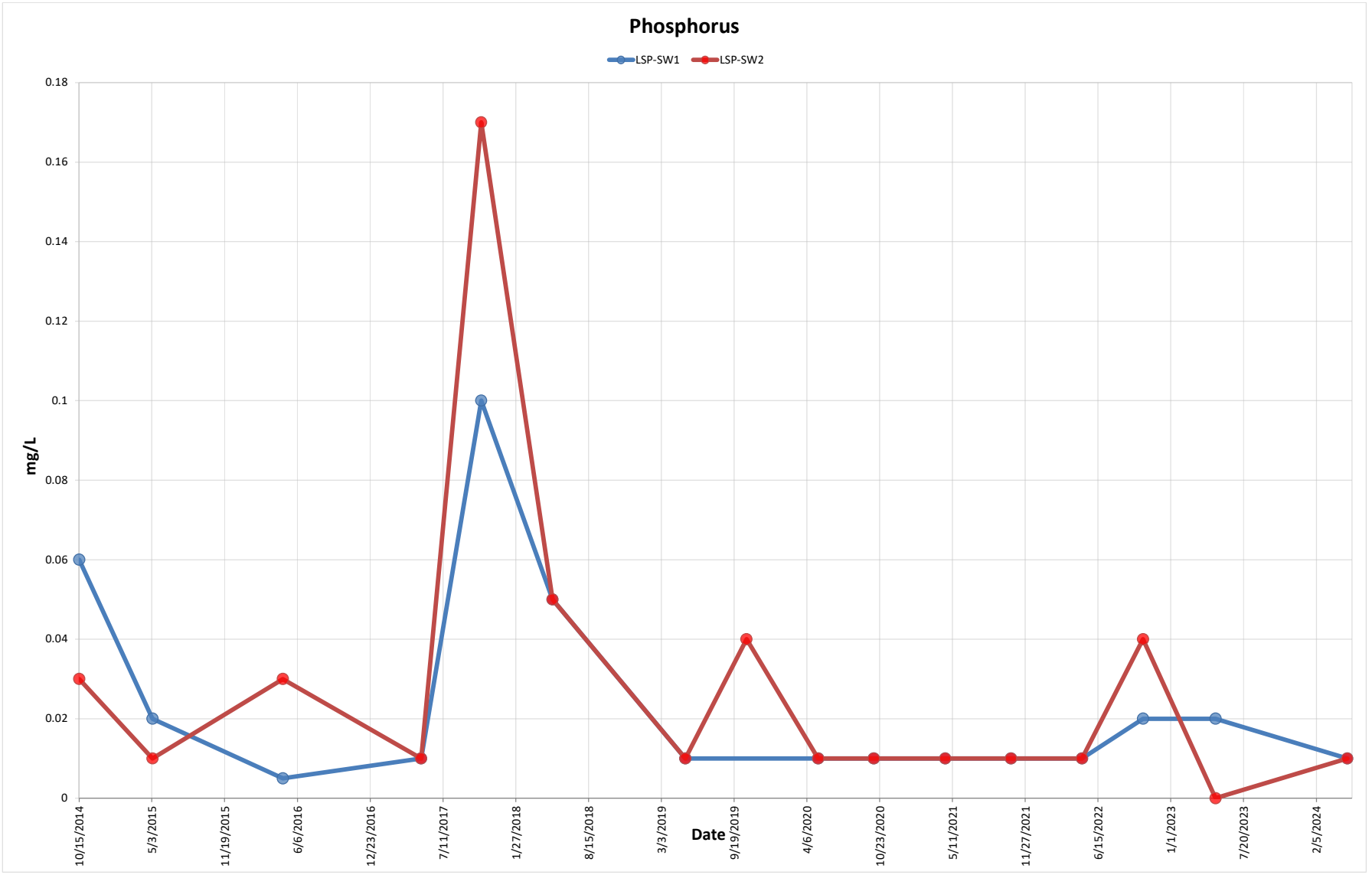


Lake St Peter WDS
Municipality of Hasting's Highlands

BluMetric Proj No: 240205
Date: March 17, 2025

Graph 15
Total Suspended Solids in Surface Water

Created by: JL
Checked by: CM

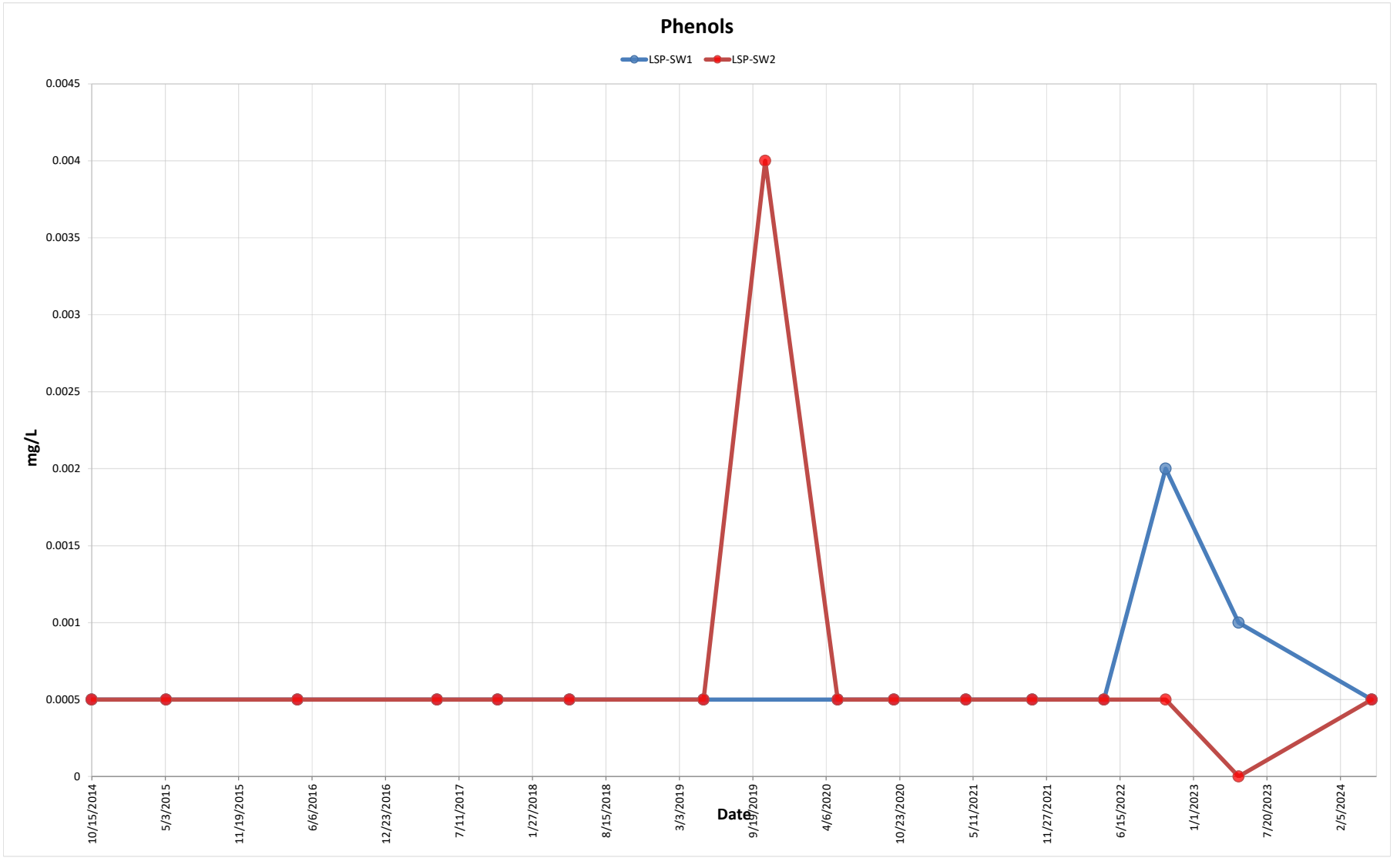


Lake St Peter WDS
Municipality of Hasting's Highlands

BluMetric Proj No: 240205
Date: March 17, 2025

Graph 16
Phosphorus in Surface Water

Created by: JL
Checked by: CM

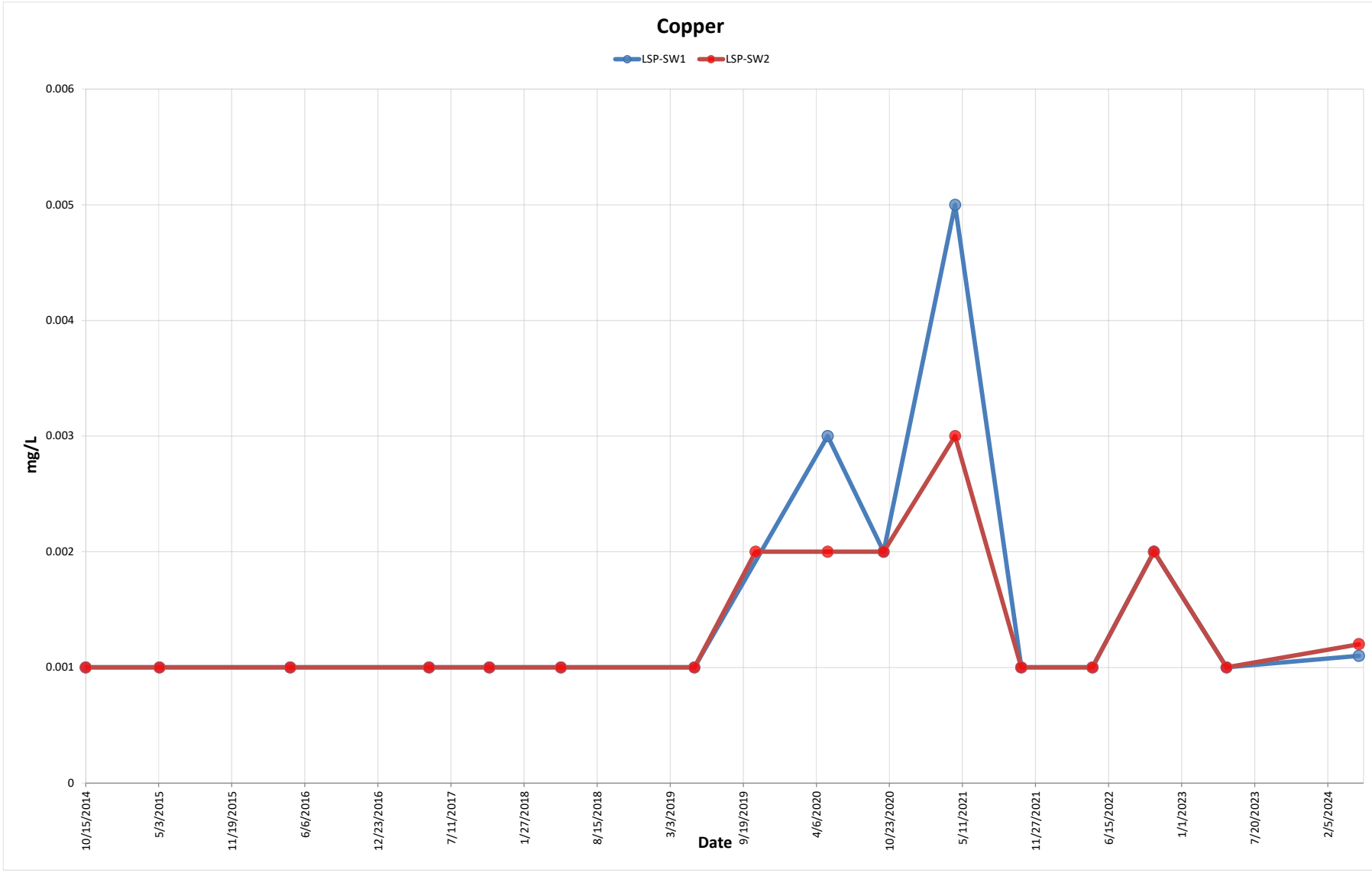


Lake St Peter WDS
Municipality of Hasting's Highlands

BluMetric Proj No: **240205**
Date: **March 17, 2025**

Graph 17
Phenols in Surface Water

Created by: JL
Checked by: CM

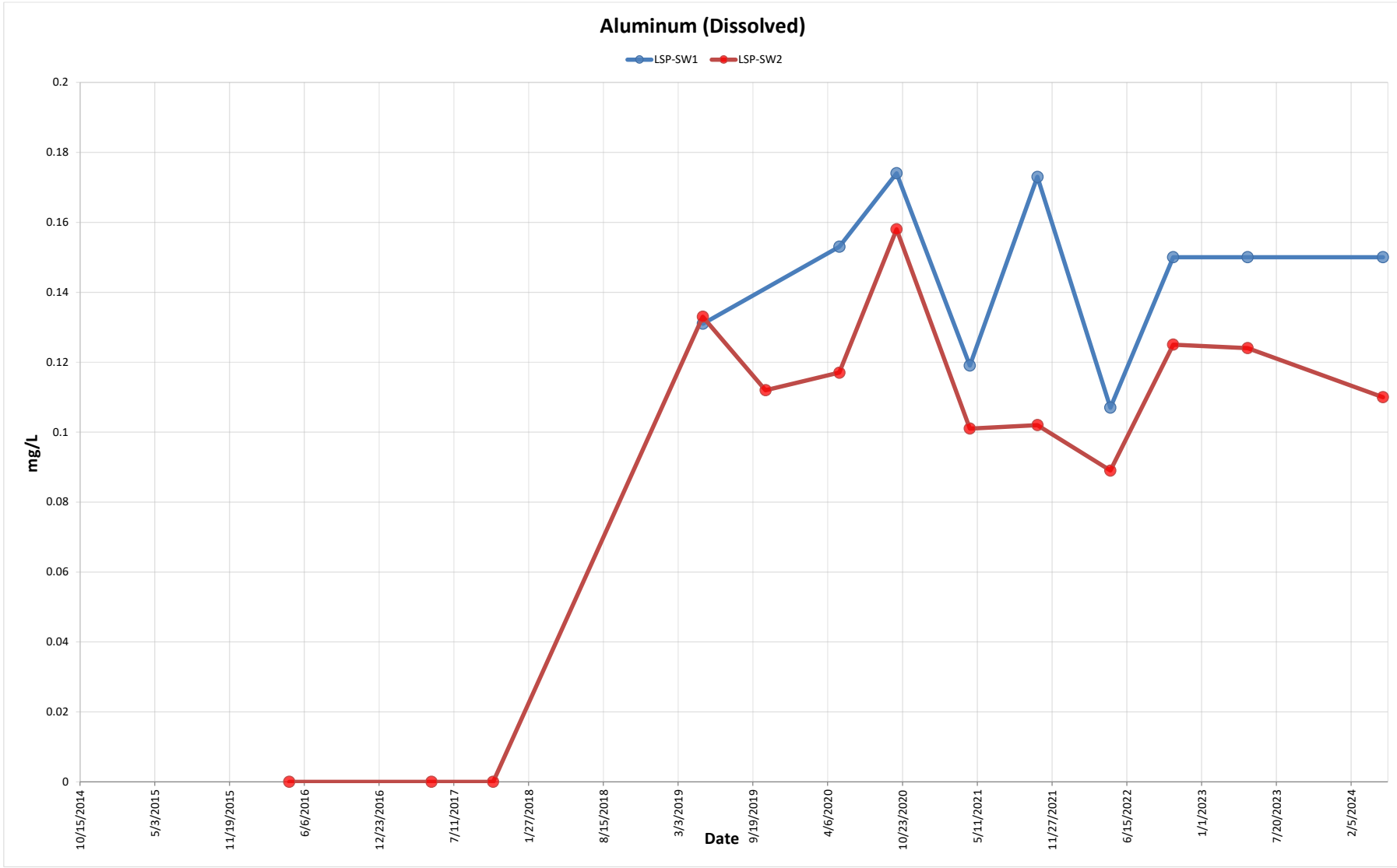


Lake St Peter WDS
Municipality of Hasting's Highlands

BluMetric Proj No: **240205**
Date: **March 17, 2025**

Graph 18
Copper in Surface Water

Created by: JL
Checked by: CM



Lake St Peter WDS
Municipality of Hasting's Highlands

BluMetric Proj No: **240205**
Date: **March 17, 2025**

Graph 19
Dissolved Aluminum in Surface Water

Created by: JL
Checked by: CM

Appendix A

A-1 Environmental Compliance Approval

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER A361116
Issue Date: October 25, 2021

The Corporation of the Municipality of Hastings Highlands
33011 Highway 62
Post Office Box, No. 130
Maynooth, Ontario
K0L 2S0

Site Location: Lake St. Peter Waste Disposal Site
2825 Highway 127
Hastings Highlands Municipality, County of Hastings

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:

the use and operation of 2.2 hectare of waste disposal/transfer site within a total site area of 17 hectares for accepting the following wastes:

Municipal non-hazardous from domestic sources, IC & I, leaf and yard waste, wood waste, tires, scrap metal, bulky items (furniture), Blue Box Materials and waste electrical and electronics equipment (WEEE).

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

"Approval" means this entire Environmental Compliance Approval and any Schedules attached to it;

"Adverse Effect" as defined in the EPA;

"Contaminant Attenuation Zone" or "CAZ" means a three-dimensional zone that,

a. is located on land adjacent to a landfilling site,
b. is in the subsurface or extends into the subsurface, and
c. is used or is intended to be used for the attenuation of contaminants from the landfilling site to levels that will not have an unacceptable impact beyond the boundary of the zone;

"Contaminating Life Span" means contaminating life span as defined in Ontario Regulation 232/98;

"Director" means any *Ministry* employee appointed in writing by the Minister pursuant to section 5 of the *Act* as a Director for the purposes of Part V of the *Act* .

"District Manager" means the District Manager of the local district office of the *Ministry* in which the *Site* is geographically located.

"EPA or Act" means the Environmental Protection Act, R.S.O. 1990, c.E.19;

"HHW" means household hazardous or special waste;
"Leaf and Yard Waste" includes waste consisting of natural Christmas trees and other plant materials but not tree limbs or other woody materials in excess of seven (7) centimetres in diameter;

"Ministry" means the ministry of the government of Ontario responsible for the EPA and OWRA and includes all officials, employees or other persons acting on its behalf;

"NMA" means the Nutrient Management Act, 2002, S.O. 2002, c. 4, as amended.

"Ontario Drinking Water Quality Standards" means Ontario Regulation 169/03 (Ontario Drinking Water Quality Standards) as amended;

"Owner" means any person that is responsible for the establishment or operation of the *Site* being approved by this *Approval,* and includes The Corporation of the Municipality of Hastings Highlands and its successors and assigns;

"OWRA" means the *Ontario Water Resources Act* , R.S.O. 1990, c. O.40, as amended;

"PA" means the *Pesticides Act* , R.S.O. 1990, c. P-11, as amended;

"Provincial Officer" means any person designated in writing by the Minister as a provincial officer pursuant to Section 5 of the *OWRA,* Section 5 of the *EPA,* Section 17 of the *PA,* Section 4 of the *NMA,* or Section 8 of the *SDWA;*

"Reg. 347" means Regulation 347, R.R.O. 1990, made under the EPA, as amended;

"Regional Director" means the Regional Director of the local Regional Office of the Ministry in which the Site is located;

"Regulation 903" means Regulation 903, R.R.O. 1990, made under the *OWRA,* as amended;

"Site" means the entire Lake St. Peter waste disposal site, including the buffer lands, and contaminant attenuation zone at located on Part Lot 10, Concession 12 &13, former Township of McClure, County of Hastings, Ontario.

"*SDWA* " means the Safe Drinking Water Act, 2002, S.O. 2002, c. 32, as amended.

"Trained Personnel" means personnel knowledgeable in the following through instruction and/or practice:

a. relevant waste management legislation, regulations and guidelines;

b. major environmental concerns pertaining to the waste to be handled;

c. occupational health and safety concerns pertaining to the processes and wastes to be handled;

d. management procedures including the use and operation of equipment for the processes and wastes to be handled;

e. emergency response procedures;

f. specific written procedures for the control of nuisance conditions;

g. specific written procedures for refusal of unacceptable waste loads; and

h. the requirements of this *Approval.*

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. GENERAL

Compliance

(1) The *Owner* and *Operator* shall ensure compliance with all the conditions of this *Approval* and shall ensure that any person authorized to carry out work on or operate any aspect of the *Site* is notified of this *Approval* and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

(2) Any person authorized to carry out work on or operate any aspect of the *Site* shall comply with the conditions of this *Approval.*

In Accordance

(3) 3.1 Except as otherwise provided for in this Approval, the Site shall be designed, developed, built, operated, and maintained in accordance with the documents listed in *Schedule "A"* of this Approval.

3.2 (1) Construction and installation of the aspects of the Site described in the most recent application in *Schedule "A* " must be completed within 5 years of the later of:

(a) the date this Approval is issued; or
(b) if there is a hearing or other litigation in respect of the issuance of this

Approval, the date that this hearing or litigation is disposed of, including all appeals.

(2) This Approval ceases to apply in respect of the aspects of the Site noted above that have not been constructed or installed before the later of the dates identified in Condition 3.2(1) above.

Interpretation

(4) Where there is a conflict between a provision of any document listed in *Schedule "A "* in this *Approval,* and the conditions of this *Approval,* the conditions in this *Approval* shall take precedence.

(5) Where there is a conflict between the application and a provision in any document listed in *Schedule "A"* , the application shall take precedence, unless it is clear that the purpose of the document was to amend the application and that the *Ministry* approved the amendment.

(6) Where there is a conflict between any two documents listed in *Schedule "A "*, the document bearing the most recent date shall take precedence.

(7) The conditions of this *Approval* are severable. If any condition of this *Approval,* or the application of any condition of this *Approval* to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this *Approval* shall not be affected thereby.

Other Legal Obligations

(8) The issuance of, and compliance with, this *Approval* does not:

(a) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement; or
(b) limit in any way the authority of the *Ministry* to require certain steps be taken or to require the *Owner* and *Operator* to furnish any further information related to compliance with this *Approval.*

Adverse Effect

(9) The *Owner* and *Operator* shall take steps to minimize and ameliorate any adverse effect on the natural environment or impairment of water quality resulting from the *Site,* including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.

(10) Despite an *Owner, Operator* or any other person fulfilling any obligations imposed by this *Approval* the person remains responsible for any contravention of any other

condition of this *Approval* or any applicable statute, regulation, or other legal requirement resulting from any act or omission that caused the adverse effect to the natural environment or impairment of water quality.

Change of Ownership

(11) The *Owner* shall notify the *Director,* in writing, and forward a copy of the notification to the *District Manager,* within 30 days of the occurrence of any changes in the following information:

(a) the ownership of the *Site;*
(b) the *Operator* of the *Site;*
(c) the address of the *Owner or Operator;* and
(d) the partners, where the *Owner or Operator* is or at any time becomes a partnership and a copy of the most recent declaration filed under the *Business Names Act* , R. S. O. 1990, c. B.17, shall be included in the notification.

(12) No portion of this *Site* shall be transferred or encumbered prior to or after closing of the *Site* unless the *Director* is notified in advance and sufficient financial assurance is deposited with the *Ministry* to ensure that these conditions will be carried out.

(13) In the event of any change in ownership of the *Site,* other than change to a successor municipality, the *Owner* shall notify the successor of and provide the successor with a copy of this *Approval,* and the *Owner* shall provide a copy of the notification to the *District Manager* and the *Director.*

Registration on Title Requirement

(14) Prior to dealing with the property in any way, the *Owner* shall provide a copy of this *Approval* and any amendments, to any person who will acquire an interest in the property as a result of the dealing.

(15) (a) If the *Site* is patented, the *Owner* shall, within three (3) years of receiving the patent for the land occupying the waste disposal site, submit to the *Director* a completed Certificate of Requirement which shall include:

(i) a plan of survey prepared, signed and sealed by an Ontario Land Surveyor, which shows the area of the *Site* where waste has been or is to be deposited at the *Site;*
(ii) proof of ownership of the *Site;*
(iii) a letter signed by a member of the Law Society of Upper Canada or other qualified legal practitioner acceptable to the *Director,* verifying the legal description provided in the Certificate of Requirement;
(iv) the legal abstract of the property; and
(v) any supporting documents including a registerable description of the *Site.*

(b) Within fifteen (15) calendar days of receiving a Certificate of Requirement authorized by the *Director,* the *Owner* shall:

(i) register the Certificate of Requirement in the appropriate Land Registry Office on the title to the property; and
(ii) submit to the *Director* and the District Manager, written verification that the Certificate of Requirement has been registered on title.

Registration on Title Requirement - Contaminant Attenuation Zone (CAZ)

(16) Within four (4) years from the date of this *Approval* , the Owner shall complete acquiring the ground water easement to the proposed contaminant attenuation zone and buffer lands.

(17) The *Owner* must continue to own the property rights to the Contaminant Attenuation Zone for all of the *contaminating life span* of the *Site.*

(18) The ownership of the property rights must include the right to:

(a) discharge contaminants from the operations at the Site into the Contaminant Attenuation Zone;
(b) enter into the Contaminant Attenuation Zone and onto the surface above the Contaminant Attenuation Zone for purposes of testing, monitoring, intercepting contaminants and carrying out remedial work;
(c) install, operate and maintain works, for the purposes mentioned in clause (b), in the Contaminant Attenuation Zone, including on the surface above the Contaminant Attenuation Zone; and
(d) prevent the owner(s) of the land(s) in which the Contaminant Attenuation Zone is located from paving, erecting a structure or making any use of land(s) above or in the vicinity of the contaminant attenuation zone that would interfere with the functioning of the Contaminant Attenuation Zone or with the exercise of any of the rights mentioned in this subsection.

(19) The *Owner* shall notify the *Director* in writing within thirty (30) days after any change in his, her or its ownership of the property rights in the Contaminant Attenuation Zone.

(20) The *Owner* shall ensure that the written easement agreement, specified in Condition (16) includes an agreement of the property owner(s) of the land(s) required for the Contaminant Attenuation Zone, to register a Certificate of Requirement on title to the land(s) to be used as the Contaminant Attenuation Zone.

(21) Within thirty (30) calendar days from the date of establishing a Contaminant Attenuation Zone (overburden and/or bedrock aquifers) in either fee simple or by way of a groundwater easement, the *Owner* shall submit to the *Director* a completed

Certificate of Requirement which shall include:

(a) If rights are obtained in fee simple, the *Owner* shall provide:

(i) documentation evidencing ownership of the CAZ obtained in compliance with *O.Reg. 232/98,* as amended;
(ii) a completed Certificate of Requirement and supporting documents containing a registerable description of the CAZ; and
(iii) a letter signed by a member of the Law Society of Upper Canada; or other qualified legal practitioner acceptable to the *Director,* verifying the legal description of the CAZ.

(b) Within fifteen (15) calendar days of receiving a Certificate of Requirement signed or authorized by the *Director,* the Owner shall:

(i) register the Certificate of Requirement in the appropriate Land Registry Office on the title to the property; and
(ii) submit to the *Director* and the *District Manager,* written verification that the Certificate of Requirement has been registered on title.

(c) If rights are obtained by way of a groundwater easement, the Applicant shall:

(i) provide a copy of the easement;
(ii) provide a plan of survey signed and sealed by an Ontario Land Surveyor for the CAZ;
(ii) submit proof of registration on title of the groundwater easement to the *Director;*

(d) The *Owner* shall not amend or remove or consent to the removal of the easement or CAZ from title without the prior written consent of the *Director.*

Inspections by the Ministry

(22) No person shall hinder or obstruct a *Provincial Officer* from carrying out any and all inspections authorized by the *OWRA,* the *EPA,* the *PA,* the *SDWA* or the *NMA,* of any place to which this *Approval* relates, and without limiting the foregoing:

(a) to enter upon the premises where the approved works are located, or the location where the records required by the conditions of this *Approval* are kept;
(b) to have access to, inspect, and copy any records required to be kept by the conditions of this *Approval;*
(c) to inspect the *Site,* related equipment and appurtenances;
(d) to inspect the practices, procedures, or operations required by the conditions of this *Approval;* and
(e) to sample and monitor for the purposes of assessing compliance with the terms

and conditions of this *Approval* or the *EPA,* the *OWRA,* the *PA,* the *SDWA* or the *NMA.*

Information and Record Retention

(23) (a) Except as authorized in writing by the *Director,* all records required by this *Approval* shall be retained at the *Site* for a minimum of two (2) years from their date of creation.

(b) The *Owner* shall retain all documentation listed in Schedule "A" for as long as this *Approval* is valid.

(c) All monthly summary reports of waste records collected are to be kept at the *Site* until they are included in the Annual Report.

(d) The *Owner* shall retain employee *training* records as long as the employee is working at the *Site.*

(e) The *Owner* shall make all of the above documents available for inspection upon request of *Ministry* staff.

(24) The receipt of any information by the *Ministry* or the failure of the *Ministry* to prosecute any person or to require any person to take any action under this *Approval* or under any statute, regulation or other legal requirement, in relation to the information, shall not be construed as:

(a) an approval, waiver, or justification by the *Ministry* of any act or omission of any person that contravenes any term or condition of this *Approval* or any statute, regulation or other legal requirement; or

(b) acceptance by the *Ministry* of the information's completeness or accuracy.

(25) The *Owner* shall ensure that a copy of this *Approval,* in its entirety and including all its Notices of Amendment, and documentation listed in Schedule "A", are retained at the *Site* at all times.

(26) Any information related to this *Approval* and contained in *Ministry* files may be made available to the public in accordance with the provisions of the Freedom of Information and Protection of Privacy Act, RSO 1990, CF-31.

2. SITE OPERATION

Operation

(1) The *Site* shall be operated and maintained at all times including management and disposal of all waste, in accordance with the *EPA, Reg.347,* and the conditions of this *Approval.* At no time shall the discharge of a contaminant that causes or is likely to cause an adverse effect be permitted.

Signs

(2) A sign shall be installed and maintained at the main entrance/exit to the *Site* which legibly display the following information:

(a) the name of the *Site* and *Owner;*
(b) the number of the *Approval;*
(c) the name of the *Operator;*
(d) the normal hours of operation;
(e) the allowable and prohibited waste types;
(f) the telephone number to which complaints may be directed;
(g) a warning against unauthorized access;
(h) a twenty-four (24) hour emergency telephone number (if different from above); and
(i) a warning against dumping outside the *Site.*

(3) The *Owner* shall install and maintain signs to direct vehicles to working face and waste recycling and transfer areas.

(4) The *Owner* shall provide signs at recycling and transfer area informing users what materials are acceptable and directing users to appropriate storage areas.

Vermin, Vectors, Dust, Litter, Odour, Noise and Traffic

(5) The *Site* shall be operated and maintained such that the vermin, vectors, dust, litter, odour, noise and traffic do not create a nuisance.

Burning Waste Prohibited

(6) (a) Burning of waste at the *Site* is prohibited.

(b) Notwithstanding Condition 2 (6) (a) above, burning of segregated, clean wood and brush at the landfill may be carried out in strict compliance with the Ministry of the Environment Document titled "Guideline C-7, Burning at Landfill Sites" dated April 1994.

Site Access

(7) Waste shall only be accepted during the following time periods:

Winter (Thanksgiving Day to Victoria Day)

Thursday	:	12:00 p.m. - 5:00 p.m.
Saturday & Sunday	:	12:00 p.m. - 5:00 p.m.

Summer (Victoria Day to Thanksgiving Day)

Thursday	:	12:00 p.m. - 5:00 p.m.

Saturday	:	07:00 a.m. - 12:00 p.m.
Sunday	:	02:00 p.m. - 7:00 p.m.

(8) On-site equipment used for daily site preparation and closing activities may be operated one (1) hour before and one (1) hour after the hours of operation approved by this *Approval*. Notwithstanding Condition 2(7), waste/recyclables materials present on Site can be removed for processing/disposal by a registered/licensed waste hauler from Monday to Friday, from 7 a.m. to 5 p.m.

(9) With the prior written approval from the *District Manager,* the time periods may be extended to accommodate seasonal or unusual quantities of waste.

Site Security

(10) No waste shall be received, landfilled or removed from the *Site* unless a site supervisor or an attendant is present and supervises the operations during operating hours. The *Site* shall be closed when a site attendant is not present to supervise landfilling operations.

(11) The *Site* shall be operated and maintained in a safe and secure manner. During non-operating hours, the *Site* entrance and exit gates shall be locked and the *Site* shall be secured against access by unauthorized persons.

(12) The Owner shall ensure that:

(a) access to the Site is restricted by fencing; and
(b) fencing and lockable gate are kept in good repair.

Operations - Transfer Station

13. The transfer station shall be designed, built, used and maintained in accordance with Item 5 of *Schedule "A"*.

14. The transfer station shall only accept municipal waste and recyclable materials generated within the boundaries of the municipal boundaries of the Town of Hastings Highlands.

15. All wastes and recyclable materials shall be managed and disposed in accordance with the Act and Reg. 347.

16. The Owner shall post a sign in a prominent location at the Site entrance which clearly states:

(a) the hours of operation of the transfer station;
(b) the types of waste which are accepted at the transfer station;

(c) the area serviced by the transfer station;
(d) Waste Management System requirements for commercial haulers;
(e) the Environmental Compliance Approval number of the Site;
(f) the Owner's name; and
(g) staff contact name and telephone number to call in the event of an emergency.

17. (a) The Owner shall ensure that a trained employee(s) is/are on duty at all times when the Site is open to ensure proper supervision of all activities; and
(b) Prior to being accepted at the Site, all incoming waste and recyclable materials shall be inspected by the trained employee and shall only be permitted to enter the Site if the Site is approved to accept that type of waste.

18. (a) The combined total amount of waste (excluding tires) and recyclable materials stored at the transfer station at any one time shall not exceed 100 tonnes per day.
(b) The total amount of tires stored at the transfer station at any one time shall not exceed 100 tire units.

(19) The *Owner* shall ensure that:

(a) all bins and waste storage areas are clearly labelled;
(b) all lids or doors on bins shall be kept closed during non-operating hours and during high wind events; and
(c) if necessary to prevent litter, waste storage areas shall be covered during high winds events.
(d) Tires shall be stockpiled in the following manner:

(i) individual stockpiles shall not exceed a volume of 300 m^3;
(ii) stockpiles shall be located a minimum of 15 metres from the property line and/or any buildings;
(iii) stockpiles shall be separated from each other and from other waste piles by a minimum of 6 metres; and
(iv) an area around stockpiles of no less than 4.5 metres shall be kept free of vegetation.

(20) The *Owner* shall transfer waste and recyclable materials from the *Site* as follows:

(a) recyclable materials shall be transferred off-site once their storage bins are full or when the maximum capacities listed in Condition 19 (a) or (b) have been reached.;
(b) scrap metal shall be transferred off-site at least twice a year;
(c) tires shall be transferred off-site as soon as a load for the contractor hired by the *Owner* has accumulated or as soon as the accumulated volume exceeds the storage capacity of its bunker; and
(d) immediately, in the event that waste is creating an odour or vector problem.

(21) The *Owner* shall notify the appropriate contractors that waste and recyclable wastes that are to be transferred off-site are ready for removal. Appropriate notice time, as determined by the contract shall be accommodated in the notification procedure.

(22) Collection, storage and transfer of Waste Electrical and Electronic Equipment shall be in accordance with the documents in the *Schedule "A"* . If there is any discrepancy between the guideline titled "Collection Site Organizing & Operating Waste Electrical and Electronic Equipment (WEEE) Guidebook" dated November 2012 as amended prepared by Ontario Electronic Stewardship and the documents in *Schedule "A"* , the guideline shall take precedence.

(23) The amount of *Leaf and Yard Waste* received at the *Site* shall not exceed 39 cubic meters per day between May and June and 16 cubic meter per day for rest of the year.

(24) Sealable and lockable bins shall be used to collect inadvertently left hazardous household or special waste (HHW). The storage and transfer of HHW shall be in such a way to protection health and safety of the public and the environment.

(25) The Owner shall conduct regular inspections, on a weekly basis at a minimum, to ensure that all equipment and facilities at the transfer station are operating in a manner that will not negatively impact the environment. Any deficiencies detected shall be promptly corrected. A written record shall be maintained at the transfer station which includes the following information:

(a) name and signature of trained employee(s) conducting the inspection;
(b) date and time of the inspection; and
(c) list of all deficiencies observed and description of remedial action(s) taken to correct observed deficiency including the date and time of the action(s).

26. The Owner shall maintain a log book at the transfer station which records the following information:

(a) date of record;
(b) quantities (m^3) and destination of each type of waste, including recyclable material, shipped from the transfer station; and
(c) complaints received, if any, including the nature of the complaint, time of complaint and action(s) taken to remediate the problem.

27. (a) The Owner shall submit, for approval by the Director, a detailed written Closure Plan six (6) months prior to the closure of the transfer station. This plan shall include, as a minimum, a description of the work that will be completed to facilitate closure of the transfer station and a schedule for the completion of that work; and

(b) Within ten (10) days following closure of the transfer station, the Owner shall notify the Director, in writing, that the transfer station is closed and that the Closure Plan has been implemented.

3. EMPLOYEE TRAINING

(1) A training plan for all employees that operate any aspect of the *Site* shall be developed and implemented by the *Owner* or the *Operator.* Only *Trained Personnel* shall operate any aspect of the *Site* or carry out any activity required under this *Approval* .

4. COMPLAINTS RESPONSE PROCEDURE

(1) If at any time the *Owner* receives complaints regarding the operation of the *Site,* the *Owner* shall respond to these complaints according to the following procedure:

(a) The *Owner* shall record and number each complaint, either electronically or in a log book, and shall include the following information: the nature of the complaint, the name, address and the telephone number of the complainant if the complainant will provide this information and the time and date of the complaint;
(b) The *Owner,* upon notification of the complaint, shall initiate appropriate steps to determine possible causes of the complaint, proceed to take the necessary actions to eliminate the cause of the complaint and forward a formal reply to the complainant; and
(c) The *Owner* shall complete and retain on-site a report written within one (1) week of the complaint date, listing the actions taken to resolve the complaint and any recommendations for remedial measures, and managerial or operational changes to reasonably avoid the recurrence of similar incidents.

5. EMERGENCY RESPONSE

(1) All Spills as defined in the *EPA* shall be immediately reported to the **Ministry's Spills Action Centre at 1-800-268-6060** and shall be recorded in the log book as to the nature of the emergency situation, and the action taken for clean-up, correction and prevention of future occurrences.

(2) In addition, the *Owner* shall submit, to the *District Manager* a written report within three (3) business days of the emergency situation, outlining the nature of the incident, remedial measures taken, handling of waste generated as a result of the emergency situation and the measures taken to prevent future occurrences at the *Site.*

(3) All wastes resulting from an emergency situation shall be managed and disposed of in accordance with *Reg. 347.*

(4) All equipment and materials required to handle the emergency situations shall be:

(a) kept on hand at all times that waste landfilling and/or handling is undertaken at the *Site;* and
(b) adequately maintained and kept in good repair.

(5) The *Owner* shall ensure that the emergency response personnel are familiar with the use of such equipment and its location(s).

6. INSPECTIONS, RECORD KEEPING AND REPORTING

Daily Log Book

(1) A daily log shall be maintained in written or electronic format and shall include the following information:
(a) the type, date and time of arrival, hauler, and quantity (tonnes) of all waste and cover material received at the *Site;*
(b) the area of the *Site* in which waste disposal operations are taking place;
(c) a record of litter collection activities and the application of any dust suppressants;
(d) a record of the daily inspections; and
(e) a description of any out-of-service period of any control, treatment, disposal or monitoring facilities, the reasons for the loss of service, and action taken to restore and maintain service.

(2) Any information requested, by the *Director* or a *Provincial Officer,* concerning the *Site* and its operation under this *Approval,* including but not limited to any records required to be kept by this *Approval* shall be provided to the *Ministry,* upon request.

Daily Inspections and Log Book

(3) An inspection of the entire *Site* and all equipment on the *Site* shall be conducted each day the *Site* is in operation to ensure that: the *Site* is secure; that the operation of the *Site* is not causing any nuisances; that the operation of the *Site* is not causing any adverse effects on the environment and that the *Site* is being operated in compliance with this *Approval.* Any deficiencies discovered as a result of the inspection shall be remedied immediately, including temporarily ceasing operations at the *Site* if needed**.**

(4) A record of the inspections shall be kept in a daily log book that includes:

(a) the name and signature of person that conducted the inspection;
(b) the date and time of the inspection;
(c) the list of any deficiencies discovered;
(d) the recommendations for remedial action; and
(e) the date, time and description of actions taken.

(5) A record shall be kept in the daily log book of all refusals of waste shipments, the reason(s) for refusal, and the origin of the waste, if known.

Annual Report

(6) A written report on the development, operation and monitoring of the *Site,* shall be completed annually (the "Annual Report"). The Annual Report shall be submitted to the *District Manager,* by March 31st of the year following the period being reported upon.

(7) The Annual Report shall include but not be limited to the following information:

(a) the results and an interpretive analysis of the results of all leachate, groundwater surface water and landfill gas monitoring, including an assessment of the need to amend the monitoring programs;
(b) an assessment of the operation and performance of all engineered facilities, the need to amend the design or operation of the *Site,* and the adequacy of and need to implement the contingency plans;
(c) site plans showing the existing contours of the *Site;* areas of landfilling operation during the reporting period; areas of intended operation during the next reporting period; areas of excavation during the reporting period; the progress of final cover, vegetative cover, and any intermediate cover application; facilities existing, added or removed during the reporting period; and site preparations and facilities planned for installation during the next reporting period;
(d) calculations of the volume of waste, weekly and intermediate cover, and final cover deposited or placed at the *Site* during the reporting period and a calculation of the total volume of *Site* capacity used during the reporting period;
(e) a calculation of the remaining capacity of the *Site* and an estimate of the remaining *Site* life;
(f) a summary of the weekly, maximum daily and total annual quantity (tonnes) of waste received at the *Site;*
(g) a summary of any complaints received and the responses made;
(h) a discussion of any operational problems encountered at the *Site* and corrective action taken;
(i) any changes to the Design and Operations Report and the Closure Plan that have been approved by the *Director* since the last *Annual Report;*
(j) a report on the status of all monitoring wells and a statement as to compliance with *Ontario Regulation 903;* and
(k) any other information with respect to the *Site* which the *District Manager* may require from time to time.

7. LANDFILL DESIGN AND DEVELOPMENT

Approved Waste Types

(1) Only municipal waste as defined under *Reg.* 347 being solid non-hazardous shall be accepted at the *Site* for landfilling.

(2) The *Owner* shall develop and implement a program to inspect waste to ensure that the waste received at the *Site* is of a type approved for acceptance under this *Approval.*

(3) The *Owner* shall ensure that all loads of waste are properly inspected by *Trained personnel* prior to acceptance at the *Site* and that the waste vehicles are directed to the appropriate areas for disposal or transfer of the waste. The *Owner* shall notify the *District Manager,* in writing, of load rejections at the *Site* within one (1) business day from their occurrence.

Capacity

(4) The calculated theoretical maximum volumetric capacity of the *Site,* consisting of the waste, daily cover and intermediate cover, but excluding the final cover is ***73,383*** cubic metres.

(5) This approval is for the design, operation and use of 73,383 cubic meters of the calculated theoretical maximum volumetric capacity of the *Site* as described in Item 1 of Schedule "A". This does not include the historical waste volume deposited below ground at the site.

(6) Within 2 years from the date of issuance of the Approval, the waste deposited outside the approved site boundary in the Phase I waste footprint area as shown on Figure 4 of the Design and Operations Plan, enclosed as Item 5 in *Schedule "A"* , shall be excavated and deposited within the Phase I approved fill area. The waste deposited outside the Phase 1 footprint area but within the site boundary can remain in-place.

Service Area

(7) Only waste that is generated within the geographical boundaries of the Municipality of the Hastings and Highland shall be accepted at the *Site.*

Cover

(8) Cover material shall be applied as follows:

(a) Weekly Cover - Weather permitting, deposited waste shall be covered every week in a manner acceptable to the *District Manager* so that no waste is exposed

to the atmosphere;

(b) Intermediate Cover - In areas where landfilling has been temporarily discontinued for six (6) months or more, a minimum thickness of 300 millimetre of soil cover or an approved thickness of alternative cover material shall be placed; and

(c) Final Cover - In areas where landfilling has been completed to final contours, a minimum 600 millimetre thick layer of soil of medium permeability and 150 millimetres of top soil (vegetative cover) shall be placed. Fill areas shall be progressively completed and rehabilitated as landfill development reaches final contours.

8. LANDFILL MONITORING

Landfill Gas

(1) The *Owner* shall ensure that any buildings or structures at the *Site* contain adequate ventilation systems to relieve any possible landfill gas accumulation to prevent methane concentration reaching the levels within its explosive range. Routine monitoring for explosive methane gas levels shall be conducted in all buildings or structures at the *Site,* especially enclosed structures which at times are occupied by people.

(2) The *Owner* shall construct at least two (2) dedicated landfill gas monitors at locations acceptable to the *District Manager* within 2 years of the anticipated closure of the Phase1 area and the landfill gas monitoring shall occur concurrently with the groundwater monitoring as outlined in Table E-2, *Schedule B* .

(3) The Owner shall ensure that all on-Site enclosed buildings are equipped with appropriate dedicated gas monitoring devices.

Leachate Monitoring

(4) The Owner shall construct one (1) dedicated leachate monitor within Phase 1 footprint area at location acceptable to the *District Manager* within *two years* of the issuance of the Approval.

(5) The leachate level and sampling and chemical testing shall occur concurrently with the groundwater monitoring as outlined in Table E-2, *of Schedule B* .

Surface Water and Groundwater

(6) The *Owner* shall monitor surface water and ground water in accordance with the monitoring program outlined in Table E-1: Annual (Spring & Fall) Surface Water Monitoring and Analysis and Table E-2: Annual (Spring & Fall) Groundwater Monitoring and Analysis, enclosed in *Schedule "B".*

(7) In addition to the groundwater chemical quality program specified in Condition 8 (6), the groundwater and leachate samples shall be tested for volatile organic compounds (VOCs) once per year in the Spring monitoring event. A depth to water level shall be recorded prior to sample collection at groundwater and leachate monitoring wells.

Groundwater Wells and Monitors

(8) The *Owner* shall ensure that all groundwater monitoring wells which form part of the monitoring program are properly capped, locked and protected from damage.

(9) Where landfilling is to proceed around monitoring wells, suitable extensions shall be added to the wells and the wells shall be properly re-secured.

(10) Any groundwater monitoring well included in the on-going monitoring program that is damaged shall be assessed, repaired, replaced or decommissioned by the *Owner,* as required.

(a) The *Owner* shall repair or replace any monitoring well which is destroyed or in any way made to be inoperable for sampling such that no more than one regular sampling event is missed.

(b) All monitoring wells which are no longer required as part of the groundwater monitoring program, and have been approved by the *Director* for abandonment, shall be decommissioned by the *Owner,* as required, in accordance with *O.Reg. 903,* to prevent contamination through the abandoned well. A report on the decommissioning of the well shall be included in the Annual Report for the period during which the well was decommissioned.

Trigger Mechanisms and Contingency Plans

(11) (a) Trigger mechanisms shall be in accordance with Trigger Mechanisms Contingency Plan provided in Appendix H of the Design and Operations Plan, enclosed as Item 5 in *Schedule "A"* .

(b) Contingency plan in the event of a confirmed exceedance of a site-specific trigger level relating to leachate mounding or groundwater or surface water impacts due to leachate shall be in accordance with Item 5 of *Schedule "A".*

(12) In the event of a confirmed exceedance of a site-specific trigger level relating to leachate mounding or groundwater or surface water impacts due to leachate, the *Owner* shall immediately notify the *District Manager,* and an investigation into the cause and the need for implementation of remedial or contingency actions shall be carried out by the *Owner* in accordance with the approved trigger mechanisms and associated contingency plans.

(13) If monitoring results, investigative activities and/or trigger mechanisms indicate the need to implement contingency measures, the *Owner* shall ensure that the following steps are taken:

(a) The *Owner* shall notify the *District Manager,* in writing of the need to implement contingency measures, no later than 30 days after confirmation of the exceedances;
(b) Detailed plans, specifications and descriptions for the design, operation and maintenance of the contingency measures shall be prepared and submitted by the *Owner* to the *Director* for approval; and
(c) The contingency measures shall be implemented by the *Owner* upon approval by the *Director* .

(14) The *Owner* shall ensure that any proposed changes to the site-specific trigger levels for leachate impacts to the surface water or groundwater, are approved in advance by the *Director* via an amendment to this *Approval.*

Changes to the Monitoring Plan

(15) The *Owner* may request to make changes to the monitoring program to the *District Manager* in accordance with the recommendations of the annual report. The *Owner* shall make clear reference to the proposed changes in a separate letter that shall accompany the annual report.

(16) Within thirty (30) days of receiving the written correspondence from the *District Manager* confirming that the *District Manager* is in agreement with the proposed changes to the environmental monitoring program, the *Owner* shall forward a letter identifying the proposed changes and a copy of the correspondences from the *District Manager* and all other correspondences and responses related to the changes to the monitoring program, to the *Director* requesting the *Approval* be amended to approve the proposed changes to the environmental monitoring plan prior to implementation.

(17) In the event any other changes to the environmental monitoring program are proposed outside of the recommendation of the annual report, the *Owner* shall follow current *Ministry* procedures for seeking approval for amending the *Approval.*

Compliance

(18) The *Site* shall be operated in such a way as to ensure compliance with the following:

(a) Reasonable Use Guideline B-7 for the protection of the groundwater at the *Site;* and
(b) Provincial Water Quality Objectives included in the July 1994 publication entitled *Water Management Policies, Guidelines, Provincial Water Quality Objectives,* as amended from time to time or limits set by the *Regional*

Director, for the protection of the surface water at and off the *Site.*

9. CLOSURE PLAN

(1) At least 3 years prior to the anticipated date of closure of this *Site,* the *Owner* shall submit to the *Director* for approval, with copies to the *District Manager,* a detailed *Site* closure plan pertaining to the termination of landfilling operations at this *Site,* post-closure inspection, maintenance and monitoring, and end use. The plan shall include but not be limited to the following information:

(a) a plan showing *Site* appearance after closure;
(b) a description of the proposed end use of the *Site;*
(c) a description of the procedures for closure of the *Site,* including:
(i) advance notification of the public of the landfill closure;
(ii) posting of a sign at the *Site* entrance indicating the landfill is closed and identifying any alternative waste disposal arrangements;
(iii) completion, inspection and maintenance of the final cover and landscaping;
(iv) *Site* security;
(v) removal of unnecessary landfill-related structures, buildings and facilities;
(vi) final construction of any control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas; and
(vii) a schedule indicating the time-period for implementing sub-conditions (i) to (vi) above;
(d) descriptions of the procedures for post-closure care of the *Site,* including:
(i) operation, inspection and maintenance of the control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;
(ii) record keeping and reporting; and
(iii) complaint contact and response procedures;
(e) an assessment of the adequacy of and need to implement the contingency plans for leachate and methane gas; and
(f) an updated estimate of the *contaminating life span* of the *Site,* based on the results of the monitoring programs to date.

(2) The *Site* shall be closed in accordance with the closure plan as approved by the *Director.*

Schedule "A"

1. Application for a Certificate of Approval for a Waste Disposal Site (Landfill) dated November 1, 1984 signed by Donald C. Bloom, Clerk-Treasurer and modified by correspondence of January 20, 1986, D. C. Bloom to Paul Moore, Ministry of the Environment.

2. Site Plan entitled “Drawing No. 1(A)” and conveyed to D. Graham, Ministry of the Environment, by correspondence of December 17, 1984 from D.C. Bloom, Clerk-Treasurer.

3. Application for Approval dated May 8, 2000, and supporting information and documentation prepared by Mr. Donald C. Bloom, Clerk-Treasurer of the Corporation of United Townships of Bangor, Wicklow and McClure, including letter dated May 26, 2000 with site plan.

4. Letter from the Corporation of the Municipality of Hastings Highlands, dated February 4, 2002, signed by Glenn Kargus, Manager of Transportation Services.

5. Environmental Compliance Approval Application dated September 25, 2020 and signed David Stewart, CAO, including the attached supporting documentation “Development and Operations Plan, Lake St. Peter Waste Disposal Site, Environmental Compliance Approval No.: A361116, BluMatric Environmental Inc., September 2020.

6. Email dated July 2, 2021, EA Amendment #1, letter dated June 30, 2021, prepared by BluMetric.

7. Email Response dated October 15, 2021, and supporting documentation prepared by BluMetric dated October 14, 2021, including an updated monitoring program.

Schedule "B"

Table E-1: Annual (Spring & Fall) Surface Water Monitoring and Analysis

Monitoring Locations	Category	Parameters
LSP-SW1, LSPSW2, LSP-DP1-21	Biological Parameters	Biological Oxygen Demand (BOD_5), Chemical Oxygen Demand (COD)
	Organic Parameters	Phenols
	Inorganic Parameters	Alkalinity, Chloride, Nitrite, Nitrate, Sulphate, Phosphorous (Total), Total Kjeldahl Nitrogen (TKN), Ammonia (N)-Total, Calcium, Aluminum (Dissolved), Arsenic, Boron, Cadmium, Chromium, Cobalt, Copper, Iron, Magnesium, Nickel, Potassium, Selenium, Silver, Sodium, Zinc, Lead, Barium, Beryllium, Molybdenum, Manganese, Mercury (dissolved), Silicon, Strontium, Thallium, Titanium, Vanadium
	Physical/Chemical Parameters	pH, Conductivity, Total Dissolved Solids (TDS), Total Suspended Solids (TSS), Colour, Hardness ($CaCO_3$), Turbidity (NTU)

Table E-2: Annual (Spring & Fall) Groundwater Monitoring and Analysis

Monitoring Locations	Category	Parameters
LSP1-03, LSP2-03, LSP3-03, LSP4-19, LSP5-19	Organic Parameters	Dissolved Organic Carbon (DOC)
	Inorganic Parameters	Nitrate, Ammonia, Chloride, Major Ions (Sodium, Calcium, Magnesium, Sulphate, Alkalinity)
	Dissolved Metals	Iron, Boron, Barium, Manganese
Future Leachate Well (In Phase 1 Area)	Physical/Chemical Parameters	pH, Conductivity, Total Dissolved Solids (TDS), Total Suspended Solids (TSS)

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

1. *The reason for Conditions 1(1), (2), (4), (5), (6), (7), (8), (9), (10), (19) & (24) is to clarify the legal rights and responsibilities of the Owner and Operator under this Approval.*

2. *The reasons for Condition 1(3), 2(12), 2 (13), and 7 (8) are to ensure that the Site is designed, operated, monitored and maintained in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider.*

3. *The reasons for Condition 1(11) are to ensure that the Site is operated under the corporate name which appears on the application form submitted for this approval and to ensure that the Director is informed of any changes.*

4. *The reasons for Condition 1(12) are to restrict potential transfer or encumbrance of the Site without the approval of the Director and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this Approval.*

5. *The reason for Condition 1(13) is to ensure that the successor is aware of its legal responsibilities.*

6. *The reasons for Conditions 1(14), (15), (16), (17), (18), (20) & (21) are that the Part II.1 Director is an individual with authority pursuant to Section 197 of the Environmental Protection Act to require registration on title and provide any person with an interest in property before dealing with the property in any way to give a copy of the Approval to any person who will acquire an interest in the property as a result of the dealing.*

7. *The reason for Condition 1(22) is to ensure that appropriate Ministry staff has ready access to the Site for inspection of facilities, equipment, practices and operations required by the conditions in this Approval. This Condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the Act, the OWRA, the PA, the NMA and the SDWA.*

8. *The reason for Condition 1 (23), 1(25), 2 (25), and 2(26) is to ensure that accurate waste records and approval documents are maintained to ensure compliance with the conditions in this Approval, the EPA and its regulations.*

9. *Condition 1 (26) has been included to clarify what information may be subject to the Freedom of Information Act.*

10. *The reasons for Conditions 2(1), 2 (3), 2(5), 2(19), 2(20), 2 (21), and 6(3) are to ensure that the Site is operated, inspected and maintained in an environmentally acceptable*

manner and does not result in a hazard or nuisance to the natural environment or any person.

11. *The reason for Condition 2(15) is to ensure that waste is transported to and from the Site in accordance with Reg. 347.*

12. *The reason for Conditions 2 (2), 2(4), and 2(16) is to ensure that users of the Site are fully aware of important information and restrictions related to Site operations and access under this Approval.*

13. *The reasons for Condition 2(6) (a), and (b) are open burning of municipal waste is unacceptable because of concerns with air emissions, smoke and other nuisance effects, and the potential fire hazard and to make sure burning of brush and wood are carried out in accordance with Ministry guidelines.*

14. *The reasons for Condition 2(7), 2(8), and 2(9) are to specify the hours of operation for the landfill site and a mechanism for amendment of the hours of operation, as required.*

15. *The reasons for Condition 2(10), 2(11), 2(17), 2(18), 3(1) are to ensure that the Site is supervised by properly trained staff in a manner which does not result in a hazard or nuisance to the natural environment or any person and to ensure the controlled access and integrity of the Site by preventing unauthorized access when the Site is closed and no site attendant is on duty.*

16. *The reasons for Conditions 2(13), 2(18), 2(22) and 2(23) are to specify the approved areas from which waste may be accepted at the Site and the types and amounts of waste that may be accepted for disposal at the Site, based on the Owner's application and supporting documentation.*

17. *The reason for Conditions 2(19), 2(20) and 2(24) is to ensure the waste storage and diversion is done in a manner and duration which does not result in a nuisance or a hazard to the health and safety of the environment or people and restrictions related to Site operations and access under this ECA.*

18. *The reason for Condition 3(1) is to ensure that the Site is supervised and operated by properly trained staff in a manner which does not result in a hazard or nuisance to the natural environment or any person.*

18. *The reason for Condition 4(1) is to ensure that any complaints regarding landfill operations at this Site are responded to in a timely and efficient manner.*

19. *Conditions 5(1) through 5(5) are included to ensure that emergency situations are handled in a manner to minimize the likelihood of an adverse effect and to ensure public health and safety and environmental protection.*

20. The reason for Conditions 6(1) and 6(2) is to ensure that accurate waste records are maintained to ensure compliance with the conditions in this Approval (such as fill rate, site capacity, record keeping, annual reporting, and financial assurance requirements), the EPA and its regulations.

21. The reason for Conditions 6(4) and 6(5) is to ensure that detailed records of Site inspections are recorded and maintained for inspection and information purposes.

22. The reasons for Conditions 6(6) and 6(7) are to ensure that regular review of site development, operations and monitoring data is documented and any possible improvements to site design, operations or monitoring programs are identified. An annual report is an important tool used in reviewing site activities and for determining the effectiveness of site design.

23. The reason for Conditions 7(1) to 7(7) inclusive is to specify the approved areas from which waste may be accepted at the Site and the types and amounts of waste that may be accepted for disposal at the Site, based on the Owner's application and supporting documentation.

24. The reasons for Condition 7(8) are to ensure that weekly and intermediate cover are used to control potential nuisance effects, to facilitate vehicle access on the Site, and to ensure an acceptable site appearance is maintained. The proper closure of a landfill site requires the application of a final cover which is aesthetically pleasing, controls infiltration, and is suitable for the end use planned for the Site.

25. The reasons for Condition 8(1), 8(2) and 8(3) are to ensure that off-site migration of landfill gas is monitored and all buildings at the Site are free of any landfill gas accumulation, which due to a methane gas component may be explosive and thus create a danger to any persons at the Site.

26. Conditions 8(4) to 8(7) and 8(18) are included to specify the leachate, groundwater and surface water monitoring requirements for monitoring leachate, groundwater and surface water quality and to require the Owner to demonstrate that the Site is performing as designed and the impacts on the natural environment are acceptable. Regular monitoring allows for the analysis of trends over time and ensures that there is an early warning of potential problems so that any necessary remedial/contingency action can be taken.

27. Conditions 8(8) to 8(10) are included to ensure the integrity of the groundwater monitoring network so that accurate monitoring results are achieved and the natural environment is protected.

28. Conditions 8(11) to 8(14) are added to ensure the Owner has a plan with an organized set of procedures for identifying and responding to potential issues relating to groundwater and surface water contamination at the Site's compliance point.

29. *The reasons for Conditions 8(15) to 8(17) are included to streamline the approval of the changes to the monitoring plan.*

30. *The reasons for Condition 9(1), 9(2) and 2(27) are to ensure that final closure of the Site is completed in an aesthetically pleasing manner, in accordance with Ministry standards, and to ensure the long-term protection of the health and safety of the public and the environment.*

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). A361116 issued on April 3, 1986

In accordance with Section 139 of the *Environmental Protection Act,* you may by written notice served upon me and the Ontario Land 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 ("the Notice") 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.

Pursuant to subsection 139(3) of the *Environmental Protection Act,* a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

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:

Registrar*
Ontario Land Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5
OLT.Registrar@ontario.ca

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 Ontario Land Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349 or 1 (866) 448-2248, or www.oltt.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 25th day of October, 2021

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

AQ/
c: Area Manager, MECP Belleville
c: District Manager, MECP Kingston - District
Iris O'Connor, BlueMetric Environmental Inc.

Ministry of Natural Resources
Program Services Section
300 Water Street
Peterborough, ON K9J 3C7

Ministère des Richesses naturelles
Section des services de programme
300, rue Water
Peterborough (Ontario) K9J 3C7

Ontario

File No. 112798

February 20, 2025

Municipality of Hastings Highlands
33011 Highway 62
P.O Box 130
Maynooth, ON, K0L 2S0

Attn: The Corporation of the Municipality of Hastings Highlands

Dear Sir/Madam:

Re: Grant of Easement No. 1126
Location CL 19416, Part 2 and 4, Plan 21R-26155, Geographic Township of McClure, Municipality of Hastings Highlands

Location CL 4647, Part 1 and 2, Plan 21R-9281, Geographic Township of McClure, Municipality of Hastings Highlands

Enclosed is the above referenced Grant of Easement. Please execute and affix your corporate seal, or add after the signature "I HAVE AUTHORITY TO BIND THE CORPORATION", and then return to the undersigned at your earliest possible convenience.

We will then arrange to have the easement registered in the pertinent Land Registry Office, following which a copy of the registered easement will be sent to you.

If you have any questions, please do not hesitate to contact me.

Yours truly,

Stacey Doughty
Provincial Lands Specialist - Crown Land Registry
Telephone: (705)-313-5251

Ontario

Ministry of
Natural Resources
and Forestry

PROVINCE OF ONTARIO

MINISTRY OF NATURAL RESOURCES AND FORESTRY

GRANT OF EASEMENT

NO. 1126

THIS AGREEMENT made on this sixth day of February in the year of Our Lord two thousand and twenty-three pursuant to the Public Lands Act,

BETWEEN:

THE MINISTER OF NATURAL RESOURCES AND FORESTRY for the Province of Ontario, hereinafter called the "Grantor",

OF THE FIRST PART;

- and -

THE CORPORATION OF THE MUNICIPALITY OF HASTINGS HIGHLANDS, hereinafter called the "Grantee"

OF THE SECOND PART;

WHEREAS the Grantee operates a waste disposal site, (the "Waste Disposal Site") located on lands more particularly described in Schedule "B" attached hereto adjacent to certain Public Lands owned by His Majesty the King in right of Ontario.

AND WHEREAS surface and ground water from the Waste Disposal Site may flow or migrate into, onto, over, along and under the Public Lands.

WITNESSETH that under the Public Lands Act and in consideration of the sum of TWO THOUSAND AND TEN DOLLARS AND FIFTY-SEVEN CENTS ($2,010.57) now paid by the Grantee to the Minister of Finance of Ontario, the receipt whereof is hereby acknowledged, and the covenants and agreements hereinafter contained on the part of the Grantee to be observed and performed, the Grantor doth hereby grant, convey, transfer, and confirm unto the Grantee, its successors and assigns, as and from the first day of January, 2023, the right, licence, liberty, privilege and easement on, over, under and through the Public Lands situate, lying and being in the Geographic Township of McClure, in the Municipality of Hastings Highlands, County of Hastings and Province of Ontario, being more particularly described in Schedule "A" attached hereto.

1. The Grantor hereby grants to the Grantee the right in the nature of an easement and irrevocable licence to use the Public Lands for the purpose of a contaminant attenuation zone for the Waste Disposal Site including without limitation, the right to discharge contaminants from the Waste Disposal Site into, onto, over, along and under the Public Lands subject to the terms of this agreement.

2. This agreement shall be effective until such time as the Director of the Ministry of the Environment, Conservation and Parks consents to the removal of this agreement from title.

3. The Grantee, its employees, agents and contractors shall have reasonable access to the Public Lands from time to time for all reasonable purposes arising from the rights granted under this agreement, including, without limitation,

   a) the right to enter into the Public Lands and onto the surface above the Public Lands for purposes of testing, monitoring, intercepting contaminants and carrying out remedial work (the "Works");

   b) the right to install, operate and maintain Works, for the purposes mentioned in clause 3.(a), in or above the Public Lands, including on the surface above the Public Lands.

4. The Grantee agrees to restore at its own expense the surface of the Public Lands to its approximate condition as the same existed immediately prior to the installation of the Works, to the satisfaction of the Grantor so far as is consistent with the use of the easement hereby granted.

5. Notwithstanding any rule of law or equity, the Works shall at all times remain the property of the Grantee notwithstanding that the same may be annexed or affixed to the land and shall at any time and from time to time be removable in whole or in part by the Grantee, its successors and assigns.

6. In the event that the Grantee abandons the Works, the Grantee may, with the consent of the Grantor, leave any part thereof in place.

7. The Grantee agrees to maintain a surface and ground water monitoring program with respect to the Waste Disposal Site as it pertains to the Public Lands in accordance with the environmental approvals as required by the Ministry of the Environment, Conservation and Parks.

8. (a) The Grantor acknowledges that surface and ground water flowing or otherwise migrating onto, over, along and under the Public Lands from the Waste Disposal Site may be contaminated from waste deposited at the Waste Disposal Site.

   (b) The Grantor understands and acknowledges that the rights granted to the Grantee include the right of the Grantee to prevent the Grantor from paving, erecting a structure or making any use of the Public Lands above or in the vicinity of the Public Lands that would interfere with the functioning of the Public Lands as a contaminant attenuation zone or with the exercise of any of the rights mentioned herein, without the prior written consent of the Grantee.

   (c) The Grantee agrees that the Waste Disposal Site will accept only domestic, commercial and non-hazardous solid industrial waste.

   (d) The Grantee agrees to operate and close the Waste Disposal Site in accordance with the applicable legislation.

9. Subject to the rights granted herein to the Grantee, His Majesty the King in right of Ontario shall have charge of the administration, management, sale and disposition of the Public Lands and shall have the right to fully use and enjoy it.

10. The rights, liberties, privileges and easement hereby granted are and shall be of the same force and effect to all intents and purposes as a covenant running with the land, and this agreement, including all the covenants and conditions herein contained, shall extend to, be binding upon and enure to the benefit of the successors and assigns of the parties hereto respectively.

11. The Grantee performing and observing the covenants and conditions on its part to be performed and observed, shall and may peaceably hold and enjoy the rights, liberties, privileges and easement hereby granted, without let, hindrance, molestation or interruption on the part of the Grantor or of any person claiming by, through, under or in trust for the Grantor.

12. The right, licence, liberty, privilege and easement herein granted are hereby declared to be appurtenant to the lands of the Grantee (the "Waste Disposal Site") situate lying and being in the Geographic Township of McClure, in the Municipality of Hastings Highlands, County of Hastings and Province of Ontario, being more particularly described in Schedule "B" attached hereto.

13. The Grantee covenants to indemnify, keep indemnified and save harmless the Grantor, His Majesty the King in right of Ontario, His officers, servants and agents or any of them, hereinafter collectively referred to as "the Grantor" from and against all claims, demands, costs, suits, actions or proceedings, causes of action, loss, damage, expense or injury including death, of any nature or kind whatsoever, resulting from, caused by or in any manner connected with the exercise of any right granted herein or which would not have happened but for the existence of this easement, and the Grantee hereby waives, releases and forever discharges, the Grantor from all claims, demands, costs, suits, actions or proceedings, causes of action, loss, damage, expense or injury including death, of any nature or kind whatsoever, which the Grantee has or hereafter shall or may have resulting from, caused by or in any manner connected with the exercise of any right granted herein or which would not have happened but for the existence of this easement, provided that the indemnity and release herein shall not apply if a court of competent jurisdiction has ruled that such claims, demands, costs, suits, actions or proceedings, causes of action, loss, damage, expense or injury including death, of any nature or kind whatsoever are attributable to acts of the Grantor in deliberate or reckless disregard for the rights granted herein.

14. All notices to be given hereunder may be given by registered letter, addressed to the Grantee at:

33011 Highway 62
P.O. Box 130
Maynooth, ON K0L 2S0

and to the Grantor at:

District Manager,
Ministry of Natural Resources and Forestry
106 Monck Street
Box 500
Bancroft, ON K0L 1C0

or such other address as the Grantor or Grantee may respectively, from time to time designate by letter, and any such notice shall be deemed to have been given to and received by the addressee three days after mailing thereof, postage prepaid and registered.

15. Neither this agreement nor any benefits or burdens under this agreement shall be assignable by any party without the prior written consent of the other party, which consent shall not be unreasonably withheld. Subject to the foregoing, this agreement shall enure to the benefit of and be binding upon the parties and their respective successors (including any successor by reason of amalgamation of any party) and permitted assigns.

IN WITNESS WHEREOF the parties hereto have hereunto set their hands and seals.

C. Scott Kaldeway
Provincial Lands Specialist, Crown Land Registry
Ministry of Natural Resources and Forestry
for and on behalf of the
Minister of Natural Resources and Forestry

THE CORPORATION OF THE MUNICIPALITY OF HASTINGS HIGHLANDS

BY: _____

AND: _____

We have authority to bind the corporation.

Grant of Easement No. 1126

Main Office File No. 112798

Municipality of Hastings Highlands
33011 Highway 62
P.O. Box 130
Maynooth, ON K0L 2S0

SCHEDULE A

Part of Location CL 19416,

Being part of Lots 9 and 10, Concession 12, and,

Part of Lot 10, Concession 13,

Geographic Township of McClure,

Municipality of Hastings Highlands,

County of Hastings,

Containing 12.546 hectares, more or less,

Designated as Parts 2 & 4 on Reference Plan 21R-26155.

SCHEDULE B

All of Location CL 4647,

Being part of Lot 10, Concession 12, and,

Part of Lot 10, Concession 13,

Geographic Township of McClure,

Municipality of Hastings Highlands,

County of Hastings,

Containing 1.25 hectares, more or less,

Designated as Parts 1 & 2 on Reference Plan 21R-9281.

Comprising all of P.I.N 40001-0001(LT) and P.I.N. 40001-0002(LT)

or such other address as the Grantor or Grantee may respectively, from time to time designate by letter, and any such notice shall be deemed to have been given to and received by the addressee three days after mailing thereof, postage prepaid and registered.

15. Neither this agreement nor any benefits or burdens under this agreement shall be assignable by any party without the prior written consent of the other party, which consent shall not be unreasonably withheld. Subject to the foregoing, this agreement shall enure to the benefit of and be binding upon the parties and their respective successors (including any successor by reason of amalgamation of any party) and permitted assigns.

IN WITNESS WHEREOF the parties hereto have hereunto set their hands and seals.

C. Scott Kaldeway
Provincial Lands Specialist, Crown Land Registry
Ministry of Natural Resources and Forestry
for and on behalf of the
Minister of Natural Resources and Forestry

THE CORPORATION OF THE MUNICIPALITY OF HASTINGS HIGHLANDS

BY: _____

AND: _____

We have authority to bind the corporation.

Grant of Easement No. 1126

Main Office File No. 112798

Municipality of Hastings Highlands
33011 Highway 62
P.O. Box 130
Maynooth, ON K0L 2S0

Appendix B

Monitoring and Screening Checklist (MECP/MOE)

Appendix D-Monitoring and Screening Checklist
General Information and Instructions

General Information: The checklist is to be completed, and submitted with the Monitoring Report.
Instructions: A complete checklist consists of:
(a) a completed and signed checklist, including any additional pages of information which can be attached as needed to provide further details where indicated.
(b) completed contact information for the Competent Environmental Practitioner (CEP)
(c) self-declaration that CEP(s) meet(s) the qualifications as set out below and in Section 1.2 of the Technical Guidance Document.

Definition of Groundwater CEP:
For groundwater, the CEP must have expertise in hydrogeology and meet one of the following:
(a) the person holds a licence, limited licence or temporary licence under the *Professional Engineers Act*; or
(b) the person holds a certificate of registration under the *Professional Geoscientists Act, 2000* and is a practicing member, temporary, member or limited member of the Association of Professional Geoscientists of Ontario. O. Reg. 66/08, s. 2..
Definition of Surface water CEP:
A CEP for surface water assessments is a scientist, professional engineer or professional geoscientist as described in (a) and (b) above with demonstrated experience and post-secondary education, either a diploma or degree, in hydrology, aquatic ecology, limnology, aquatic biology, physical geography with specialization in surface water, and/or water resource management.

The type of scientific work that a CEP performs must be consistent with that person's education and experience. If an individual has appropriate training and credentials in both groundwater and surface water and is responsible for both areas of expertise, the CEP may then complete and validate both sections of the checklist.

Monitoring Report and Site Information	
Waste Disposal Site Name	Lake St. Peter Waste Disposal Site
Location (e.g. street address, lot, concession)	2825 Hwy. 127
GPS Location (taken within the property boundary at front gate/ front entry)	731681 m E, 5022608 m N
Municipality	Municipality of Hasting Highlands (formerly McClure)
Client and/or Site Owner	The Corporation of the Municipality of Hasting Highlands
Monitoring Period (Year)	2024
This Monitoring Report is being submitted under the following:	
Environmental Compliance Approval Number:	A 361116
Director's Order No.:	
Provincial Officer's Order No.:	
Other:	

Report Submission Frequency	◉ **Annual** ○ **Other**	Required to be submitted to MECP, on March 31st following reporting year.	
The site is: **(Operation Status)**	◉ **Open** ○ **Inactive** ○ **Closed**		
Does your Site have a Total Approved Capacity?	◉ **Yes** ○ **No**		
If yes, please specify Total Approved Capacity	73,383	*Units*	Cubic Metres
Does your Site have a Maximum Approved Fill Rate?	○ **Yes** ◉ **No**		
If yes, please specify Maximum Approved Fill Rate		*Units*	
Total Waste Received within Monitoring Period (Year)	243.2	*Units*	Tonnes
Total Waste Received within Monitoring Period (Year) *Methodology*	Estimated		
Estimated Remaining Capacity	68,866	*Units*	Cubic Metres
Estimated Remaining Capacity *Methodology*	Aerial Photogrammetry		
Estimated Remaining Capacity *Date Last Determined*	31-12-2023		
Non-Hazardous Approved Waste Types	☒ Domestic ☒ Industrial, Commercial & Institutional (IC&I) ☐ Source Separated Organics (Green Bin) ☒ Tires	☒ Contaminated Soil ☒ Wood Waste ☒ Blue Box Material ☐ Processed Organics ☒ Leaf and Yard Waste	☐ Food Processing/Preparation Operations Waste ☐ Hauled Sewage Other:
Subject Waste Approved Waste Classes: Hazardous & Liquid Industrial *(separate waste classes by comma)*			
Year Site Opened *(enter the Calendar Year only)*		**Current ECA Issue Date**	10/25/2021
Is your Site required to submit Financial Assurance?		○ **Yes** ◉ **No**	
Describe how your Landfill is designed.		◉ Natural Attenuation only ○ Fully engineered Facility ○ Partially engineered Facility	
Does your Site have an approved Contaminant Attenuation Zone?		○ **Yes** ◉ **No**	

If closed, specify C of A, control or authorizing document closure date:	

Has the nature of the operations at the site changed during this monitoring period?	○ **Yes** ◉ **No**
If yes, provide details:	
Have any measurements been taken since the last reporting period that indicate landfill gas volumes have exceeded the MOE limits for subsurface or adjacent buildings? (i.e. exceeded the LEL for methane)	○ Yes ◉ No

Groundwater WDS Verification:

Based on all available information about the site and site knowledge, it is my opinion that:

Sampling and Monitoring Program Status:

1) The monitoring program continues to effectively characterize site conditions and any groundwater discharges from the site. All monitoring wells are confirmed to be in good condition and are secure:	◉ **Yes** ○ **No**	All wells in good condition.
2) All groundwater, leachate and WDS gas sampling and monitoring for the monitoring period being reported on was successfully completed as required by Certificate(s) of Approval or other relevant authorizing/control document (s):	◉ **Yes** ○ **No** ○ **Not Applicable**	If no, list exceptions below or attach information.

Groundwater Sampling Location	**Description/Explanation for change (change in name or location, additions, deletions)**	**Date**

3) a) Is landfill gas being monitored or controlled at the site?	◉ **Yes** ○ **No**	
If yes to 3(a), please answer the next two questions below.		
b) Have any measurements been taken since the last reporting period that indicate landfill gas is present in the subsurface at levels exceeding criteria established for the site?	○ **Yes** ◉ **No**	
c) Has the sampling and monitoring identified under 3(a) for the monitoring period being reported on was successfully completed in accordance with established protocols, frequencies, locations, and parameters developed as per the Technical Guidance Document:	◉ **Yes** ○ **No** ○ **Not Applicable**	If no, list exceptions below or attach additional information.

Groundwater Sampling Location	**Description/Explanation for change (change in name or location, additions, deletions)**	**Date**

4) All field work for groundwater investigations was done in accordance with standard operating procedures as established/outlined per the Technical Guidance Document (including internal/external QA/QC requirements) (Note: A SOP can be from a published source, developed internally by the site owner's consultant, or adopted by the consultant from another organization):	◉ **Yes** ○ **No**	If no, specify (Type Here):

Sampling and Monitoring Program Results/WDS Conditions and Assessment:

5) The site has an adequate buffer, Contaminant Attenuation Zone (CAZ) and/or contingency plan in place. Design and operational measures, including the size and configuration of any CAZ, are adequate to prevent potential human health impacts and impairment of the environment.	○ **Yes** ◉ **No**	Land transaction process is ongoing. Easement lands have been granted, finalization is underway.	
6) The site meets compliance and assessment criteria.	○ **Yes** ◉ **No**	The site is not in compliance with Guideline B-7 along the eastern property boundary.	
7) The site continues to perform as anticipated. There have been no unusual trends/ changes in measured leachate and groundwater levels or concentrations.	◉ **Yes** ○ **No**	Typical fluctuations.	
1) Is one or more of the following risk reduction practices in place at the site: ***(a)*** **There is minimal reliance on natural attenuation of leachate due to the presence of an effective waste liner and active leachate collection/ treatment; or** ***(b)*** **There is a predictive monitoring program in-place (modeled indicator concentrations projected over time for key locations); or** ***(c)*** **The site meets the following two conditions (typically achieved after 15 years or longer of site operation):** ***i.*** **The site has developed stable leachate mound(s) and stable leachate plume geometry/concentrations; and** ***ii.*** **Seasonal and annual water levels and water quality fluctuations are well understood.**	○ **Yes** ◉ **No**	**Note which practice(s):**	☐ **(a)** ☐ **(b)** ☐ **(c)**
9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):	○ **Yes** ◉ **No** ○ **Not Applicable**	The groundwater trigger assessment plan was implemented during the fall event following the installation of both wells along the eastern CAZ boundary acting as the assessment points . No exceedances of the trigger parameters were reported.	

Groundwater CEP Declaration:

I am a licensed professional Engineer or a registered professional geoscientist in Ontario with expertise in hydrogeology, as defined in Appendix D under Instructions. Where additional expertise was needed to evaluate the site monitoring data, I have relied on individuals who I believe to be experts in the relevant discipline, who have co-signed the compliance monitoring report or monitoring program status report, and who have provided evidence to me of their credentials.

I have examined the applicable Certificate of Approval and any other environmental authorizing or control documents that apply to the site. I have read and followed the Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document (MOE, 2010, or as amended), and associated monitoring and sampling guidance documents, as amended from time to time. I have reviewed all of the data collected for the above-referenced site for the monitoring period(s) identified in this checklist. Except as otherwise agreed with the ministry for certain parameters, all of the analytical work has been undertaken by a laboratory which is accredited for the parameters analysed to *ISO/IEC 17025:2005 (E)- General requirements for the competence of testing and calibration laboratories,* or as amended from time to time by the ministry.

If any exceptions or potential concerns have been noted in the questions in the checklist attached to this declaration, it is my opinion that these exceptions and concerns are minor in nature and will be rectified for the next monitoring/reporting period. Where this is not the case, the circumstances concerning the exception or potential concern and my client's proposed action have been documented in writing to the Ministry of the Environment District Manager in a letter from me dated:

Recommendations:

Based on my technical review of the monitoring results for the waste disposal site:

◉ **No changes to the monitoring program are recommended** ○ **The following change(s) to the monitoring program is/are recommended:**	
◉ **No Changes to site design and operation are recommended** ○ **The following change(s) to the site design and operation is/ are recommended:**	

Name:	Jaclyn Kalesnikoff, B.Sc., P.Geo		
Seal:			
Signature:		**Date:**	28-Mar-2025
CEP Contact Information:	Jaclyn Kalesnikoff, B.Sc., P.Geo		
Company:	BluMetric Environmental Inc.		
Address:	1682 Woodward Dr, Ottawa, ON		
Telephone No.:	877-487-8436 x339	Fax No. :	
E-mail Address:	jkalesnikoff@blumetric.ca		
Co-signers for additional expertise provided:			
Signature:		**Date:**	
Signature:		**Date:**	

Surface Water WDS Verification:

Provide the name of surface water body/bodies potentially receiving the WDS effluent and the approximate distance to the waterbody (including the nearest surface water body/bodies to the site):

Name (s)	Unnamed Lake, Boulter Lake, Lake St. Peter
Distance(s)	Approximately 500 m to the northeast, 900 m to the south, 900 m to the southeast.

Based on all available information and site knowledge, it is my opinion that:

Sampling and Monitoring Program Status:

1) The current surface water monitoring program continues to effectively characterize the surface water conditions, and includes data that relates upstream/background and downstream receiving water conditions:	(●) Yes ( ) No	
2) All surface water sampling for the monitoring period being reported was successfully completed in accordance with the Certificate(s) of Approval or relevant authorizing/control document(s) (if applicable):	(●) Yes ( ) No ( ) **Not applicable (No C of A, authorizing / control document applies)**	If no, specify below or provide details in an attachment.

Surface Water Sampling Location	**Description/Explanation for change (change in name or location, additions, deletions)**	**Date**

3) a) Some or all surface water sampling and monitoring program requirements for the monitoring period have been established outside of a ministry C of A or authorizing/control document.	○ **Yes** ◉ **No** ○ **Not Applicable**	
b) If yes, all surface water sampling and monitoring identified under 3 (a) was successfully completed in accordance with the established program from the site, including sampling protocols, frequencies, locations and parameters) as developed per the Technical Guidance Document:	○ **Yes** ○ **No** ◉ **Not Applicable**	If no, specify below or provide details in an attachment.

Surface Water Sampling Location	**Description/Explanation for change (change in name or location, additions, deletions)**	**Date**

4) All field work for surface water investigations was done in accordance with standard operating procedures, including internal/external QA/QC requirements, as established/outlined as per the Technical Guidance Document, MOE 2010, or as amended. (Note: A SOP can be from a published source, developed internally by the site owner's consultant, or adopted by the consultant from another organization):	◉ **Yes** ○ **No**	

Sampling and Monitoring Program Results/WDS Conditions and Assessment:

5) The receiving water body meets surface water-related compliance criteria and assessment criteria: i.e., there are no exceedances of criteria, based on MOE legislation, regulations, Water Management Policies, Guidelines and Provincial Water Quality Objectives and other assessment criteria (e.g., CWQGs, APVs), as noted in Table A or Table B in the Technical Guidance Document (Section 4.6):	○ **Yes** ◉ **No**

If no, list parameters that exceed criteria outlined above and the amount/percentage of the exceedance as per the table below or provide details in an attachment:

Parameter	Compliance or Assessment Criteria or Background	Amount by which Compliance or Assessment Criteria or Background Exceeded
e.g. Nickel	e.g. C of A limit, PWQO, background	e.g. X% above PWQO
Dissolved Aluminum (SW1)	0.075 mg/L (PWQO)	0.15 mg/L, 200% above PWQO
Dissolved Aluminum (SW2)	0.075 mg/L (PWQO)	0.124 mg/L, 165.33% above PWQO
Lead (SW2)	0.001 mg/L (PWQO)	0.002 mg/L, 200% above PWQO
6) In my opinion, any exceedances listed in Question 5 are the result of non-WDS related influences (such as background, road salting, sampling site conditions)?	◉ **Yes** ○ **No**	No MECP Table A and Table B exceedances were reported in 2024. Dissolved aluminum is considered to be naturally occurring at the site, therefore the only PWQO exceedance that is likely due to landfill impacts is lead at SW2.

7) All monitoring program surface water parameter concentrations fall within a stable or decreasing trend. The site is not characterized by historical ranges of concentrations above assessment and compliance criteria.	◉ **Yes** ◯ **No**	Stable, typical fluctuations.
8) For the monitoring program parameters, does the water quality in the groundwater zones adjacent to surface water receivers exceed assessment or compliance criteria (e.g. , PWQOs, CWQGs, or toxicity values for aquatic biota (APVs)):	◉ Yes ◯ No ◯ Not Known ◯ Not Applicable	Groundwater samples are compared against the PWQO criteria and some exceedances are present. However, groundwater and surface water interaction was determined to be unlikely. The surface water concentrations recorded during 2024 do not reflect groundwater discharge.
9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):	◉ **Yes** ◯ **No** ◯ **Not Applicable**	Toxicity sampling was carried out in the spring and the fall of 2024 following three trigger exceedances for two consecutive sampling periods at LSP-DP-1-21. The test results indicated the percent mortality for Daphnia Magna and Rainbow Trout to be 0 % for both sampling events.

Surface Water CEP Declaration:

I, the undersigned hereby declare that I am a Competent Environmental Practitioner as defined in Appendix D under Instructions, holding the necessary level of experience and education to design surface water monitoring and sampling programs, conduct appropriate surface water investigations and interpret the related data as it pertains to the site for this monitoring period.

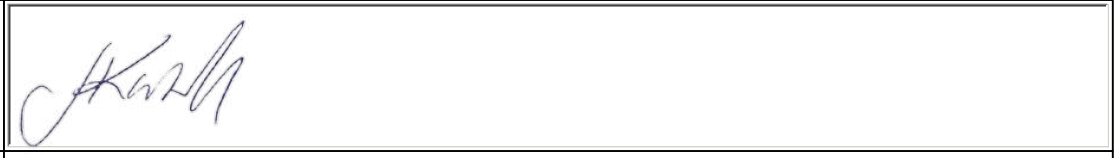
I have examined the applicable Certificate of Approval and any other environmental authorizing or control documents that apply to the site. I have read and followed the Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document (MOE, 2010, or as amended) and associated monitoring and sampling guidance documents, as amended from time to time. I have reviewed all of the data collected for the above-referenced site for the monitoring period(s) identified in this checklist. Except as otherwise agreed with the ministry for certain parameters, all of the analytical work has been undertaken by a laboratory which is accredited for the parameters analysed to *ISO/IEC 17025:2005 (E)- General requirements for the competence of testing and calibration laboratories,* or as amended from time to time by the ministry.

If any exceptions or potential concerns have been noted in the questions in the checklist attached to this declaration, it is my opinion that these exceptions and concerns are minor in nature or will be rectified for future monitoring events. Where this is not the case, the circumstances concerning the exception or potential concern and my client's proposed action have been documented in writing to the Ministry of the Environment District Manager in a letter from me dated:

Recommendations:

Based on my technical review of the monitoring results for the waste disposal site:

◉ **No Changes to the monitoring program are recommended** ○ **The following change(s) to the monitoring program is/are recommended:**	
◉ **No changes to the site design and operation are recommended** ○ **The following change(s) to the site design and operation is/are recommended:**	

CEP Signature	
Relevant Discipline	Senior Hydrogeologist
Date:	28-Mar-2025
CEP Contact Information:	Jaclyn Kalesnikoff, B.Sc., P.Geo
Company:	BluMetric Environmental Inc.
Address:	1682 Woodward Dr, Ottawa, ON
Telephone No.:	877-487-8436 x339
Fax No. :	
E-mail Address:	jkalesnikoff@blumetric.ca

Save As		**Print Form**

Appendix C

Monitoring Well Logs

Project No: KB1946-4

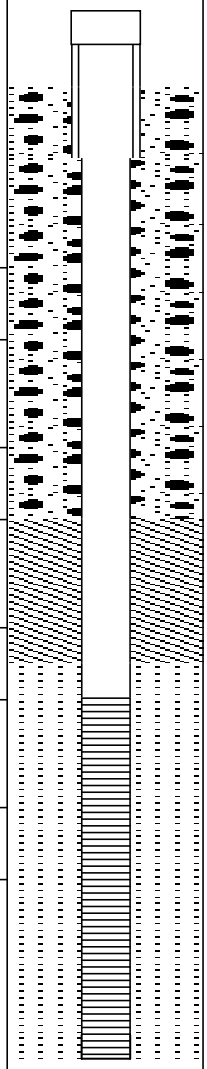
Project: Lake St. Peter WDS

Client: Municipality of Hastings Highlands

Site Coordinates: Zone 17 T North 5022641, East 731481

Log of Borehole: LSP1-03

Field Personnel: B. M.

SUBSURFACE PROFILE				SAMPLE				WELL INSTALLATION	
Depth (ft / m)	Elevation	Symbol	Description	Number	Type	SPT N-Value	Recovery	Well Construction	Comments
0 / 0	98.87		Ground Surface						Steel locking protective cover and casing Stick-up: 0.65m
0 / 0			Brown SAND, trace gravel, dry.						
3 / 1									51mm (2") I.D. Sch. 40 PVC pipe
6 / 2				SS1	SS	27	14"		Native backfill
10 / 3	95.82		Brown SAND, moist.	SS2	SS	13	15"		
13 / 4	94.30		Brown SAND, wet.	SS3	SS	14			3/8" Bentonite holeplug #3 Silica sand pack
19 / 6	92.77		Brown SAND, saturated.	SS4	SS	9	16"		
23 / 7									10' Slot 10 PVC screen (2")
26 / 8	90.64		End of Borehole						

Drill Method: 8" Hollow Stem Auger

Hole Size: 8" (205mm)

Drill Date: July 24/03

Datum: Elevation TPVC - 99.519 m

Checked by:

Sheet: 1 of 1

Project No: KB1946-4

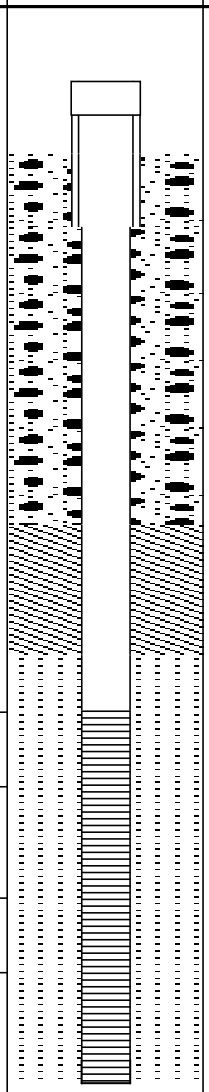
Project: Lake St. Peter WDS

Client: Municipality of Hastings Highlands

Site Coordinates: Zone 17 T North 5022752, East 731383

Log of Borehole: LSP2-03

Field Personnel: B. M.

SUBSURFACE PROFILE				SAMPLE				WELL INSTALLATION	
Depth (ft / m)	Elevation	Symbol	Description	Number	Type	SPT N-Value	Recovery	Well Construction	Comments
0 / 0	98.89		Ground Surface						Steel locking protective cover and casing Stick-up: 0.65m
0 – 10 / 0 – 3	95.84		Brown SAND, trace gravel, dry.						51mm (2") I.D. Sch. 40 PVC pipe Native backfill
10 – 13 / 3 – 4	94.92		Brown SAND, wet.						3/8" Bentonite holeplug
13 – 15 / 4	94.31		Brown SAND with Gravel and Cobbles, wet.						#3 Silica sand pack
15 – 20 / 4 – 6	92.79		Brown SAND and GRAVEL, saturated.	SS1	SS	24	12"		
20 – 25 / 6 – 7	91.27		Brown, SAND, saturated.	SS2	SS	25	24"		10' Slot 10 PVC screen (2")
25 / 7			End of Borehole						

Drill Method: 8" Hollow Stem Auger

Hole Size: 8" (205mm)

Drill Date: July 24/03

Datum: Elevation TPVC - 99.535 m

Checked by:

Sheet: 1 of 1

Project No: KB1946-4

Project: Lake St. Peter WDS

Client: Municipality of Hastings Highlands

Site Coordinates: Zone 17 T North 5022671, East 731462

Log of Borehole: LSP3-03

Field Personnel: B. M.

SUBSURFACE PROFILE				SAMPLE				WELL INSTALLATION	
Depth (ft / m)	Elevation	Symbol	Description	Number	Type	SPT N-Value	Recovery	Well Construction	Comments
0 / 0	98.73		Ground Surface						Steel locking protective cover and casing Stick-up: 0.72m
0 – 3 / 0 – 1			Brown SAND, trace gravel, dry.						51mm (2") I.D. Sch. 40 PVC pipe Native backfill
10 / 3	95.68		Brown SAND, moist.	SS1	SS	14	15"		
15 / 4	94.16		Brown SAND, saturated.	SS2	SS	10			3/8" Bentonite holeplug #3 Silica sand pack
20 / 6	92.63		Brown SAND, saturated.						10' Slot 10 PVC screen (2")
25 / 7	91.11		End of Borehole						

Drill Method: 8" Hollow Stem Auger

Hole Size: 8" (205mm)

Drill Date: July 24/03

Datum: Elevation TPVC - 99.447 m

Checked by:

Sheet: 1 of 1

Well ID: LSP4-19

Project No.: 190495-02
Client: Municipality of Hastings Highlands
Report: 2019 Monitoring Well Installations
Site Address: Lake St. Peter W.D.S.
2825 Hwy 127, Maynooth, Ontario

Elevation Ground: *411.76 m*
TOP: *412.55 m*

UTM NAD83 (Zone 18T): 5022665 N
731554 E

Depth (m)	Description	Depth (m) / Elev. (m.a.s.l.)	Notes
	Ground Surface	0.00 / 411.76	4 in. sq. steel monument with lock PVC Stickup = 0.79m
0–2	**Sand and Gravel** Light brown, dry.		backfilled with drill cuttings
2		2.13 / 409.63	
2–9	**Sand** Light brown to grey brown, dry. - trace gravel, light brown grey, dry. - 5.64m wet. - saturated.		bentonite gravel seal 3.05 x 50mm slot 10 PVC screen within No. 2 silica sand pack
9		9.14 / 402.62	native soil collaspe
9	End of well at 9.14 m		
	Well Completion Details: Screened interval from 5.94 m to 9.00 m below surface Elevation at top of pipe (TOP) = 412.55 m		

SUBSURFACE PROFILE | SAMPLE | WELL COMPLETION

Sample ID | Type | Blow Counts | Recovery (%) | Lab Analysis | Headspace Vapour Level (ppm) 10 100 1000 10000 | Construction

Drill Date: 2019 July 16
Drilled By: Canadian Environmental Drilling
Drilling Method: Hollow Stem Auger
Hole Diameter: 0.2 m (OD)
Datum: LSP-BM2 413.57 m
Logged By: B.M.
Checked By: I.O'C.

Notes: AUGER SAMPLE

Sheet 1 of 1

BH MW OB LOGV1.0 190495-02 LAKE ST. PETER.GPJ WESA TEMPLATE V1.2.GDT 20-3-5

Well ID: LSP5-19

Project No.: 190495-02
Client: Municipality of Hastings Highlands
Report: 2019 Monitoring Well Installations
Site Address: Lake St. Peter W.D.S.
2825 Hwy 127, Maynooth, Ontario

Elevation Ground: *412.02 m*
TOP: *412.76 m*
MOECC Well Tag: A259053
UTM NAD83 (Zone 18T): 5022610 N
731498 E

Depth (m)	Symbol	Description	Depth (m) / Elev. (m.a.s.l.)	Sample ID	Type	Blow Counts	Recovery (%)	Lab Analysis	Headspace Vapour Level (ppm) 10 100 1000 10000	Construction	Notes
											4 in. sq. steel monument with lock PVC Stickup = 0.79m
0		Ground Surface	0.00 412.02								
		Sand and Gravel Light brown, dry, coarser 2.13m.									backfilled with drill cuttings
1											
2											bentonite gravel seal
3		- brown, dry									
4											
		- coarser gravel 5.18m, wet.									
5											
6											3.05m x 50mm slot 10 PVC screen within No. 2 silica sand pack
7			7.62 404.40								
		Sand Brown, some coarse gravel and cobbles.									
8		Auger refusal	8.23 403.79								native soil collaspe
		End of well at 8.23 m									
		Well Completion Details: Screened interval from 4.88 m to 7.92 m below surface Elevation at top of pipe (TOP) = 412.76 m									
9											

Drill Date: 2019 July 16
Drilled By: Canadian Environmental Drilling
Drilling Method: Hollow Stem Auger
Hole Diameter: 0.2 m (OD)
Datum: LSP-BM2 413.57 m
Logged By: B.M.
Checked By: I.O'C.

Notes: AUGER SAMPLE

Sheet 1 of 1

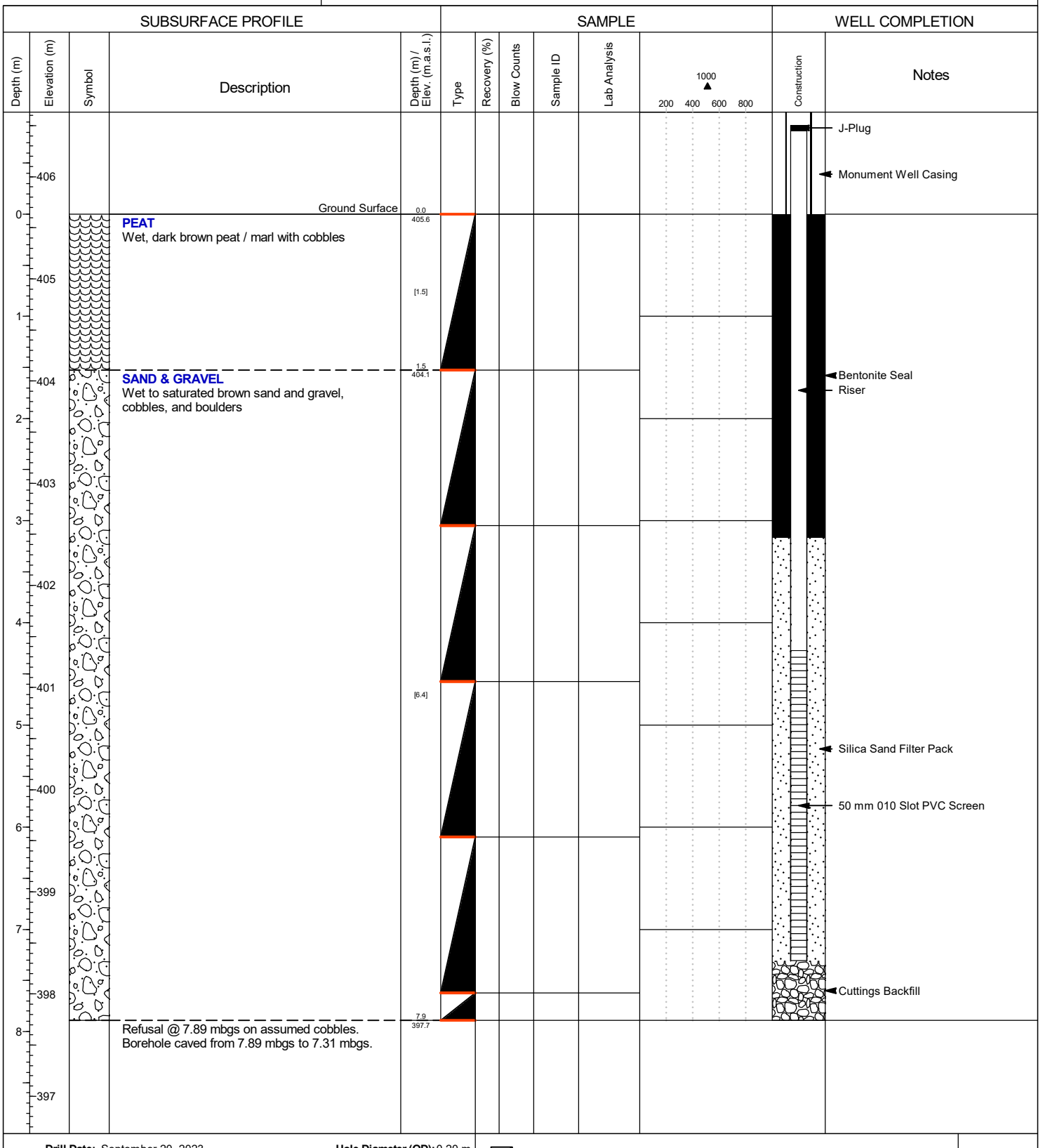
BH MW OB LOGV1.0 190495-02 LAKE ST. PETER.GPJ WESA TEMPLATE V1.2.GDT 20-3-5

Monitoring Well ID: LSP6-23

Project No.: 230226
Client: MHH
Report: Lake St. Peter WDS
Site Address: Lake St. Peter
Ontario

Elevation Ground: *405.63 m*
TOP: *406.53 m*

UTM NAD 83 (Zone 17): 5022808.037 N
731621.085 E



Drill Date: September 20, 2023
Drilled By: Canadian Environmental
Drilling Method: Hollow Stem Auger

Hole Diameter (OD): 0.20 m
Logged By: BM
Checked By: CM

AUGER SAMPLE
Perched Groundwater Strike / Unstabilized Groundwater Level
True Groundwater Strike / Stabilized Groundwater Level

BH MW OB LOG 230226 - LSP UPDATED.GPJ BLUMETRIC STANDARD.GDT 2/1/24

Monitoring Well ID: LSP7-23

Project No.: 230226
Client: MHH
Report: Lake St. Peter WDS
Site Address: Lake St. Peter
Ontario

Elevation Ground: *408.10 m*
TOP: *408.93 m*

UTM NAD 83 (Zone 17): 5022708.627 N
731657.332 E

SUBSURFACE PROFILE | SAMPLE | WELL COMPLETION

Depth (m)	Elevation (m)	Description	Depth (m) / Elev. (m.a.s.l.)
0	409	Ground Surface	0.0
	408	**SAND & GRAVEL** Dry, brown sand and gravel	408.1
1	407		[1.5]
			1.5 / 406.6
2	406	**SAND & GRAVEL** Moist to wet, orange / brown sand and gravel	
3	405		
4	404		[4.6]
5	403		
6	402		6.1 / 402.0
		SAND & GRAVEL Brown sand and gravel	
7	401		[2.3]
8	400		8.4 / 399.7
		Refusal @ 8.38 mbgs at assumed cobbles/boulders. Target depth achieved.	
9	399		

Sample columns: Type | Recovery (%) | Blow Counts | Sample ID | Lab Analysis | 1000 (200 400 600 800)

Well completion: Construction | Notes

- J-Plug
- Monument Well Casing
- Native Backfill
- Riser
- Bentonite Seal
- Silica Sand Filter Pack
- 50 mm 010 Slot PVC Screen

Drill Date: September 20, 2023
Drilled By: Canadian Environmental
Drilling Method: Hollow Stem Auger
Hole Diameter (OD): 0.20 m
Logged By: BM
Checked By: CM

AUGER SAMPLE
Perched Groundwater Strike / Unstabilized Groundwater Level
True Groundwater Strike / Stabilized Groundwater Level

Sheet 1 of 1

BH MW OB LOG 230226 - LSP UPDATED.GPJ BLUMETRIC STANDARD.GDT 2/1/24

Monitoring Well ID: LSP8-23

Project No.: 230226
Client: MHH
Report: Lake St. Peter WDS
Site Address: Lake St. Peter
Ontario

Elevation Ground: *412.59 m*
TOP: *413.68 m*

UTM NAD 83 (Zone 17): 5022716.692 N
731450.743 E

Depth (m)	Elevation (m)	Description	Depth (m) / Elev. (m.a.s.l.)
		Ground Surface	0.0
0	412	**WASTE MATERIAL** Dry to moist, brown / black sand and gravel mixed with garbage - plastics, fabric, metal	412.6 [1.5]
1	411		1.5
		SAND & GRAVEL Moist to wet, brown sand and gravel with cobbles	411.1
2	410		
3	409		
4	408		
5	407		[7.6]
6	406		
7	405	Saturated	
8	404		
9	403		9.1 403.4
		EOH @ 9.14 mbgs. Target depth achieved in saturated conditions. MOE Tag # A361478	

SAMPLE: Type | Recovery (%) | Blow Counts | Sample ID | Lab Analysis | 1000 (200 400 600 800)

WELL COMPLETION: Construction | Notes

- J-Plug
- Monument Well Casing
- Cave/Native Backfill
- Riser
- Bentonite Seal
- Silica Sand Filter Pack
- 50 mm 010 Slot PVC Screen

Drill Date: September 21, 2023
Drilled By: Canadian Environmental
Drilling Method: Hollow Stem Auger
Hole Diameter (OD): 0.20 m
Logged By: BM
Checked By: CM

AUGER SAMPLE
Perched Groundwater Strike / Unstabilized Groundwater Level
True Groundwater Strike / Stabilized Groundwater Level

Appendix D

Inspection Forms and Laboratory & Chain of Custody Reports

Appendix D

D-1 Field Inspection Forms

SMALL LANDFILL
OPERATION AND INSPECTION FORM

BluMetric Environmental

Site Name: Lake St. Peter WDS, MHHs	Date: April 30, 2024	Weather Conditions:
Project #: 240205-04	BluMetric Staff: BM/MD	Overcast 8°C

Photographs of each item below should be collected during site visits.

OVERALL INSPECTION AND OPERATION REVIEW

❑	Signage in good condition	Yes ✓	No _
❑	ECA and emergency numbers on signage	Yes ✓	No _
❑	Hour of operation observed	Yes ✓	No _
❑	Site open under normal operating hours	Yes _	No ✓
❑	Perimeter fencing and gate in good condition	Yes ✓	No _
❑	Gate locked if closed	Yes ✓	No _

DESIGNATED WASTE AREA

❑	Working active/trench area (moderate size, daily cover, compacted)	Yes ✓	No _
❑	Designated waste areas are properly signed and easily accessed by public	Yes ✓	No _

Area covered - blown plastics over entire site

RECYCLING OPERATION (if applicable)

❑	Proper signage and bins present	Yes ✓	No _
❑	Clearly signed	Yes ✓	No _
❑	Overall neat in appearance	Yes ✓	No _

SEGREGATED SCRAP PILES (metal, tires, brush, etc.)

❑	Metals neat and appropriate size	Yes ✓	No _	
❑	Tires neat and appropriate size	Yes ✓	No _	
❑	Bulky Items neat and appropriate size	Yes ✓	No _	Bulk nearing capacity
❑	Brush pile neat and appropriate size	Yes ✓	No _	
❑	Construction debris neat and appropriate size	Yes _	No _	NA ✓

MONITORING WELL CONDITION

❑	Casing conditions (frost heave, lock, cap)	Yes ✓	No _
❑	Monitor condition (capped, vented)	Yes ✓	No _
❑	Wells clearly labeled (re-label as required)	Yes ✓	No _
❑	Well clearly visible (clear brush if necessary)	Yes ✓	No _

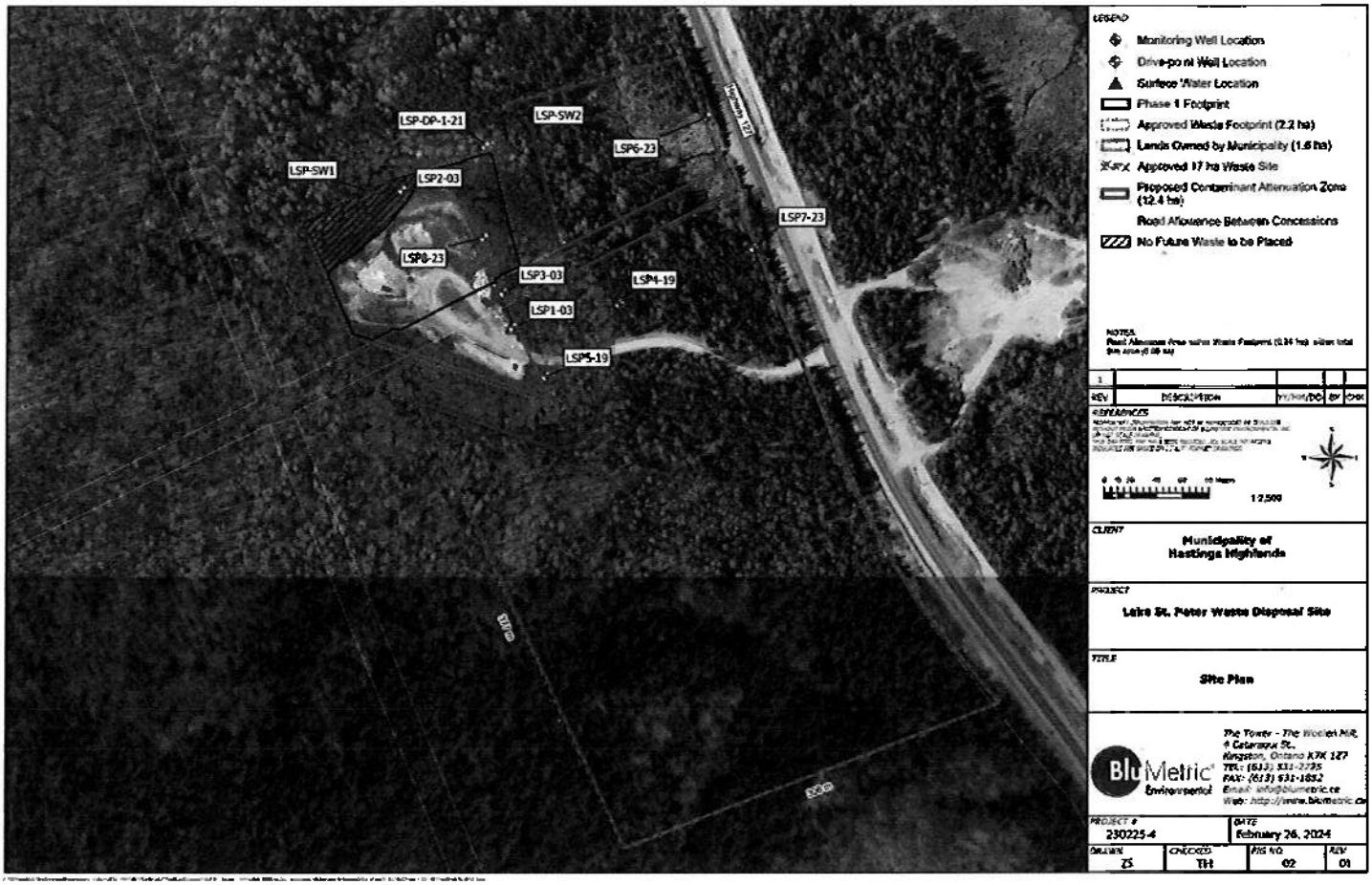
LANDFILL GAS MONITORING

❑	Conducted at structures	Yes ✓	No _	Attendant Building = 0ppm
❑	Conducted at monitoring wells	Yes ✓	No _	

REPAIRS: Provide details of repairs made or materials required for repairs upon next site visit:

OBSERVATIONS OF PHYSICAL ENVIRONMENT: Please comment on any changes to the local environment (e.g. settling or slumping of waste/cover, new or altered drainage, presence of seeps, changes in vegetation cover, etc.)

This form is intended as a general reminder of information that should recorded during monitoring activities. The above information is a minimum guide. Any information deemed important should be recorded in the field notes for each site.



Identify any changes to site layout on drawing and/or comment:

- Blown plastics out entrance road, behind attendant building and across most of site
- FBAL area removed last year should have cover applied and be properly sloped
- Creek that runs behind WDS has broken out into the FBAL area and runs through the excavated area.

This form is intended as a general reminder of information that should recorded during monitoring activities. The above information is a minimum guide. Any information deemed important should be recorded in the field notes for each site.

SMALL LANDFILL
OPERATION AND INSPECTION FORM

Site Name: Lake St. Peter WDS, MHHs	Date: 2024/10/28	Weather Conditions:
Project #: 240205-04	BluMetric Staff: BM/NW	Sun/Cloud 4°C

Photographs of each item below should be collected during site visits.

OVERALL INSPECTION AND OPERATION REVIEW

❑ Signage in good condition	Yes ✓	No _	
❑ ECA and emergency numbers on signage	Yes ✓	No _	
❑ Hour of operation observed	Yes ✓	No _	
❑ Site open under normal operating hours	Yes ✓	No _	
❑ Perimeter fencing and gate in good condition	Yes ✓	No _	
❑ Gate locked if closed	Yes ✓	No _	

DESIGNATED WASTE AREA

❑ Working active/trench area (moderate size, daily cover, compacted)	Yes ✓	No _	Moderate size but Needs to be packed/covered
❑ Designated waste areas are properly signed and easily accessed by public	Yes ✓	No _	

RECYCLING OPERATION (if applicable)

❑ Proper signage and bins present	Yes ✓	No _	
❑ Clearly signed	Yes ✓	No _	
❑ Overall neat in appearance	Yes ✓	No _	

SEGREGATED SCRAP PILES (metal, tires, brush, etc.)

❑ Metals neat and appropriate size	Yes ✓		No _	
❑ Tires neat and appropriate size	Yes ✓		No _	
❑ Bulky Items neat and appropriate size	Yes ✓		No _	Bulky neat but large
❑ Brush pile neat and appropriate size	Yes ✓		No _	Brushpile neat but Large
❑ Construction debris neat and appropriate size	Yes _	NA ✓	No _	

MONITORING WELL CONDITION

❑ Casing conditions (frost heave, lock, cap)	Yes ✓	No _	
❑ Monitor condition (capped, vented)	Yes ✓	No _	
❑ Wells clearly labeled (re-label as required)	Yes ✓	No _	
❑ Well clearly visible (clear brush if necessary)	Yes ✓	No _	

LANDFILL GAS MONITORING

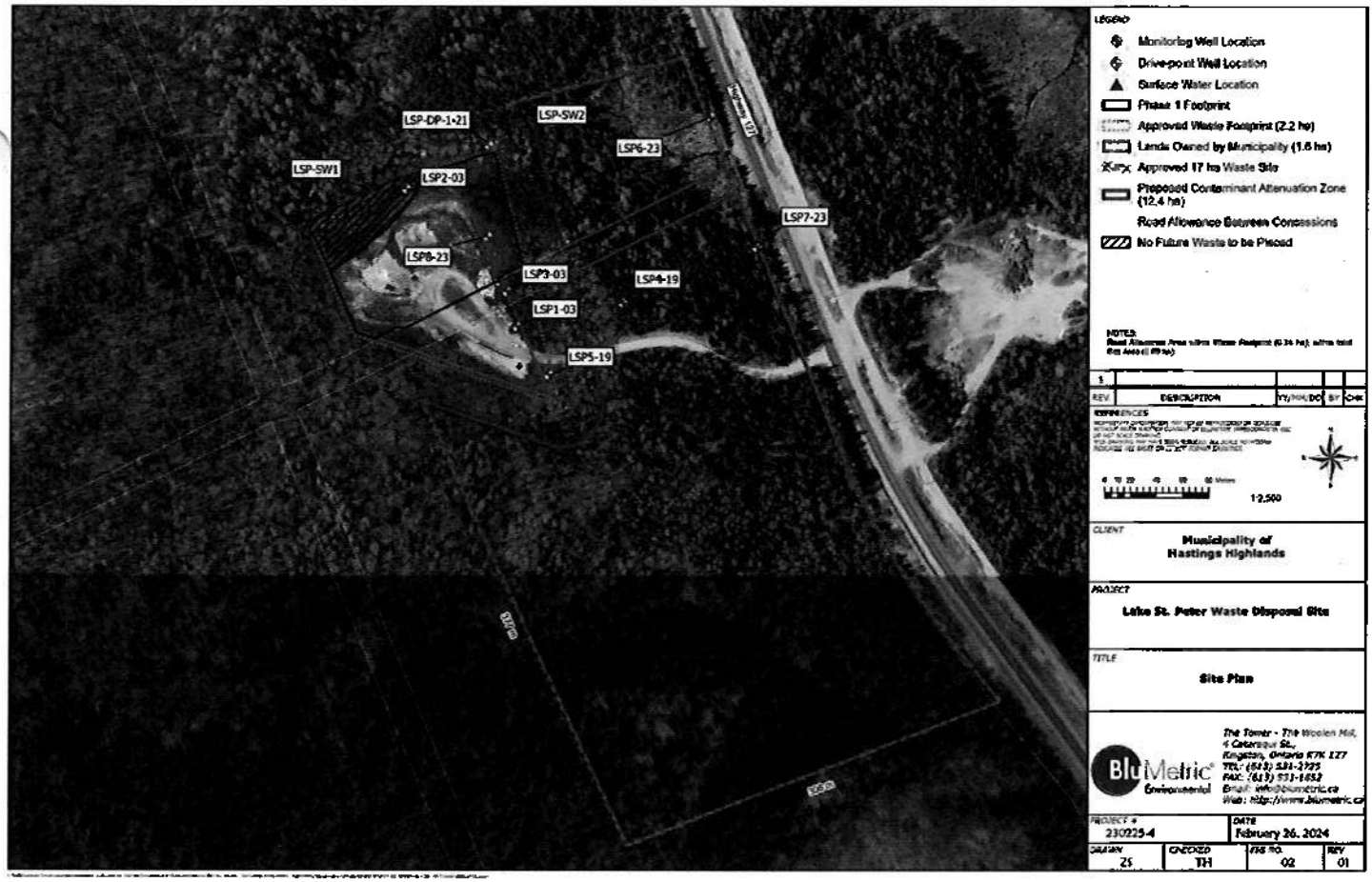
❑ Conducted at structures	Yes ✓	No _	Attendant Building = 0 ppm
❑ Conducted at monitoring wells	Yes ✓	No _	

REPAIRS: Provide details of repairs made or materials required for repairs upon next site visit:

No repairs required

OBSERVATIONS OF PHYSICAL ENVIRONMENT: Please comment on any changes to the local environment (e.g. settling or slumping of waste/cover, new or altered drainage, presence of seeps, changes in vegetation cover, etc.)

This form is intended as a general reminder of information that should recorded during monitoring activities. The above information is a minimum guide. Any information deemed important should be recorded in the field notes for each site.



Identify any changes to site layout on drawing and/or comment:

This form is intended as a general reminder of information that should recorded during monitoring activities. The above information is a minimum guide. Any information deemed important should be recorded in the field notes for each site.

Appendix D

D-2 Groundwater Laboratory Reports

Your Project #: 240205-04
Site Location: Lake St. Peter
Your C.O.C. #: 880970

Attention: MHH Distribution

BluMetric Environmental Inc
The Tower - The Woolen Mill
4 Cataraqui St
Kingston, ON
CANADA K7K 1Z7

Report Date: 2024/05/14
Report #: R8148856
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4D1309
Received: 2024/05/02, 09:16

Sample Matrix: Water
Samples Received: 11

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	9	N/A	2024/05/09	CAM SOP-00448	SM 24 2320 B m
Alkalinity	1	N/A	2024/05/14	CAM SOP-00448	SM 24 2320 B m
Chloride by Automated Colourimetry	9	N/A	2024/05/07	CAM SOP-00463	SM 24 4500-Cl E m
Chloride by Automated Colourimetry	1	N/A	2024/05/13	CAM SOP-00463	SM 24 4500-Cl E m
Conductivity	10	N/A	2024/05/09	CAM SOP-00414	SM 24 2510 m
Dissolved Organic Carbon (DOC) (1)	10	N/A	2024/05/07	CAM SOP-00446	SM 24 5310 B m
Dissolved Metals by ICPMS	9	N/A	2024/05/06	CAM SOP-00447	EPA 6020B m
Dissolved Metals by ICPMS	1	N/A	2024/05/13	CAM SOP-00447	EPA 6020B m
Total Ammonia-N	10	N/A	2024/05/07	CAM SOP-00441	USGS I-2522-90 m
Nitrate & Nitrite as Nitrogen in Water (2)	2	N/A	2024/05/04	CAM SOP-00440	SM 24 4500-NO3I/NO2B
Nitrate & Nitrite as Nitrogen in Water (2)	8	N/A	2024/05/06	CAM SOP-00440	SM 24 4500-NO3I/NO2B
pH (3)	10	2024/05/03	2024/05/09	CAM SOP-00413	SM 24th - 4500H+ B
Sulphate by Automated Turbidimetry	9	N/A	2024/05/07	CAM SOP-00464	SM 24 4500-SO42- E m
Sulphate by Automated Turbidimetry	1	N/A	2024/05/13	CAM SOP-00464	SM 24 4500-SO42- E m
Total Dissolved Solids	8	2024/05/06	2024/05/07	CAM SOP-00428	SM 24 2540C m
Total Dissolved Solids	1	2024/05/07	2024/05/08	CAM SOP-00428	SM 24 2540C m
Total Dissolved Solids	1	2024/05/09	2024/05/10	CAM SOP-00428	SM 24 2540C m
Total Suspended Solids	1	2024/05/04	2024/05/06	CAM SOP-00428	SM 24 2540D m
Total Suspended Solids	9	2024/05/07	2024/05/08	CAM SOP-00428	SM 24 2540D m
Volatile Organic Compounds in Water	11	N/A	2024/05/06	CAM SOP-00228	EPA 8260D

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Your Project #: 240205-04
Site Location: Lake St. Peter
Your C.O.C. #: 880970

Attention: MHH Distribution

BluMetric Environmental Inc
The Tower - The Woolen Mill
4 Cataraqui St
Kingston, ON
CANADA K7K 1Z7

Report Date: 2024/05/14
Report #: R8148856
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4D1309

Received: 2024/05/02, 09:16

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.
(3) "The CCME method and Analytical Protocol (O. Reg 153/04, O. Reg. 406/19) requires pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME and Analytical Protocol (O. Reg 153/04, O. Reg. 406/19) holding time. Bureau Veritas endeavors to analyze samples as soon as possible after receipt."

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
Christine Gripton, Senior Project Manager
Email: Christine.Gripton@bureauveritas.com
Phone# (519)652-9444

==========

This report has been generated and distributed using a secure automated process.
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

Bureau Veritas Job #: C4D1309
Report Date: 2024/05/14

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter
Sampler Initials: BM

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		ZBH051			ZBH052			ZBH053		ZBH054		
Sampling Date		2024/04/30 16:47			2024/04/30 17:22			2024/04/30 16:00		2024/04/30 16:30		
COC Number		880970			880970			880970		880970		
	UNITS	LSP1-03	RDL	QC Batch	LSP2-03	RDL	QC Batch	LSP3-03	RDL	LSP4-19	RDL	QC Batch
Inorganics												
Total Ammonia-N	mg/L	9.6	0.050	9376271	ND	0.050	9376271	0.73	0.050	1.8	0.050	9376271
Conductivity	umho/cm	1000	1.0	9373464	36	1.0	9373464	340	1.0	370	1.0	9373464
Total Dissolved Solids	mg/L	545	10	9375224	45	10	9375189	195	10	315	10	9375224
Dissolved Organic Carbon	mg/L	14	0.4	9375630	2.7	0.4	9375630	5.9	0.4	5.5	0.4	9375630
pH	pH	7.20		9373466	7.27		9373466	7.16		7.24		9373466
Total Suspended Solids	mg/L	580	50	9374001	240	10	9377039	5500	100	40000	200	9374001
Dissolved Sulphate (SO4)	mg/L	6.5	1.0	9373531	3.3	1.0	9373531	11	1.0	7.7	1.0	9373531
Alkalinity (Total as CaCO3)	mg/L	310	1.0	9373463	14	1.0	9373463	130	1.0	110	1.0	9373463
Dissolved Chloride (Cl-)	mg/L	120	1.0	9373523	ND	1.0	9373523	17	1.0	28	1.0	9373523
Nitrate (N)	mg/L	ND	0.10	9373616	ND	0.10	9373379	ND	0.10	2.90	0.10	9373616

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas ID		ZBH055			ZBH055			ZBH056		
Sampling Date		2024/04/30 16:40			2024/04/30 16:40			2024/04/30 17:45		
COC Number		880970			880970			880970		
	UNITS	LSP5-19	RDL	QC Batch	LSP5-19 Lab-Dup	RDL	QC Batch	LSP-DP1-21	RDL	QC Batch
Inorganics										
Total Ammonia-N	mg/L	ND	0.050	9376271				5.5	0.050	9376271
Conductivity	umho/cm	26	1.0	9373464				400	1.0	9373464
Total Dissolved Solids	mg/L	55	10	9377073	55	10	9377073	250	10	9375224
Dissolved Organic Carbon	mg/L	1.8	0.4	9375630				10	0.4	9375630
pH	pH	6.78		9373466				7.21		9373466
Total Suspended Solids	mg/L	2000	20	9373983				200	33	9374001
Dissolved Sulphate (SO4)	mg/L	2.7	1.0	9373531				26	1.0	9373531
Alkalinity (Total as CaCO3)	mg/L	10	1.0	9373463				150	1.0	9373463
Dissolved Chloride (Cl-)	mg/L	ND	1.0	9373523				9.1	1.0	9373523
Nitrate (N)	mg/L	0.12	0.10	9373616				ND	0.10	9373616

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

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Bureau Veritas Job #: C4D1309
Report Date: 2024/05/14

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter
Sampler Initials: BM

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		ZBH057			ZBH058			ZBH059		
Sampling Date		2024/04/30 15:55			2024/04/30 16:05			2024/04/30 17:10		
COC Number		880970			880970			880970		
	UNITS	LSP6-23	RDL	QC Batch	LSP7-23	RDL	QC Batch	LSP8-23	RDL	QC Batch
Inorganics										
Total Ammonia-N	mg/L	ND	0.050	9376271	ND	0.050	9376271	19	0.25	9376271
Conductivity	umho/cm	100	1.0	9373495	77	1.0	9373464	900	1.0	9373464
Total Dissolved Solids	mg/L	405	10	9384380	175	10	9375224	465	10	9375224
Dissolved Organic Carbon	mg/L	1.1	0.4	9375630	1.5	0.4	9375630	37	0.4	9375630
pH	pH	7.50		9373497	6.80		9373466	7.18		9373466
Total Suspended Solids	mg/L	11000	500	9374001	14000	200	9374001	1500	100	9374001
Dissolved Sulphate (SO4)	mg/L	4.5	1.0	9373531	4.6	1.0	9373531	15	1.0	9387932
Alkalinity (Total as CaCO3)	mg/L	59	1.0	9373494	15	1.0	9373463	350	1.0	9387945
Dissolved Chloride (Cl-)	mg/L	ND	1.0	9373523	11	1.0	9373523	48	1.0	9387925
Nitrate (N)	mg/L	ND	0.10	9373616	0.14	0.10	9373361	ND	0.10	9373616

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas ID		ZBH060		
Sampling Date		2024/04/30 16:30		
COC Number		880970		
	UNITS	LSP-QAQC-GW1	RDL	QC Batch
Inorganics				
Total Ammonia-N	mg/L	1.8	0.050	9376271
Conductivity	umho/cm	370	1.0	9373495
Total Dissolved Solids	mg/L	315	10	9375224
Dissolved Organic Carbon	mg/L	5.5	0.4	9375630
pH	pH	8.04		9373497
Total Suspended Solids	mg/L	35000	200	9374001
Dissolved Sulphate (SO4)	mg/L	7.6	1.0	9373531
Alkalinity (Total as CaCO3)	mg/L	120	1.0	9373494
Dissolved Chloride (Cl-)	mg/L	28	1.0	9373523
Nitrate (N)	mg/L	2.93	0.10	9373616

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Bureau Veritas Job #: C4D1309
Report Date: 2024/05/14

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter
Sampler Initials: BM

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		ZBH051	ZBH052	ZBH053	ZBH054	ZBH055	ZBH056	ZBH057		
Sampling Date		2024/04/30 16:47	2024/04/30 17:22	2024/04/30 16:00	2024/04/30 16:30	2024/04/30 16:40	2024/04/30 17:45	2024/04/30 15:55		
COC Number		880970	880970	880970	880970	880970	880970	880970		
	UNITS	LSP1-03	LSP2-03	LSP3-03	LSP4-19	LSP5-19	LSP-DP1-21	LSP6-23	RDL	QC Batch
Metals										
Dissolved Barium (Ba)	ug/L	500	9.4	170	99	10	290	10	2.0	9374144
Dissolved Boron (B)	ug/L	550	ND	140	390	ND	290	17	10	9374144
Dissolved Calcium (Ca)	ug/L	95000	3600	37000	35000	2700	36000	10000	200	9374144
Dissolved Iron (Fe)	ug/L	13000	120	6200	ND	ND	27000	170	100	9374144
Dissolved Magnesium (Mg)	ug/L	12000	950	4800	4900	460	6200	2800	50	9374144
Dissolved Manganese (Mn)	ug/L	3500	51	570	3900	2.2	7200	580	2.0	9374144
Dissolved Sodium (Na)	ug/L	64000	1600	16000	20000	1400	13000	3000	100	9374144

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas ID		ZBH058		ZBH059		ZBH060		
Sampling Date		2024/04/30 16:05		2024/04/30 17:10		2024/04/30 16:30		
COC Number		880970		880970		880970		
	UNITS	LSP7-23	QC Batch	LSP8-23	QC Batch	LSP-QAQC-GW1	RDL	QC Batch
Metals								
Dissolved Barium (Ba)	ug/L	20	9374144	690	9389038	97	2.0	9374144
Dissolved Boron (B)	ug/L	ND	9374144	400	9389038	370	10	9374144
Dissolved Calcium (Ca)	ug/L	6000	9374144	79000	9389038	34000	200	9374144
Dissolved Iron (Fe)	ug/L	ND	9374144	91000	9389038	ND	100	9374144
Dissolved Magnesium (Mg)	ug/L	1200	9374144	13000	9389038	5000	50	9374144
Dissolved Manganese (Mn)	ug/L	93	9374144	4900	9389038	3900	2.0	9374144
Dissolved Sodium (Na)	ug/L	4600	9374144	53000	9389038	20000	100	9374144

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

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Bureau Veritas Job #: C4D1309
Report Date: 2024/05/14

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter
Sampler Initials: BM

VOLATILE ORGANICS BY GC/MS (WATER)

Bureau Veritas ID		ZBH051	ZBH052	ZBH053	ZBH054	ZBH055	ZBH056		
Sampling Date		2024/04/30 16:47	2024/04/30 17:22	2024/04/30 16:00	2024/04/30 16:30	2024/04/30 16:40	2024/04/30 17:45		
COC Number		880970	880970	880970	880970	880970	880970		
	UNITS	**LSP1-03**	**LSP2-03**	**LSP3-03**	**LSP4-19**	**LSP5-19**	**LSP-DP1-21**	**RDL**	**QC Batch**
Volatile Organics									
Acetone (2-Propanone)	ug/L	ND	ND	ND	ND	ND	ND	10	9373958
Benzene	ug/L	2.3	ND	ND	0.29	ND	ND	0.20	9373958
Bromodichloromethane	ug/L	ND	ND	ND	ND	ND	ND	0.50	9373958
Bromoform	ug/L	ND	ND	ND	ND	ND	ND	1.0	9373958
Bromomethane	ug/L	ND	ND	ND	ND	ND	ND	0.50	9373958
Carbon Tetrachloride	ug/L	ND	ND	ND	ND	ND	ND	0.19	9373958
Chlorobenzene	ug/L	0.37	ND	ND	ND	ND	ND	0.20	9373958
Chloroform	ug/L	ND	ND	ND	ND	ND	ND	0.20	9373958
Dibromochloromethane	ug/L	ND	ND	ND	ND	ND	ND	0.50	9373958
1,2-Dichlorobenzene	ug/L	ND	ND	ND	ND	ND	ND	0.40	9373958
1,3-Dichlorobenzene	ug/L	ND	ND	ND	ND	ND	ND	0.40	9373958
1,4-Dichlorobenzene	ug/L	1.2	ND	ND	ND	ND	ND	0.40	9373958
Dichlorodifluoromethane (FREON 12)	ug/L	ND	ND	ND	ND	ND	ND	1.0	9373958
1,1-Dichloroethane	ug/L	0.44	ND	ND	0.21	ND	ND	0.20	9373958
1,2-Dichloroethane	ug/L	ND	ND	ND	ND	ND	ND	0.49	9373958
1,1-Dichloroethylene	ug/L	ND	ND	ND	ND	ND	ND	0.20	9373958
cis-1,2-Dichloroethylene	ug/L	ND	ND	ND	ND	ND	0.60	0.50	9373958
trans-1,2-Dichloroethylene	ug/L	ND	ND	ND	ND	ND	ND	0.50	9373958
1,2-Dichloropropane	ug/L	ND	ND	ND	ND	ND	ND	0.20	9373958
cis-1,3-Dichloropropene	ug/L	ND	ND	ND	ND	ND	ND	0.30	9373958
trans-1,3-Dichloropropene	ug/L	ND	ND	ND	ND	ND	ND	0.40	9373958
Ethylbenzene	ug/L	ND	ND	ND	ND	ND	ND	0.20	9373958
Ethylene Dibromide	ug/L	ND	ND	ND	ND	ND	ND	0.19	9373958
Hexane	ug/L	ND	ND	ND	ND	ND	ND	1.0	9373958
Methylene Chloride(Dichloromethane)	ug/L	ND	ND	ND	ND	ND	ND	2.0	9373958
Methyl Ethyl Ketone (2-Butanone)	ug/L	ND	ND	ND	ND	ND	ND	10	9373958
Methyl Isobutyl Ketone	ug/L	ND	ND	ND	ND	ND	ND	5.0	9373958
Methyl t-butyl ether (MTBE)	ug/L	ND	ND	ND	ND	ND	ND	0.50	9373958
Styrene	ug/L	ND	ND	ND	ND	ND	ND	0.40	9373958
1,1,1,2-Tetrachloroethane	ug/L	ND	ND	ND	ND	ND	ND	0.50	9373958

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

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Bureau Veritas Job #: C4D1309
Report Date: 2024/05/14

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter
Sampler Initials: BM

VOLATILE ORGANICS BY GC/MS (WATER)

Bureau Veritas ID		ZBH051	ZBH052	ZBH053	ZBH054	ZBH055	ZBH056		
Sampling Date		2024/04/30 16:47	2024/04/30 17:22	2024/04/30 16:00	2024/04/30 16:30	2024/04/30 16:40	2024/04/30 17:45		
COC Number		880970	880970	880970	880970	880970	880970		
	UNITS	LSP1-03	LSP2-03	LSP3-03	LSP4-19	LSP5-19	LSP-DP1-21	RDL	QC Batch
1,1,2,2-Tetrachloroethane	ug/L	ND	ND	ND	ND	ND	ND	0.40	9373958
Tetrachloroethylene	ug/L	ND	ND	ND	ND	ND	ND	0.20	9373958
Toluene	ug/L	ND	ND	ND	ND	ND	ND	0.20	9373958
1,1,1-Trichloroethane	ug/L	ND	ND	ND	ND	ND	ND	0.20	9373958
1,1,2-Trichloroethane	ug/L	ND	ND	ND	ND	ND	ND	0.40	9373958
Trichloroethylene	ug/L	ND	ND	ND	ND	ND	ND	0.20	9373958
Trichlorofluoromethane (FREON 11)	ug/L	ND	ND	ND	ND	ND	ND	0.50	9373958
Vinyl Chloride	ug/L	ND	ND	ND	ND	ND	ND	0.20	9373958
p+m-Xylene	ug/L	ND	ND	ND	ND	ND	ND	0.20	9373958
o-Xylene	ug/L	ND	ND	ND	ND	ND	ND	0.20	9373958
Total Xylenes	ug/L	ND	ND	ND	ND	ND	ND	0.20	9373958
Surrogate Recovery (%)									
4-Bromofluorobenzene	%	96	101	97	98	100	98		9373958
D4-1,2-Dichloroethane	%	125	124	122	123	124	125		9373958
D8-Toluene	%	84	85	86	86	86	85		9373958

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

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VOLATILE ORGANICS BY GC/MS (WATER)

Bureau Veritas ID		ZBH057	ZBH058	ZBH059	ZBH060	ZBH061		
Sampling Date		2024/04/30 15:55	2024/04/30 16:05	2024/04/30 17:10	2024/04/30 16:30	2024/04/30 17:50		
COC Number		880970	880970	880970	880970	880970		
	UNITS	LSP6-23	LSP7-23	LSP8-23	LSP-QAQC-GW1	Trip Blank	RDL	QC Batch
Volatile Organics								
Acetone (2-Propanone)	ug/L	ND	ND	ND	ND	ND	10	9373958
Benzene	ug/L	ND	ND	0.94	0.29	ND	0.20	9373958
Bromodichloromethane	ug/L	ND	ND	ND	ND	ND	0.50	9373958
Bromoform	ug/L	ND	ND	ND	ND	ND	1.0	9373958
Bromomethane	ug/L	ND	ND	ND	ND	ND	0.50	9373958
Carbon Tetrachloride	ug/L	ND	ND	ND	ND	ND	0.19	9373958
Chlorobenzene	ug/L	ND	ND	ND	ND	ND	0.20	9373958
Chloroform	ug/L	ND	ND	ND	ND	ND	0.20	9373958
Dibromochloromethane	ug/L	ND	ND	ND	ND	ND	0.50	9373958
1,2-Dichlorobenzene	ug/L	ND	ND	ND	ND	ND	0.40	9373958
1,3-Dichlorobenzene	ug/L	ND	ND	ND	ND	ND	0.40	9373958
1,4-Dichlorobenzene	ug/L	ND	ND	0.42	ND	ND	0.40	9373958
Dichlorodifluoromethane (FREON 12)	ug/L	ND	ND	ND	ND	ND	1.0	9373958
1,1-Dichloroethane	ug/L	ND	ND	ND	0.22	ND	0.20	9373958
1,2-Dichloroethane	ug/L	ND	ND	ND	ND	ND	0.49	9373958
1,1-Dichloroethylene	ug/L	ND	ND	ND	ND	ND	0.20	9373958
cis-1,2-Dichloroethylene	ug/L	ND	ND	ND	ND	ND	0.50	9373958
trans-1,2-Dichloroethylene	ug/L	ND	ND	ND	ND	ND	0.50	9373958
1,2-Dichloropropane	ug/L	ND	ND	ND	ND	ND	0.20	9373958
cis-1,3-Dichloropropene	ug/L	ND	ND	ND	ND	ND	0.30	9373958
trans-1,3-Dichloropropene	ug/L	ND	ND	ND	ND	ND	0.40	9373958
Ethylbenzene	ug/L	ND	ND	ND	ND	ND	0.20	9373958
Ethylene Dibromide	ug/L	ND	ND	ND	ND	ND	0.19	9373958
Hexane	ug/L	ND	ND	ND	ND	ND	1.0	9373958
Methylene Chloride(Dichloromethane)	ug/L	ND	ND	ND	ND	ND	2.0	9373958
Methyl Ethyl Ketone (2-Butanone)	ug/L	ND	ND	ND	ND	ND	10	9373958
Methyl Isobutyl Ketone	ug/L	ND	ND	ND	ND	ND	5.0	9373958
Methyl t-butyl ether (MTBE)	ug/L	ND	ND	ND	ND	ND	0.50	9373958
Styrene	ug/L	ND	ND	ND	ND	ND	0.40	9373958
1,1,1,2-Tetrachloroethane	ug/L	ND	ND	ND	ND	ND	0.50	9373958

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

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Bureau Veritas Job #: C4D1309
Report Date: 2024/05/14

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter
Sampler Initials: BM

VOLATILE ORGANICS BY GC/MS (WATER)

Bureau Veritas ID		ZBH057	ZBH058	ZBH059	ZBH060	ZBH061		
Sampling Date		2024/04/30 15:55	2024/04/30 16:05	2024/04/30 17:10	2024/04/30 16:30	2024/04/30 17:50		
COC Number		880970	880970	880970	880970	880970		
	UNITS	LSP6-23	LSP7-23	LSP8-23	LSP-QAQC-GW1	Trip Blank	RDL	QC Batch
1,1,2,2-Tetrachloroethane	ug/L	ND	ND	ND	ND	ND	0.40	9373958
Tetrachloroethylene	ug/L	ND	ND	ND	ND	ND	0.20	9373958
Toluene	ug/L	ND	ND	ND	ND	ND	0.20	9373958
1,1,1-Trichloroethane	ug/L	ND	ND	ND	ND	ND	0.20	9373958
1,1,2-Trichloroethane	ug/L	ND	ND	ND	ND	ND	0.40	9373958
Trichloroethylene	ug/L	ND	ND	ND	ND	ND	0.20	9373958
Trichlorofluoromethane (FREON 11)	ug/L	ND	ND	ND	ND	ND	0.50	9373958
Vinyl Chloride	ug/L	ND	ND	ND	ND	ND	0.20	9373958
p+m-Xylene	ug/L	ND	ND	ND	ND	ND	0.20	9373958
o-Xylene	ug/L	ND	ND	ND	ND	ND	0.20	9373958
Total Xylenes	ug/L	ND	ND	ND	ND	ND	0.20	9373958
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	100	100	96	97	100		9373958
D4-1,2-Dichloroethane	%	124	126	123	124	123		9373958
D8-Toluene	%	85	85	85	85	86		9373958

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

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TEST SUMMARY

Bureau Veritas ID: ZBH051
Sample ID: LSP1-03
Matrix: Water

Collected: 2024/04/30
Shipped:
Received: 2024/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9373463	N/A	2024/05/09	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9373523	N/A	2024/05/07	Massarat Jan
Conductivity	AT	9373464	N/A	2024/05/09	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9375630	N/A	2024/05/07	Gyulshen Idriz
Dissolved Metals by ICPMS	ICP/MS	9374144	N/A	2024/05/06	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9376271	N/A	2024/05/07	Yogesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	9373616	N/A	2024/05/06	Samuel Law
pH	AT	9373466	2024/05/03	2024/05/09	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9373531	N/A	2024/05/07	Massarat Jan
Total Dissolved Solids	BAL	9375224	2024/05/06	2024/05/07	Razieh Tabesh
Total Suspended Solids	BAL	9374001	2024/05/07	2024/05/08	Razieh Tabesh
Volatile Organic Compounds in Water	GC/MS	9373958	N/A	2024/05/06	Gabriella Morrone

Bureau Veritas ID: ZBH052
Sample ID: LSP2-03
Matrix: Water

Collected: 2024/04/30
Shipped:
Received: 2024/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9373463	N/A	2024/05/09	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9373523	N/A	2024/05/07	Massarat Jan
Conductivity	AT	9373464	N/A	2024/05/09	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9375630	N/A	2024/05/07	Gyulshen Idriz
Dissolved Metals by ICPMS	ICP/MS	9374144	N/A	2024/05/06	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9376271	N/A	2024/05/07	Yogesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	9373379	N/A	2024/05/04	Jinal Chavda
pH	AT	9373466	2024/05/03	2024/05/09	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9373531	N/A	2024/05/07	Massarat Jan
Total Dissolved Solids	BAL	9375189	2024/05/06	2024/05/07	Razieh Tabesh
Total Suspended Solids	BAL	9377039	2024/05/07	2024/05/08	Razieh Tabesh
Volatile Organic Compounds in Water	GC/MS	9373958	N/A	2024/05/06	Gabriella Morrone

Bureau Veritas ID: ZBH053
Sample ID: LSP3-03
Matrix: Water

Collected: 2024/04/30
Shipped:
Received: 2024/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9373463	N/A	2024/05/09	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9373523	N/A	2024/05/07	Massarat Jan
Conductivity	AT	9373464	N/A	2024/05/09	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9375630	N/A	2024/05/07	Gyulshen Idriz
Dissolved Metals by ICPMS	ICP/MS	9374144	N/A	2024/05/06	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9376271	N/A	2024/05/07	Yogesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	9373616	N/A	2024/05/06	Samuel Law
pH	AT	9373466	2024/05/03	2024/05/09	Nachiketa Gohil

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Bureau Veritas Job #: C4D1309
Report Date: 2024/05/14

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter
Sampler Initials: BM

TEST SUMMARY

Bureau Veritas ID: ZBH053
Sample ID: LSP3-03
Matrix: Water

Collected: 2024/04/30
Shipped:
Received: 2024/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Sulphate by Automated Turbidimetry	SKAL	9373531	N/A	2024/05/07	Massarat Jan
Total Dissolved Solids	BAL	9375224	2024/05/06	2024/05/07	Razieh Tabesh
Total Suspended Solids	BAL	9374001	2024/05/07	2024/05/08	Razieh Tabesh
Volatile Organic Compounds in Water	GC/MS	9373958	N/A	2024/05/06	Gabriella Morrone

Bureau Veritas ID: ZBH054
Sample ID: LSP4-19
Matrix: Water

Collected: 2024/04/30
Shipped:
Received: 2024/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9373463	N/A	2024/05/09	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9373523	N/A	2024/05/07	Massarat Jan
Conductivity	AT	9373464	N/A	2024/05/09	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9375630	N/A	2024/05/07	Gyulshen Idriz
Dissolved Metals by ICPMS	ICP/MS	9374144	N/A	2024/05/06	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9376271	N/A	2024/05/07	Yogesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	9373616	N/A	2024/05/06	Samuel Law
pH	AT	9373466	2024/05/03	2024/05/09	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9373531	N/A	2024/05/07	Massarat Jan
Total Dissolved Solids	BAL	9375224	2024/05/06	2024/05/07	Razieh Tabesh
Total Suspended Solids	BAL	9374001	2024/05/07	2024/05/08	Razieh Tabesh
Volatile Organic Compounds in Water	GC/MS	9373958	N/A	2024/05/06	Gabriella Morrone

Bureau Veritas ID: ZBH055
Sample ID: LSP5-19
Matrix: Water

Collected: 2024/04/30
Shipped:
Received: 2024/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9373463	N/A	2024/05/09	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9373523	N/A	2024/05/07	Massarat Jan
Conductivity	AT	9373464	N/A	2024/05/09	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9375630	N/A	2024/05/07	Gyulshen Idriz
Dissolved Metals by ICPMS	ICP/MS	9374144	N/A	2024/05/06	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9376271	N/A	2024/05/07	Yogesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	9373616	N/A	2024/05/06	Samuel Law
pH	AT	9373466	2024/05/03	2024/05/09	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9373531	N/A	2024/05/07	Massarat Jan
Total Dissolved Solids	BAL	9377073	2024/05/07	2024/05/08	Razieh Tabesh
Total Suspended Solids	BAL	9373983	2024/05/04	2024/05/06	Razieh Tabesh
Volatile Organic Compounds in Water	GC/MS	9373958	N/A	2024/05/06	Gabriella Morrone

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TEST SUMMARY

Bureau Veritas ID: ZBH055 Dup
Sample ID: LSP5-19
Matrix: Water

Collected: 2024/04/30
Shipped:
Received: 2024/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Dissolved Solids	BAL	9377073	2024/05/07	2024/05/08	Razieh Tabesh

Bureau Veritas ID: ZBH056
Sample ID: LSP-DP1-21
Matrix: Water

Collected: 2024/04/30
Shipped:
Received: 2024/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9373463	N/A	2024/05/09	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9373523	N/A	2024/05/07	Massarat Jan
Conductivity	AT	9373464	N/A	2024/05/09	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9375630	N/A	2024/05/07	Gyulshen Idriz
Dissolved Metals by ICPMS	ICP/MS	9374144	N/A	2024/05/06	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9376271	N/A	2024/05/07	Yogesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	9373616	N/A	2024/05/06	Samuel Law
pH	AT	9373466	2024/05/03	2024/05/09	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9373531	N/A	2024/05/07	Massarat Jan
Total Dissolved Solids	BAL	9375224	2024/05/06	2024/05/07	Razieh Tabesh
Total Suspended Solids	BAL	9374001	2024/05/07	2024/05/08	Razieh Tabesh
Volatile Organic Compounds in Water	GC/MS	9373958	N/A	2024/05/06	Gabriella Morrone

Bureau Veritas ID: ZBH057
Sample ID: LSP6-23
Matrix: Water

Collected: 2024/04/30
Shipped:
Received: 2024/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9373494	N/A	2024/05/09	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9373523	N/A	2024/05/07	Massarat Jan
Conductivity	AT	9373495	N/A	2024/05/09	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9375630	N/A	2024/05/07	Gyulshen Idriz
Dissolved Metals by ICPMS	ICP/MS	9374144	N/A	2024/05/06	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9376271	N/A	2024/05/07	Yogesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	9373616	N/A	2024/05/06	Samuel Law
pH	AT	9373497	2024/05/03	2024/05/09	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9373531	N/A	2024/05/07	Massarat Jan
Total Dissolved Solids	BAL	9384380	2024/05/09	2024/05/10	Madhav Somani
Total Suspended Solids	BAL	9374001	2024/05/07	2024/05/08	Razieh Tabesh
Volatile Organic Compounds in Water	GC/MS	9373958	N/A	2024/05/06	Gabriella Morrone

Bureau Veritas ID: ZBH058
Sample ID: LSP7-23
Matrix: Water

Collected: 2024/04/30
Shipped:
Received: 2024/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9373463	N/A	2024/05/09	Nachiketa Gohil

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TEST SUMMARY

Bureau Veritas ID: ZBH058
Sample ID: LSP7-23
Matrix: Water

Collected: 2024/04/30
Shipped:
Received: 2024/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	SKAL	9373523	N/A	2024/05/07	Massarat Jan
Conductivity	AT	9373464	N/A	2024/05/09	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9375630	N/A	2024/05/07	Gyulshen Idriz
Dissolved Metals by ICPMS	ICP/MS	9374144	N/A	2024/05/06	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9376271	N/A	2024/05/07	Yogesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	9373361	N/A	2024/05/04	Jinal Chavda
pH	AT	9373466	2024/05/03	2024/05/09	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9373531	N/A	2024/05/07	Massarat Jan
Total Dissolved Solids	BAL	9375224	2024/05/06	2024/05/07	Razieh Tabesh
Total Suspended Solids	BAL	9374001	2024/05/07	2024/05/08	Razieh Tabesh
Volatile Organic Compounds in Water	GC/MS	9373958	N/A	2024/05/06	Gabriella Morrone

Bureau Veritas ID: ZBH059
Sample ID: LSP8-23
Matrix: Water

Collected: 2024/04/30
Shipped:
Received: 2024/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9387945	N/A	2024/05/14	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9387925	N/A	2024/05/13	Geetee Noorzaad
Conductivity	AT	9373464	N/A	2024/05/09	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9375630	N/A	2024/05/07	Gyulshen Idriz
Dissolved Metals by ICPMS	ICP/MS	9389038	N/A	2024/05/13	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9376271	N/A	2024/05/07	Yogesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	9373616	N/A	2024/05/06	Samuel Law
pH	AT	9373466	2024/05/03	2024/05/09	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9387932	N/A	2024/05/13	Geetee Noorzaad
Total Dissolved Solids	BAL	9375224	2024/05/06	2024/05/07	Razieh Tabesh
Total Suspended Solids	BAL	9374001	2024/05/07	2024/05/08	Razieh Tabesh
Volatile Organic Compounds in Water	GC/MS	9373958	N/A	2024/05/06	Gabriella Morrone

Bureau Veritas ID: ZBH060
Sample ID: LSP-QAQC-GW1
Matrix: Water

Collected: 2024/04/30
Shipped:
Received: 2024/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9373494	N/A	2024/05/09	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9373523	N/A	2024/05/07	Massarat Jan
Conductivity	AT	9373495	N/A	2024/05/09	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9375630	N/A	2024/05/07	Gyulshen Idriz
Dissolved Metals by ICPMS	ICP/MS	9374144	N/A	2024/05/06	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9376271	N/A	2024/05/07	Yogesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	9373616	N/A	2024/05/06	Samuel Law
pH	AT	9373497	2024/05/03	2024/05/09	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9373531	N/A	2024/05/07	Massarat Jan

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Bureau Veritas Job #: C4D1309
Report Date: 2024/05/14

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter
Sampler Initials: BM

TEST SUMMARY

Bureau Veritas ID: ZBH060
Sample ID: LSP-QAQC-GW1
Matrix: Water

Collected: 2024/04/30
Shipped:
Received: 2024/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Dissolved Solids	BAL	9375224	2024/05/06	2024/05/07	Razieh Tabesh
Total Suspended Solids	BAL	9374001	2024/05/07	2024/05/08	Razieh Tabesh
Volatile Organic Compounds in Water	GC/MS	9373958	N/A	2024/05/06	Gabriella Morrone

Bureau Veritas ID: ZBH061
Sample ID: Trip Blank
Matrix: Water

Collected: 2024/04/30
Shipped:
Received: 2024/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds in Water	GC/MS	9373958	N/A	2024/05/06	Gabriella Morrone

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.7°C
Package 2	0.7°C

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
9373958	4-Bromofluorobenzene	2024/05/06	103	70 - 130	96	70 - 130	102	%		
9373958	D4-1,2-Dichloroethane	2024/05/06	107	70 - 130	100	70 - 130	108	%		
9373958	D8-Toluene	2024/05/06	104	70 - 130	106	70 - 130	87	%		
9373361	Nitrate (N)	2024/05/04	85	80 - 120	95	80 - 120	ND, RDL=0.10	mg/L	0.14	20
9373379	Nitrate (N)	2024/05/04	86	80 - 120	91	80 - 120	ND, RDL=0.10	mg/L	2.3	20
9373463	Alkalinity (Total as CaCO3)	2024/05/09			101	85 - 115	ND, RDL=1.0	mg/L	0.28	20
9373464	Conductivity	2024/05/09			103	85 - 115	ND, RDL=1.0	umho/cm	0.55	10
9373466	pH	2024/05/09			102	98 - 103			0.70	N/A
9373494	Alkalinity (Total as CaCO3)	2024/05/09			102	85 - 115	ND, RDL=1.0	mg/L	1.0	20
9373495	Conductivity	2024/05/09			102	85 - 115	ND, RDL=1.0	umho/cm	0	10
9373497	pH	2024/05/09			102	98 - 103			0.30	N/A
9373523	Dissolved Chloride (Cl-)	2024/05/07	NC	80 - 120	104	80 - 120	ND, RDL=1.0	mg/L	0.42	20
9373531	Dissolved Sulphate (SO4)	2024/05/07	NC	75 - 125	98	80 - 120	ND, RDL=1.0	mg/L	0.052	20
9373616	Nitrate (N)	2024/05/06	92	80 - 120	90	80 - 120	ND, RDL=0.10	mg/L	0.18	20
9373958	1,1,1,2-Tetrachloroethane	2024/05/06	96	70 - 130	93	70 - 130	ND, RDL=0.50	ug/L		
9373958	1,1,1-Trichloroethane	2024/05/06	97	70 - 130	100	70 - 130	ND, RDL=0.20	ug/L		
9373958	1,1,2,2-Tetrachloroethane	2024/05/06	101	70 - 130	93	70 - 130	ND, RDL=0.40	ug/L		
9373958	1,1,2-Trichloroethane	2024/05/06	98	70 - 130	91	70 - 130	ND, RDL=0.40	ug/L		
9373958	1,1-Dichloroethane	2024/05/06	99	70 - 130	101	70 - 130	ND, RDL=0.20	ug/L		
9373958	1,1-Dichloroethylene	2024/05/06	97	70 - 130	100	70 - 130	ND, RDL=0.20	ug/L		
9373958	1,2-Dichlorobenzene	2024/05/06	90	70 - 130	98	70 - 130	ND, RDL=0.40	ug/L		
9373958	1,2-Dichloroethane	2024/05/06	98	70 - 130	97	70 - 130	ND, RDL=0.49	ug/L		
9373958	1,2-Dichloropropane	2024/05/06	97	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L		
9373958	1,3-Dichlorobenzene	2024/05/06	93	70 - 130	106	70 - 130	ND, RDL=0.40	ug/L		
9373958	1,4-Dichlorobenzene	2024/05/06	107	70 - 130	122	70 - 130	ND, RDL=0.40	ug/L		
9373958	Acetone (2-Propanone)	2024/05/06	111	60 - 140	98	60 - 140	ND, RDL=10	ug/L		
9373958	Benzene	2024/05/06	89	70 - 130	94	70 - 130	ND, RDL=0.20	ug/L		
9373958	Bromodichloromethane	2024/05/06	104	70 - 130	106	70 - 130	ND, RDL=0.50	ug/L		
9373958	Bromoform	2024/05/06	90	70 - 130	84	70 - 130	ND, RDL=1.0	ug/L		
9373958	Bromomethane	2024/05/06	97	60 - 140	97	60 - 140	ND, RDL=0.50	ug/L		
9373958	Carbon Tetrachloride	2024/05/06	94	70 - 130	97	70 - 130	ND, RDL=0.19	ug/L		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
9373958	Chlorobenzene	2024/05/06	97	70 - 130	103	70 - 130	ND, RDL=0.20	ug/L		
9373958	Chloroform	2024/05/06	101	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L		
9373958	cis-1,2-Dichloroethylene	2024/05/06	101	70 - 130	102	70 - 130	ND, RDL=0.50	ug/L		
9373958	cis-1,3-Dichloropropene	2024/05/06	99	70 - 130	110	70 - 130	ND, RDL=0.30	ug/L		
9373958	Dibromochloromethane	2024/05/06	94	70 - 130	89	70 - 130	ND, RDL=0.50	ug/L		
9373958	Dichlorodifluoromethane (FREON 12)	2024/05/06	97	60 - 140	99	60 - 140	ND, RDL=1.0	ug/L		
9373958	Ethylbenzene	2024/05/06	83	70 - 130	97	70 - 130	ND, RDL=0.20	ug/L		
9373958	Ethylene Dibromide	2024/05/06	98	70 - 130	98	70 - 130	ND, RDL=0.19	ug/L		
9373958	Hexane	2024/05/06	98	70 - 130	103	70 - 130	ND, RDL=1.0	ug/L		
9373958	Methyl Ethyl Ketone (2-Butanone)	2024/05/06	116	60 - 140	107	60 - 140	ND, RDL=10	ug/L		
9373958	Methyl Isobutyl Ketone	2024/05/06	115	70 - 130	120	70 - 130	ND, RDL=5.0	ug/L		
9373958	Methyl t-butyl ether (MTBE)	2024/05/06	99	70 - 130	104	70 - 130	ND, RDL=0.50	ug/L		
9373958	Methylene Chloride(Dichloromethane)	2024/05/06	99	70 - 130	98	70 - 130	ND, RDL=2.0	ug/L		
9373958	o-Xylene	2024/05/06	74	70 - 130	85	70 - 130	ND, RDL=0.20	ug/L	NC	30
9373958	p+m-Xylene	2024/05/06	72	70 - 130	82	70 - 130	ND, RDL=0.20	ug/L	NC	30
9373958	Styrene	2024/05/06	80	70 - 130	91	70 - 130	ND, RDL=0.40	ug/L		
9373958	Tetrachloroethylene	2024/05/06	92	70 - 130	91	70 - 130	ND, RDL=0.20	ug/L		
9373958	Toluene	2024/05/06	92	70 - 130	96	70 - 130	ND, RDL=0.20	ug/L	NC	30
9373958	Total Xylenes	2024/05/06					ND, RDL=0.20	ug/L	NC	30
9373958	trans-1,2-Dichloroethylene	2024/05/06	96	70 - 130	99	70 - 130	ND, RDL=0.50	ug/L		
9373958	trans-1,3-Dichloropropene	2024/05/06	108	70 - 130	107	70 - 130	ND, RDL=0.40	ug/L		
9373958	Trichloroethylene	2024/05/06	96	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L		
9373958	Trichlorofluoromethane (FREON 11)	2024/05/06	93	70 - 130	95	70 - 130	ND, RDL=0.50	ug/L		
9373958	Vinyl Chloride	2024/05/06	95	70 - 130	97	70 - 130	ND, RDL=0.20	ug/L		
9373983	Total Suspended Solids	2024/05/06			100	80 - 120	ND, RDL=10	mg/L	NC	20
9374001	Total Suspended Solids	2024/05/08			96	80 - 120	ND, RDL=10	mg/L	NC	20
9374144	Dissolved Barium (Ba)	2024/05/06	105	80 - 120	97	80 - 120	ND, RDL=2.0	ug/L	1.5	20
9374144	Dissolved Boron (B)	2024/05/06	104	80 - 120	97	80 - 120	ND, RDL=10	ug/L	0.53	20
9374144	Dissolved Calcium (Ca)	2024/05/06	NC	80 - 120	99	80 - 120	ND, RDL=200	ug/L		
9374144	Dissolved Iron (Fe)	2024/05/06	105	80 - 120	98	80 - 120	ND, RDL=100	ug/L		
9374144	Dissolved Magnesium (Mg)	2024/05/06	104	80 - 120	97	80 - 120	ND, RDL=50	ug/L		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
9374144	Dissolved Manganese (Mn)	2024/05/06	103	80 - 120	96	80 - 120	ND, RDL=2.0	ug/L		
9374144	Dissolved Sodium (Na)	2024/05/06	NC	80 - 120	99	80 - 120	ND, RDL=100	ug/L	0.98	20
9375189	Total Dissolved Solids	2024/05/07			95	80 - 120	ND, RDL=10	mg/L	0	20
9375224	Total Dissolved Solids	2024/05/07			98	80 - 120	ND, RDL=10	mg/L	2.0	20
9375630	Dissolved Organic Carbon	2024/05/07	93	80 - 120	97	80 - 120	ND, RDL=0.4	mg/L	1.1	20
9376271	Total Ammonia-N	2024/05/07	96	75 - 125	98	80 - 120	ND, RDL=0.050	mg/L	0.44	20
9377039	Total Suspended Solids	2024/05/08			98	80 - 120	ND, RDL=10	mg/L	NC	20
9377073	Total Dissolved Solids	2024/05/08			97	80 - 120	ND, RDL=10	mg/L	0	20
9384380	Total Dissolved Solids	2024/05/10			98	80 - 120	ND, RDL=10	mg/L	5.2	20
9387925	Dissolved Chloride (Cl-)	2024/05/13	NC	80 - 120	96	80 - 120	ND, RDL=1.0	mg/L	0.91	20
9387932	Dissolved Sulphate (SO4)	2024/05/13	NC	75 - 125	97	80 - 120	ND, RDL=1.0	mg/L	0.22	20
9387945	Alkalinity (Total as CaCO3)	2024/05/14			94	85 - 115	ND, RDL=1.0	mg/L	3.3	20
9389038	Dissolved Barium (Ba)	2024/05/13	104	80 - 120	98	80 - 120	ND, RDL=2.0	ug/L	4.0	20
9389038	Dissolved Boron (B)	2024/05/13	113	80 - 120	104	80 - 120	ND, RDL=10	ug/L	NC	20
9389038	Dissolved Calcium (Ca)	2024/05/13	112	80 - 120	100	80 - 120	ND, RDL=200	ug/L		
9389038	Dissolved Iron (Fe)	2024/05/13	106	80 - 120	101	80 - 120	ND, RDL=100	ug/L		
9389038	Dissolved Magnesium (Mg)	2024/05/13	108	80 - 120	99	80 - 120	ND, RDL=50	ug/L		
9389038	Dissolved Manganese (Mn)	2024/05/13	105	80 - 120	99	80 - 120	ND, RDL=2.0	ug/L		
9389038	Dissolved Sodium (Na)	2024/05/13	NC	80 - 120	100	80 - 120	ND, RDL=100	ug/L	1.4	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

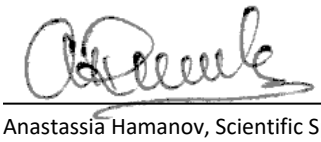
Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

Bureau Veritas Job #: C4D1309
Report Date: 2024/05/14

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter
Sampler Initials: BM

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Anastassia Hamanov, Scientific Specialist

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Lake St. Peter GW

Custody Tracking Form

T880970

Please use this form for custody tracking when submitting the work instructions via eCOC (electronic Chain of Custody). Please ensure your form has a barcode or a Bureau Veritas eCOC confirmation number in the top right hand side. This number links your electronic submission to your samples. This form should be placed in the cooler with your samples.

First Sample: LSP1-03
Last Sample: Trip Blank
Sample Count: 11

Relinquished By				Received By			
Brad M'Callum	Brad M'Calle	Date	2024/05/01	VIMUSHTI PATEL		Date	2024/05/02
		Time (24 HR)	08:00			Time (24 HR)	9:16
Print	Sign	Date	YYYY/MM/DD	Print	Sign	Date	YYYY/MM/DD
		Time (24 HR)	HH:MM			Time (24 HR)	HH:MM
Print	Sign	Date	YYYY/MM/DD	Print	Sign	Date	YYYY/MM/DD
		Time (24 HR)	HH:MM			Time (24 HR)	HH:MM

Unless otherwise agreed to, submissions and use of services are governed by Bureau Veritas' standard terms and conditions which can be found at www.bvna.com.

Triage Information

Sampled By (Print): Brad M'Callum / Matthew DeGeer

# of Coolers/Pkgs: 2

Rush ☐ Immediate Test ☐ Food Residue ☐

Micro ☐ Food Chemistry ☐

*** LABORATORY USE ONLY ***

Received At

Labeled By

Verified By

Lab Comments:

02-May-24 09:16
Christine Gripton
C4D1309
AK0 ENV-1279

Custody Seal		Cooling Media	Temperature °C		
Present (Y/N)	Intact (Y/N)	Present (Y/N)	1	2	3
Y	Y	Y	4	0	4
Y	Y	Y	0	2	0

Drinking Water Metals Preservation Check Done (Circle) **YES** **NO**

COR FCD-00383/4

LSP7

Page 1 of 1

Your Project #: 240205-04
Site Location: Lake St. Peter GW
Your C.O.C. #: 971280

Attention: MHH Distribution

BluMetric Environmental Inc
The Tower - The Woolen Mill
4 Cataraqui St
Kingston, ON
CANADA K7K 1Z7

Report Date: 2024/11/07
Report #: R8395747
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4Y2031
Received: 2024/10/30, 09:37

Sample Matrix: Ground Water
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Dissolved Aluminum (0.2 u, clay free)	1	N/A	2024/11/04	CAM SOP-00447	EPA 6020B m
Alkalinity	10	N/A	2024/11/05	CAM SOP-00448	SM 24 2320 B m
Biochemical Oxygen Demand (BOD)	1	2024/10/31	2024/11/05	CAM SOP-00427	SM 24 5210B m
Chloride by Automated Colourimetry	10	N/A	2024/11/05	CAM SOP-00463	SM 24 4500-Cl E m
Chemical Oxygen Demand	1	N/A	2024/11/04	CAM SOP-00416	SM 24 5220 D m
Colour	1	N/A	2024/11/06	CAM SOP-00412	SM 24 2120C m
Conductivity	10	N/A	2024/11/05	CAM SOP-00414	SM 24 2510 m
Dissolved Organic Carbon (DOC) (1)	10	N/A	2024/11/05	CAM SOP-00446	SM 24 5310 B m
Hardness (calculated as CaCO3)	1	N/A	2024/11/04	CAM SOP 00102/00408/00447	SM 2340 B
Dissolved Mercury in Water by CVAA	1	2024/11/01	2024/11/05	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS	9	N/A	2024/11/01	CAM SOP-00447	EPA 6020B m
Dissolved Metals by ICPMS	1	N/A	2024/11/07	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICPMS	1	2024/11/02	2024/11/05	CAM SOP-00447	EPA 6020B m
Total Ammonia-N	10	N/A	2024/11/04	CAM SOP-00441	USGS I-2522-90 m
Nitrate & Nitrite as Nitrogen in Water (2)	10	N/A	2024/11/05	CAM SOP-00440	SM 24 4500-NO3I/NO2B
pH (3)	10	2024/11/01	2024/11/05	CAM SOP-00413	SM 24th - 4500H+ B
Phenols (4AAP)	1	N/A	2024/11/05	CAM SOP-00444	OMOE E3179 m
Field Measured pH (4)	1	N/A	2024/10/30		Field pH Meter
Sulphate by Automated Turbidimetry	10	N/A	2024/11/05	CAM SOP-00464	SM 24 4500-SO42- E m
Total Dissolved Solids	4	2024/11/02	2024/11/04	CAM SOP-00428	SM 24 2540C m
Total Dissolved Solids	6	2024/11/02	2024/11/05	CAM SOP-00428	SM 24 2540C m
Field Temperature (4)	1	N/A	2024/10/30		Field Thermometer
Total Kjeldahl Nitrogen in Water	1	2024/11/01	2024/11/04	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	1	2024/11/01	2024/11/01	CAM SOP-00407	SM 24 4500-P I
Total Suspended Solids	10	2024/11/02	2024/11/05	CAM SOP-00428	SM 24 2540D m
Turbidity	1	N/A	2024/11/01	CAM SOP-00417	SM 24 2130 B
Un-ionized Ammonia (5)	1	2024/10/30	2024/11/04	Auto Calc.	PWQO

Remarks:

Your Project #: 240205-04
Site Location: Lake St. Peter GW
Your C.O.C. #: 971280

Attention: MHH Distribution

BluMetric Environmental Inc
The Tower - The Woolen Mill
4 Cataraqui St
Kingston, ON
CANADA K7K 1Z7

Report Date: 2024/11/07
Report #: R8395747
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4Y2031

Received: 2024/10/30, 09:37

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.
(3) "The CCME method and Analytical Protocol (O. Reg 153/04, O. Reg. 406/19) requires pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME and Analytical Protocol (O. Reg 153/04, O. Reg. 406/19) holding time. Bureau Veritas endeavors to analyze samples as soon as possible after receipt."

(4) This is a field test, therefore, the results relate to items that were not analysed at Bureau Veritas.
(5) Un-ionized ammonia is calculated using the total ammonia result and field data provided by the client for pH and temperature.

Your Project #: 240205-04
Site Location: Lake St. Peter GW
Your C.O.C. #: 971280

Attention: MHH Distribution

BluMetric Environmental Inc
The Tower - The Woolen Mill
4 Cataraqui St
Kingston, ON
CANADA K7K 1Z7

Report Date: 2024/11/07
Report #: R8395747
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4Y2031
Received: 2024/10/30, 09:37

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
Elora Di Bratto, Project Manager
Email: Elora.Di-Bratto@bureauveritas.com
Phone# (905) 817-5700

==========

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Bureau Veritas Job #: C4Y2031
Report Date: 2024/11/07

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter GW
Sampler Initials: BM

RESULTS OF ANALYSES OF GROUND WATER

Bureau Veritas ID		AHLG42		AHLG43	AHLG44		AHLG45		
Sampling Date		2024/10/28 10:31		2024/10/28 11:17	2024/10/28 10:56		2024/10/28 09:55		
COC Number		971280		971280	971280		971280		
	UNITS	LSP1-03	RDL	LSP2-03	LSP3-03	RDL	LSP4-19	RDL	QC Batch
Inorganics									
Total Ammonia-N	mg/L	17	0.10	ND	5.0	0.050	6.5	0.050	9738541
Conductivity	umho/cm	890	1.0	38	500	1.0	650	1.0	9739900
Total Dissolved Solids	mg/L	490	10	10	315	10	430	10	9741730
Dissolved Organic Carbon	mg/L	21	0.4	3.5	11	0.4	7.2	0.4	9744822
pH	pH	7.23		6.67	7.28		7.12		9739904
Total Suspended Solids	mg/L	1500	50	380	96	10	43000	100	9740084
Dissolved Sulphate (SO4)	mg/L	5.8	1.0	3.7	7.0	1.0	6.8	1.0	9739810
Alkalinity (Total as CaCO3)	mg/L	340	1.0	13	150	1.0	190	1.0	9739883
Dissolved Chloride (Cl-)	mg/L	65	1.0	ND	50	1.0	57	1.0	9739802
Nitrate (N)	mg/L	ND	0.10	ND	ND	0.10	6.45	0.10	9739793

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

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Bureau Veritas Job #: C4Y2031
Report Date: 2024/11/07

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter GW
Sampler Initials: BM

RESULTS OF ANALYSES OF GROUND WATER

Bureau Veritas ID		AHLG46			AHLG47			AHLG47		
Sampling Date		2024/10/28 10:11			2024/10/28 11:34			2024/10/28 11:34		
COC Number		971280			971280			971280		
	UNITS	LSP5-19	RDL	QC Batch	LSP-DP1-21	RDL	QC Batch	LSP-DP1-21 Lab-Dup	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L				160	1.0	9735592			
Total Un-ionized Ammonia	mg/L				0.0018	0.00061	9734012			
Field Measurements										
Field Temperature	Celsius				8.9	N/A	ONSITE			
Field Measured pH	pH				6.14		ONSITE			
Inorganics										
Total Ammonia-N	mg/L	ND	0.050	9738556	6.3	0.050	9738556			
Total BOD	mg/L				ND	2	9736124	ND	2	9736124
Total Chemical Oxygen Demand (COD)	mg/L				24	4.0	9739511			
Colour	TCU				41	2	9742158			
Conductivity	umho/cm	31	1.0	9739900	510	1.0	9739900			
Total Dissolved Solids	mg/L	60	10	9741623	280	10	9741623			
Total Kjeldahl Nitrogen (TKN)	mg/L				7.3	0.50	9739485			
Dissolved Organic Carbon	mg/L	1.8	0.4	9744822	11	0.4	9744822			
pH	pH	6.70		9739904	7.12		9739904			
Phenols-4AAP	mg/L				ND	0.0010	9746567			
Total Phosphorus	mg/L				0.039	0.020	9739678			
Total Suspended Solids	mg/L	7100	100	9740084	67	10	9740084			
Dissolved Sulphate (SO4)	mg/L	3.3	1.0	9739810	25	1.0	9739810			
Turbidity	NTU				160	0.1	9739216			
Alkalinity (Total as CaCO3)	mg/L	8.7	1.0	9739883	210	1.0	9739883			
Dissolved Chloride (Cl-)	mg/L	ND	1.0	9739802	16	1.0	9739802			
Nitrate (N)	mg/L	ND	0.10	9739793	ND	0.10	9739793			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

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Bureau Veritas Job #: C4Y2031
Report Date: 2024/11/07

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter GW
Sampler Initials: BM

RESULTS OF ANALYSES OF GROUND WATER

Bureau Veritas ID		AHLG48			AHLG49			AHLG50		
Sampling Date		2024/10/28 09:24			2024/10/28 09:38			2024/10/28 11:06		
COC Number		971280			971280			971280		
	UNITS	LSP6-23	RDL	QC Batch	LSP7-23	RDL	QC Batch	LSP8-23	RDL	QC Batch
Inorganics										
Total Ammonia-N	mg/L	ND	0.050	9738556	ND	0.050	9738556	12	0.050	9738556
Conductivity	umho/cm	100	1.0	9739900	72	1.0	9739900	580	1.0	9739900
Total Dissolved Solids	mg/L	115	10	9741623	175	10	9741730	355	10	9741730
Dissolved Organic Carbon	mg/L	1.2	0.4	9744822	1.8	0.4	9744822	28	0.4	9744822
pH	pH	7.33		9739904	6.69		9739904	6.99		9739904
Total Suspended Solids	mg/L	4500	100	9740084	28000	200	9740084	1900	100	9740084
Dissolved Sulphate (SO4)	mg/L	6.4	1.0	9739810	3.7	1.0	9739829	13	1.0	9739810
Alkalinity (Total as CaCO3)	mg/L	41	1.0	9739883	8.4	1.0	9739883	240	1.0	9739883
Dissolved Chloride (Cl-)	mg/L	ND	1.0	9739802	10	1.0	9739825	29	1.0	9739802
Nitrate (N)	mg/L	ND	0.10	9739793	0.13	0.10	9739793	ND	0.10	9739793

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

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Bureau Veritas Job #: C4Y2031
Report Date: 2024/11/07

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter GW
Sampler Initials: BM

RESULTS OF ANALYSES OF GROUND WATER

Bureau Veritas ID		AHLG51		
Sampling Date		2024/10/28 09:24		
COC Number		971280		
	UNITS	LSP-QAQC-GW1	RDL	QC Batch
Inorganics				
Total Ammonia-N	mg/L	ND	0.050	9738556
Conductivity	umho/cm	100	1.0	9739900
Total Dissolved Solids	mg/L	120	10	9741623
Dissolved Organic Carbon	mg/L	1.4	0.4	9744822
pH	pH	7.22		9739904
Total Suspended Solids	mg/L	4500	100	9740084
Dissolved Sulphate (SO4)	mg/L	6.4	1.0	9739810
Alkalinity (Total as CaCO3)	mg/L	40	1.0	9739883
Dissolved Chloride (Cl-)	mg/L	ND	1.0	9739802
Nitrate (N)	mg/L	ND	0.10	9739793

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

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Bureau Veritas Job #: C4Y2031
Report Date: 2024/11/07

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter GW
Sampler Initials: BM

ELEMENTS BY ATOMIC SPECTROSCOPY (GROUND WATER)

Bureau Veritas ID		AHLG42	AHLG42	AHLG43	AHLG44	AHLG45	AHLG46		
Sampling Date		2024/10/28 10:31	2024/10/28 10:31	2024/10/28 11:17	2024/10/28 10:56	2024/10/28 09:55	2024/10/28 10:11		
COC Number		971280	971280	971280	971280	971280	971280		
	UNITS	**LSP1-03**	**LSP1-03 Lab-Dup**	**LSP2-03**	**LSP3-03**	**LSP4-19**	**LSP5-19**	**RDL**	**QC Batch**
Metals									
Dissolved Barium (Ba)	ug/L	530	530	13	280	190	12	2.0	9739127
Dissolved Boron (B)	ug/L	710	710	ND	140	450	ND	10	9739127
Dissolved Calcium (Ca)	ug/L	92000	93000	3200	41000	64000	2800	200	9739127
Dissolved Iron (Fe)	ug/L	67000	69000	110	6200	ND	ND	100	9739127
Dissolved Magnesium (Mg)	ug/L	9200	9300	820	4700	9000	470	50	9739127
Dissolved Manganese (Mn)	ug/L	2100	2100	39	1600	8200	4.5	2.0	9739127
Dissolved Sodium (Na)	ug/L	39000	39000	1700	35000	26000	1700	100	9739127

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

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ELEMENTS BY ATOMIC SPECTROSCOPY (GROUND WATER)

Bureau Veritas ID		AHLG47			AHLG48	AHLG49		AHLG50		
Sampling Date		2024/10/28 11:34			2024/10/28 09:24	2024/10/28 09:38		2024/10/28 11:06		
COC Number		971280			971280	971280		971280		
	UNITS	LSP-DP1-21	RDL	QC Batch	LSP6-23	LSP7-23	QC Batch	LSP8-23	RDL	QC Batch
Metals										
Dissolved (0.2u) Aluminum (Al)	ug/L	7	5	9740479						
Dissolved Mercury (Hg)	ug/L	ND	0.10	9739107						
Total Arsenic (As)	ug/L	12	1.0	9741591						
Dissolved Barium (Ba)	ug/L	400	2.0	9739127	9.5	21	9739127	440	2.0	9751245
Total Barium (Ba)	ug/L	370	2.0	9741591						
Total Beryllium (Be)	ug/L	ND	0.40	9741591						
Dissolved Boron (B)	ug/L	360	10	9739127	17	ND	9739127	250	10	9751245
Total Boron (B)	ug/L	370	10	9741591						
Total Cadmium (Cd)	ug/L	ND	0.090	9741591						
Dissolved Calcium (Ca)	ug/L	50000	200	9739127	9100	5100	9739127	51000	200	9751245
Total Calcium (Ca)	ug/L	48000	200	9741591						
Total Chromium (Cr)	ug/L	46	5.0	9741591						
Total Cobalt (Co)	ug/L	23	0.50	9741591						
Total Copper (Cu)	ug/L	20	0.90	9741591						
Dissolved Iron (Fe)	ug/L	27000	100	9739127	210	140	9739127	80000	100	9751245
Total Iron (Fe)	ug/L	66000	100	9741591						
Total Lead (Pb)	ug/L	0.76	0.50	9741591						
Dissolved Magnesium (Mg)	ug/L	8200	50	9739127	2600	1000	9739127	7900	50	9751245
Total Magnesium (Mg)	ug/L	8200	50	9741591						
Dissolved Manganese (Mn)	ug/L	9700	2.0	9739127	450	33	9739127	4900	2.0	9751245
Total Manganese (Mn)	ug/L	11000	10	9741591						
Total Molybdenum (Mo)	ug/L	2.8	0.50	9741591						
Total Nickel (Ni)	ug/L	30	1.0	9741591						
Total Potassium (K)	ug/L	18000	200	9741591						
Total Selenium (Se)	ug/L	ND	2.0	9741591						
Total Silicon (Si)	ug/L	6600	50	9741591						
Total Silver (Ag)	ug/L	ND	0.090	9741591						
Dissolved Sodium (Na)	ug/L	17000	100	9739127	2500	4800	9739127	31000	100	9751245
Total Sodium (Na)	ug/L	17000	100	9741591						
Total Strontium (Sr)	ug/L	270	1.0	9741591						

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

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ELEMENTS BY ATOMIC SPECTROSCOPY (GROUND WATER)

Bureau Veritas ID		AHLG47			AHLG48	AHLG49		AHLG50		
Sampling Date		2024/10/28 11:34			2024/10/28 09:24	2024/10/28 09:38		2024/10/28 11:06		
COC Number		971280			971280	971280		971280		
	UNITS	LSP-DP1-21	RDL	QC Batch	LSP6-23	LSP7-23	QC Batch	LSP8-23	RDL	QC Batch
Total Thallium (Tl)	ug/L	ND	0.050	9741591						
Total Titanium (Ti)	ug/L	6.2	5.0	9741591						
Total Vanadium (V)	ug/L	4.5	0.50	9741591						
Total Zinc (Zn)	ug/L	370	5.0	9741591						

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas ID		AHLG51		
Sampling Date		2024/10/28 09:24		
COC Number		971280		
	UNITS	LSP-QAQC-GW1	RDL	QC Batch
Metals				
Dissolved Barium (Ba)	ug/L	10	2.0	9739127
Dissolved Boron (B)	ug/L	16	10	9739127
Dissolved Calcium (Ca)	ug/L	9200	200	9739127
Dissolved Iron (Fe)	ug/L	260	100	9739127
Dissolved Magnesium (Mg)	ug/L	2700	50	9739127
Dissolved Manganese (Mn)	ug/L	450	2.0	9739127
Dissolved Sodium (Na)	ug/L	2600	100	9739127

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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TEST SUMMARY

Bureau Veritas ID: AHLG42 **Collected:** 2024/10/28
Sample ID: LSP1-03 **Shipped:**
Matrix: Ground Water **Received:** 2024/10/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9739883	N/A	2024/11/05	Gurparteek KAUR
Chloride by Automated Colourimetry	SKAL	9739802	N/A	2024/11/05	Alina Dobreanu
Conductivity	AT	9739900	N/A	2024/11/05	Gurparteek KAUR
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9744822	N/A	2024/11/05	Gyulshen Idriz
Dissolved Metals by ICPMS	ICP/MS	9739127	N/A	2024/11/01	Azita Fazaeli
Total Ammonia-N	SKAL/NH4	9738541	N/A	2024/11/04	Jinal Chavda
Nitrate & Nitrite as Nitrogen in Water	LACH	9739793	N/A	2024/11/05	Chandra Nandlal
pH	AT	9739904	2024/11/01	2024/11/05	Gurparteek KAUR
Sulphate by Automated Turbidimetry	SKAL	9739810	N/A	2024/11/05	Alina Dobreanu
Total Dissolved Solids	BAL	9741730	2024/11/02	2024/11/05	Razieh Tabesh
Total Suspended Solids	BAL	9740084	2024/11/02	2024/11/05	Razieh Tabesh

Bureau Veritas ID: AHLG42 Dup **Collected:** 2024/10/28
Sample ID: LSP1-03 **Shipped:**
Matrix: Ground Water **Received:** 2024/10/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	9739127	N/A	2024/11/01	Azita Fazaeli

Bureau Veritas ID: AHLG43 **Collected:** 2024/10/28
Sample ID: LSP2-03 **Shipped:**
Matrix: Ground Water **Received:** 2024/10/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9739883	N/A	2024/11/05	Gurparteek KAUR
Chloride by Automated Colourimetry	SKAL	9739802	N/A	2024/11/05	Alina Dobreanu
Conductivity	AT	9739900	N/A	2024/11/05	Gurparteek KAUR
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9744822	N/A	2024/11/05	Gyulshen Idriz
Dissolved Metals by ICPMS	ICP/MS	9739127	N/A	2024/11/01	Azita Fazaeli
Total Ammonia-N	SKAL/NH4	9738541	N/A	2024/11/04	Jinal Chavda
Nitrate & Nitrite as Nitrogen in Water	LACH	9739793	N/A	2024/11/05	Chandra Nandlal
pH	AT	9739904	2024/11/01	2024/11/05	Gurparteek KAUR
Sulphate by Automated Turbidimetry	SKAL	9739810	N/A	2024/11/05	Alina Dobreanu
Total Dissolved Solids	BAL	9741730	2024/11/02	2024/11/05	Razieh Tabesh
Total Suspended Solids	BAL	9740084	2024/11/02	2024/11/05	Razieh Tabesh

Bureau Veritas ID: AHLG44 **Collected:** 2024/10/28
Sample ID: LSP3-03 **Shipped:**
Matrix: Ground Water **Received:** 2024/10/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9739883	N/A	2024/11/05	Gurparteek KAUR
Chloride by Automated Colourimetry	SKAL	9739802	N/A	2024/11/05	Alina Dobreanu
Conductivity	AT	9739900	N/A	2024/11/05	Gurparteek KAUR

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TEST SUMMARY

Bureau Veritas ID: AHLG44 **Collected:** 2024/10/28
Sample ID: LSP3-03 **Shipped:**
Matrix: Ground Water **Received:** 2024/10/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9744822	N/A	2024/11/05	Gyulshen Idriz
Dissolved Metals by ICPMS	ICP/MS	9739127	N/A	2024/11/01	Azita Fazaeli
Total Ammonia-N	SKAL/NH4	9738541	N/A	2024/11/04	Jinal Chavda
Nitrate & Nitrite as Nitrogen in Water	LACH	9739793	N/A	2024/11/05	Chandra Nandlal
pH	AT	9739904	2024/11/01	2024/11/05	Gurparteek KAUR
Sulphate by Automated Turbidimetry	SKAL	9739810	N/A	2024/11/05	Alina Dobreanu
Total Dissolved Solids	BAL	9741730	2024/11/02	2024/11/05	Razieh Tabesh
Total Suspended Solids	BAL	9740084	2024/11/02	2024/11/05	Razieh Tabesh

Bureau Veritas ID: AHLG45 **Collected:** 2024/10/28
Sample ID: LSP4-19 **Shipped:**
Matrix: Ground Water **Received:** 2024/10/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9739883	N/A	2024/11/05	Gurparteek KAUR
Chloride by Automated Colourimetry	SKAL	9739802	N/A	2024/11/05	Alina Dobreanu
Conductivity	AT	9739900	N/A	2024/11/05	Gurparteek KAUR
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9744822	N/A	2024/11/05	Gyulshen Idriz
Dissolved Metals by ICPMS	ICP/MS	9739127	N/A	2024/11/01	Azita Fazaeli
Total Ammonia-N	SKAL/NH4	9738541	N/A	2024/11/04	Jinal Chavda
Nitrate & Nitrite as Nitrogen in Water	LACH	9739793	N/A	2024/11/05	Chandra Nandlal
pH	AT	9739904	2024/11/01	2024/11/05	Gurparteek KAUR
Sulphate by Automated Turbidimetry	SKAL	9739810	N/A	2024/11/05	Alina Dobreanu
Total Dissolved Solids	BAL	9741730	2024/11/02	2024/11/05	Razieh Tabesh
Total Suspended Solids	BAL	9740084	2024/11/02	2024/11/05	Razieh Tabesh

Bureau Veritas ID: AHLG46 **Collected:** 2024/10/28
Sample ID: LSP5-19 **Shipped:**
Matrix: Ground Water **Received:** 2024/10/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9739883	N/A	2024/11/05	Gurparteek KAUR
Chloride by Automated Colourimetry	SKAL	9739802	N/A	2024/11/05	Alina Dobreanu
Conductivity	AT	9739900	N/A	2024/11/05	Gurparteek KAUR
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9744822	N/A	2024/11/05	Gyulshen Idriz
Dissolved Metals by ICPMS	ICP/MS	9739127	N/A	2024/11/01	Azita Fazaeli
Total Ammonia-N	SKAL/NH4	9738556	N/A	2024/11/04	Jinal Chavda
Nitrate & Nitrite as Nitrogen in Water	LACH	9739793	N/A	2024/11/05	Chandra Nandlal
pH	AT	9739904	2024/11/01	2024/11/05	Gurparteek KAUR
Sulphate by Automated Turbidimetry	SKAL	9739810	N/A	2024/11/05	Alina Dobreanu
Total Dissolved Solids	BAL	9741623	2024/11/02	2024/11/04	Manowalage shanika GUNASEKARA
Total Suspended Solids	BAL	9740084	2024/11/02	2024/11/05	Razieh Tabesh

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Bureau Veritas Job #: C4Y2031
Report Date: 2024/11/07

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter GW
Sampler Initials: BM

TEST SUMMARY

Bureau Veritas ID: AHLG47
Sample ID: LSP-DP1-21
Matrix: Ground Water

Collected: 2024/10/28
Shipped:
Received: 2024/10/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	9740479	N/A	2024/11/04	Prempal Bhatti
Alkalinity	AT	9739883	N/A	2024/11/05	Gurparteek KAUR
Biochemical Oxygen Demand (BOD)	DO	9736124	2024/10/31	2024/11/05	Nusrat Naz
Chloride by Automated Colourimetry	SKAL	9739802	N/A	2024/11/05	Alina Dobreanu
Chemical Oxygen Demand	SPEC	9739511	N/A	2024/11/04	Shivani Shivani
Colour	SPEC	9742158	N/A	2024/11/06	Viorica Rotaru
Conductivity	AT	9739900	N/A	2024/11/05	Gurparteek KAUR
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9744822	N/A	2024/11/05	Gyulshen Idriz
Hardness (calculated as CaCO3)		9735592	N/A	2024/11/04	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	9739107	2024/11/01	2024/11/05	Maitri PATIL
Dissolved Metals by ICPMS	ICP/MS	9739127	N/A	2024/11/01	Azita Fazaeli
Total Metals Analysis by ICPMS	ICP/MS	9741591	2024/11/02	2024/11/05	Indira HarryPaul
Total Ammonia-N	SKAL/NH4	9738556	N/A	2024/11/04	Jinal Chavda
Nitrate & Nitrite as Nitrogen in Water	LACH	9739793	N/A	2024/11/05	Chandra Nandlal
pH	AT	9739904	2024/11/01	2024/11/05	Gurparteek KAUR
Phenols (4AAP)	TECH/PHEN	9746567	N/A	2024/11/05	Sachi Patel
Field Measured pH	PH	ONSITE	N/A	2024/10/30	Akhiljyothi PUTHUPARAMBIL SUNILKUMAR
Sulphate by Automated Turbidimetry	SKAL	9739810	N/A	2024/11/05	Alina Dobreanu
Total Dissolved Solids	BAL	9741623	2024/11/02	2024/11/04	Manowalage shanika GUNASEKARA
Field Measured pH	PH	ONSITE	N/A	2024/10/30	Akhiljyothi PUTHUPARAMBIL SUNILKUMAR
Total Kjeldahl Nitrogen in Water	SKAL	9739485	2024/11/01	2024/11/04	Rajni Tyagi
Total Phosphorus (Colourimetric)	SKAL/P	9739678	2024/11/01	2024/11/01	Muskan
Total Suspended Solids	BAL	9740084	2024/11/02	2024/11/05	Razieh Tabesh
Turbidity	AT	9739216	N/A	2024/11/01	Gurparteek KAUR
Un-ionized Ammonia	CALC/NH3	9734012	2024/11/04	2024/11/04	Automated Statchk

Bureau Veritas ID: AHLG47 Dup
Sample ID: LSP-DP1-21
Matrix: Ground Water

Collected: 2024/10/28
Shipped:
Received: 2024/10/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Biochemical Oxygen Demand (BOD)	DO	9736124	2024/10/31	2024/11/05	Nusrat Naz

Bureau Veritas ID: AHLG48
Sample ID: LSP6-23
Matrix: Ground Water

Collected: 2024/10/28
Shipped:
Received: 2024/10/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9739883	N/A	2024/11/05	Gurparteek KAUR
Chloride by Automated Colourimetry	SKAL	9739802	N/A	2024/11/05	Alina Dobreanu
Conductivity	AT	9739900	N/A	2024/11/05	Gurparteek KAUR
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9744822	N/A	2024/11/05	Gyulshen Idriz
Dissolved Metals by ICPMS	ICP/MS	9739127	N/A	2024/11/01	Azita Fazaeli

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Bureau Veritas Job #: C4Y2031
Report Date: 2024/11/07

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter GW
Sampler Initials: BM

TEST SUMMARY

Bureau Veritas ID: AHLG48
Sample ID: LSP6-23
Matrix: Ground Water

Collected: 2024/10/28
Shipped:
Received: 2024/10/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	SKAL/NH4	9738556	N/A	2024/11/04	Jinal Chavda
Nitrate & Nitrite as Nitrogen in Water	LACH	9739793	N/A	2024/11/05	Chandra Nandlal
pH	AT	9739904	2024/11/01	2024/11/05	Gurparteek KAUR
Sulphate by Automated Turbidimetry	SKAL	9739810	N/A	2024/11/05	Alina Dobreanu
Total Dissolved Solids	BAL	9741623	2024/11/02	2024/11/04	Manowalage shanika GUNASEKARA
Total Suspended Solids	BAL	9740084	2024/11/02	2024/11/05	Razieh Tabesh

Bureau Veritas ID: AHLG49
Sample ID: LSP7-23
Matrix: Ground Water

Collected: 2024/10/28
Shipped:
Received: 2024/10/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9739883	N/A	2024/11/05	Gurparteek KAUR
Chloride by Automated Colourimetry	SKAL	9739825	N/A	2024/11/05	Massarat Jan
Conductivity	AT	9739900	N/A	2024/11/05	Gurparteek KAUR
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9744822	N/A	2024/11/05	Gyulshen Idriz
Dissolved Metals by ICPMS	ICP/MS	9739127	N/A	2024/11/01	Azita Fazaeli
Total Ammonia-N	SKAL/NH4	9738556	N/A	2024/11/04	Jinal Chavda
Nitrate & Nitrite as Nitrogen in Water	LACH	9739793	N/A	2024/11/05	Chandra Nandlal
pH	AT	9739904	2024/11/01	2024/11/05	Gurparteek KAUR
Sulphate by Automated Turbidimetry	SKAL	9739829	N/A	2024/11/05	Massarat Jan
Total Dissolved Solids	BAL	9741730	2024/11/02	2024/11/05	Razieh Tabesh
Total Suspended Solids	BAL	9740084	2024/11/02	2024/11/05	Razieh Tabesh

Bureau Veritas ID: AHLG50
Sample ID: LSP8-23
Matrix: Ground Water

Collected: 2024/10/28
Shipped:
Received: 2024/10/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9739883	N/A	2024/11/05	Gurparteek KAUR
Chloride by Automated Colourimetry	SKAL	9739802	N/A	2024/11/05	Alina Dobreanu
Conductivity	AT	9739900	N/A	2024/11/05	Gurparteek KAUR
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9744822	N/A	2024/11/05	Gyulshen Idriz
Dissolved Metals by ICPMS	ICP/MS	9751245	N/A	2024/11/07	Azita Fazaeli
Total Ammonia-N	SKAL/NH4	9738556	N/A	2024/11/04	Jinal Chavda
Nitrate & Nitrite as Nitrogen in Water	LACH	9739793	N/A	2024/11/05	Chandra Nandlal
pH	AT	9739904	2024/11/01	2024/11/05	Gurparteek KAUR
Sulphate by Automated Turbidimetry	SKAL	9739810	N/A	2024/11/05	Alina Dobreanu
Total Dissolved Solids	BAL	9741730	2024/11/02	2024/11/05	Razieh Tabesh
Total Suspended Solids	BAL	9740084	2024/11/02	2024/11/05	Razieh Tabesh

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Bureau Veritas Job #: C4Y2031
Report Date: 2024/11/07

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter GW
Sampler Initials: BM

TEST SUMMARY

Bureau Veritas ID: AHLG51
Sample ID: LSP-QAQC-GW1
Matrix: Ground Water

Collected: 2024/10/28
Shipped:
Received: 2024/10/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9739883	N/A	2024/11/05	Gurparteek KAUR
Chloride by Automated Colourimetry	SKAL	9739802	N/A	2024/11/05	Alina Dobreanu
Conductivity	AT	9739900	N/A	2024/11/05	Gurparteek KAUR
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9744822	N/A	2024/11/05	Gyulshen Idriz
Dissolved Metals by ICPMS	ICP/MS	9739127	N/A	2024/11/01	Azita Fazaeli
Total Ammonia-N	SKAL/NH4	9738556	N/A	2024/11/04	Jinal Chavda
Nitrate & Nitrite as Nitrogen in Water	LACH	9739793	N/A	2024/11/05	Chandra Nandlal
pH	AT	9739904	2024/11/01	2024/11/05	Gurparteek KAUR
Sulphate by Automated Turbidimetry	SKAL	9739810	N/A	2024/11/05	Alina Dobreanu
Total Dissolved Solids	BAL	9741623	2024/11/02	2024/11/04	Manowalage shanika GUNASEKARA
Total Suspended Solids	BAL	9740084	2024/11/02	2024/11/05	Razieh Tabesh

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	6.3°C

Turbidity will be analyzed past HT

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9736124	Total BOD	2024/11/05					ND,RDL=2	mg/L	NC	30	98	80 - 120
9738541	Total Ammonia-N	2024/11/04	NC	75 - 125	99	80 - 120	ND, RDL=0.050	mg/L	0.59	20		
9738556	Total Ammonia-N	2024/11/04	NC	75 - 125	96	80 - 120	ND, RDL=0.050	mg/L	1.4	20		
9739107	Dissolved Mercury (Hg)	2024/11/05	104	75 - 125	106	80 - 120	ND, RDL=0.10	ug/L				
9739127	Dissolved Barium (Ba)	2024/11/01	NC	80 - 120	100	80 - 120	ND, RDL=2.0	ug/L	0.14	20		
9739127	Dissolved Boron (B)	2024/11/01	NC	80 - 120	94	80 - 120	ND, RDL=10	ug/L	0.21	20		
9739127	Dissolved Calcium (Ca)	2024/11/01	NC	80 - 120	99	80 - 120	ND, RDL=200	ug/L	1.5	20		
9739127	Dissolved Iron (Fe)	2024/11/01	NC	80 - 120	99	80 - 120	ND, RDL=100	ug/L	2.4	20		
9739127	Dissolved Magnesium (Mg)	2024/11/01	99	80 - 120	96	80 - 120	ND, RDL=50	ug/L	0.82	20		
9739127	Dissolved Manganese (Mn)	2024/11/01	NC	80 - 120	98	80 - 120	ND, RDL=2.0	ug/L	2.8	20		
9739127	Dissolved Sodium (Na)	2024/11/01	NC	80 - 120	97	80 - 120	ND, RDL=100	ug/L	0.32	20		
9739216	Turbidity	2024/11/01			101	80 - 120	ND, RDL=0.1	NTU	0.84	20		
9739485	Total Kjeldahl Nitrogen (TKN)	2024/11/01	NC	80 - 120	103	80 - 120	ND, RDL=0.10	mg/L	0.40	20	106	80 - 120
9739511	Total Chemical Oxygen Demand (COD)	2024/11/04	NC	80 - 120	99	80 - 120	ND, RDL=4.0	mg/L	2.0	20		
9739678	Total Phosphorus	2024/11/01	97	80 - 120	106	80 - 120	ND, RDL=0.020	mg/L	5.0	20	107	80 - 120
9739793	Nitrate (N)	2024/11/05	88	80 - 120	94	80 - 120	ND, RDL=0.10	mg/L	NC	20		
9739802	Dissolved Chloride (Cl-)	2024/11/05	100	80 - 120	100	80 - 120	ND, RDL=1.0	mg/L	NC	20		
9739810	Dissolved Sulphate (SO4)	2024/11/05	96	75 - 125	98	80 - 120	ND, RDL=1.0	mg/L	NC	20		
9739825	Dissolved Chloride (Cl-)	2024/11/05	NC	80 - 120	97	80 - 120	ND, RDL=1.0	mg/L	8.3	20		
9739829	Dissolved Sulphate (SO4)	2024/11/05	NC	75 - 125	97	80 - 120	ND, RDL=1.0	mg/L	2.2	20		
9739883	Alkalinity (Total as CaCO3)	2024/11/05			97	85 - 115	ND, RDL=1.0	mg/L	0.64	20		
9739900	Conductivity	2024/11/05			101	85 - 115	ND, RDL=1.0	umho/cm	0.14	10		
9739904	pH	2024/11/05			102	98 - 103			0.74	N/A		
9740084	Total Suspended Solids	2024/11/05			98	80 - 120	ND, RDL=10	mg/L	0	20		
9740479	Dissolved (0.2u) Aluminum (Al)	2024/11/04	101	80 - 120	100	80 - 120	ND,RDL=5	ug/L	NC	20		
9741591	Total Arsenic (As)	2024/11/05	NC (1)	80 - 120	101	80 - 120	ND, RDL=1.0	ug/L	4.9	20		
9741591	Total Barium (Ba)	2024/11/05	NC (1)	80 - 120	91	80 - 120	ND, RDL=2.0	ug/L	1.5	20		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9741591	Total Beryllium (Be)	2024/11/05	NC (1)	80 - 120	100	80 - 120	ND, RDL=0.40	ug/L	NC	20		
9741591	Total Boron (B)	2024/11/05	NC (1)	80 - 120	90	80 - 120	ND, RDL=10	ug/L	3.8	20		
9741591	Total Cadmium (Cd)	2024/11/05	NC (1)	80 - 120	98	80 - 120	ND, RDL=0.090	ug/L	1.1	20		
9741591	Total Calcium (Ca)	2024/11/05	NC (1)	80 - 120	94	80 - 120	ND, RDL=200	ug/L	2.1	20		
9741591	Total Chromium (Cr)	2024/11/05	NC (1)	80 - 120	95	80 - 120	ND, RDL=5.0	ug/L	4.5	20		
9741591	Total Cobalt (Co)	2024/11/05	NC (1)	80 - 120	102	80 - 120	ND, RDL=0.50	ug/L	1.8	20		
9741591	Total Copper (Cu)	2024/11/05	NC (1)	80 - 120	98	80 - 120	ND, RDL=0.90	ug/L	2.9	20		
9741591	Total Iron (Fe)	2024/11/05	NC (1)	80 - 120	98	80 - 120	ND, RDL=100	ug/L	6.2	20		
9741591	Total Lead (Pb)	2024/11/05	NC (1)	80 - 120	100	80 - 120	ND, RDL=0.50	ug/L	2.8	20		
9741591	Total Magnesium (Mg)	2024/11/05	NC (1)	80 - 120	98	80 - 120	ND, RDL=50	ug/L	3.3	20		
9741591	Total Manganese (Mn)	2024/11/05	NC (1)	80 - 120	97	80 - 120	ND, RDL=2.0	ug/L	4.0	20		
9741591	Total Molybdenum (Mo)	2024/11/05	NC (1)	80 - 120	91	80 - 120	ND, RDL=0.50	ug/L	NC	20		
9741591	Total Nickel (Ni)	2024/11/05	NC (1)	80 - 120	94	80 - 120	ND, RDL=1.0	ug/L	3.4	20		
9741591	Total Potassium (K)	2024/11/05	NC (1)	80 - 120	99	80 - 120	ND, RDL=200	ug/L	4.6	20		
9741591	Total Selenium (Se)	2024/11/05	NC (1)	80 - 120	109	80 - 120	ND, RDL=2.0	ug/L	NC	20		
9741591	Total Silicon (Si)	2024/11/05	NC (1)	80 - 120	90	80 - 120	ND, RDL=50	ug/L	1.0	20		
9741591	Total Silver (Ag)	2024/11/05	NC (1)	80 - 120	93	80 - 120	ND, RDL=0.090	ug/L	NC	20		
9741591	Total Sodium (Na)	2024/11/05	NC (1)	80 - 120	99	80 - 120	ND, RDL=100	ug/L	1.0	20		
9741591	Total Strontium (Sr)	2024/11/05	NC (1)	80 - 120	94	80 - 120	ND, RDL=1.0	ug/L	5.2	20		
9741591	Total Thallium (Tl)	2024/11/05	NC (1)	80 - 120	107	80 - 120	ND, RDL=0.050	ug/L	NC	20		
9741591	Total Titanium (Ti)	2024/11/05	NC (1)	80 - 120	92	80 - 120	ND, RDL=5.0	ug/L	8.3	20		
9741591	Total Vanadium (V)	2024/11/05	NC (1)	80 - 120	95	80 - 120	ND, RDL=0.50	ug/L	2.2	20		
9741591	Total Zinc (Zn)	2024/11/05	NC (1)	80 - 120	107	80 - 120	ND, RDL=5.0	ug/L	6.0	20		
9741623	Total Dissolved Solids	2024/11/04			100	80 - 120	ND, RDL=10	mg/L	5.8	20		
9741730	Total Dissolved Solids	2024/11/05			95	80 - 120	ND, RDL=10	mg/L	0	20		
9742158	Colour	2024/11/06			102	80 - 120	ND,RDL=2	TCU	0.40	25		
9744822	Dissolved Organic Carbon	2024/11/04	91	80 - 120	94	80 - 120	ND, RDL=0.4	mg/L	0.84	20		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9746567	Phenols-4AAP	2024/11/05	99	80 - 120	97	80 - 120	ND, RDL=0.0010	mg/L	NC	20		
9751245	Dissolved Barium (Ba)	2024/11/07	100	80 - 120	103	80 - 120	ND, RDL=2.0	ug/L	1.8	20		
9751245	Dissolved Boron (B)	2024/11/07	102	80 - 120	103	80 - 120	ND, RDL=10	ug/L	3.3	20		
9751245	Dissolved Calcium (Ca)	2024/11/07	NC	80 - 120	100	80 - 120	ND, RDL=200	ug/L				
9751245	Dissolved Iron (Fe)	2024/11/07	100	80 - 120	102	80 - 120	ND, RDL=100	ug/L				
9751245	Dissolved Magnesium (Mg)	2024/11/07	96	80 - 120	99	80 - 120	ND, RDL=50	ug/L				
9751245	Dissolved Manganese (Mn)	2024/11/07	99	80 - 120	101	80 - 120	ND, RDL=2.0	ug/L				
9751245	Dissolved Sodium (Na)	2024/11/07	97	80 - 120	98	80 - 120	ND, RDL=100	ug/L	0.79	20		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) The recovery in the matrix spike was not calculated (NC). Because of the high concentration of this analyte in the parent sample, the relative difference between the spiked and unspiked concentrations is not sufficiently significant to permit a reliable recovery calculation.

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Bureau Veritas Job #: C4Y2031
Report Date: 2024/11/07

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter GW
Sampler Initials: BM

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Cristina Carriere

Cristina Carriere, Senior Scientific Specialist

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

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Custody Tr[illegible]king Form

T971280

Please use this form for custody tracking when submitting the work instructions via eCOC (electronic Chain of Custody). Please ensure your form has a barcode or a Bureau Veritas eCOC confirmation number in the top right hand side. This number links your electronic submission to your samples. This form should be placed in the cooler with your samples.

First Sample: LSP1-03
Last Sample: LSP-QAQC-GW1
Sample Count: 10

Relinquished By				Received By			
Brad McCallum	Brad McC	Date	2024/10/29	[illegible]	Ashlee Sutherland	Date	2024/10/30
		Time (24 HR)	08:00			Time (24 HR)	09:37
Print	Sign	Date	YYYY/MM/DD	Print	Sign	Date	YYYY/MM/DD
		Time (24 HR)	HH:MM			Time (24 HR)	HH:MM
Print	Sign	Date	YYYY/MM/DD	Print	Sign	Date	YYYY/MM/DD
		Time (24 HR)	HH:MM			Time (24 HR)	HH:MM

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Triage Information

Sampled By (Print): Brad McCallum / Nathan Wilson

# of Coolers/Pkgs: 1

Rush ☐ Immediate Test ☐ Food Residue ☐

Micro ☐ Food Chemistry ☐

*** LABORATORY USE ONLY ***

Received At

Labeled By

Verified By

Lab Comments:

30-Oct-24 09:37
Elora Di Bratto
C4Y2031
A3P ENV-1218

Custody Seal		Cooling Media	Temperature °C		
Present (Y/N)	Intact (Y/N)	Present (Y/N)	1	2	3
Y	Y	Y	5	6	8
Drinking Water Metals Preservation Check Done (Circle)			YES		NO

COR FCD-00383/4

Page 1 of 1

Appendix D

D-3 Surface Water Laboratory Reports

Your Project #: 240205-04
Site Location: Lake St. Peter
Your C.O.C. #: 880972

Attention: MHH Distribution

BluMetric Environmental Inc
The Tower - The Woolen Mill
4 Cataraqui St
Kingston, ON
CANADA K7K 1Z7

Report Date: 2024/05/13
Report #: R8146441
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4D1287
Received: 2024/05/02, 09:11

Sample Matrix: Water
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Dissolved Aluminum (0.2 u, clay free)	4	N/A	2024/05/07	CAM SOP-00447	EPA 6020B m
Alkalinity	1	N/A	2024/05/11	CAM SOP-00448	SM 24 2320 B m
Alkalinity	3	N/A	2024/05/05	CAM SOP-00448	SM 24 2320 B m
Biochemical Oxygen Demand (BOD)	4	2024/05/04	2024/05/09	CAM SOP-00427	SM 24 5210B m
Chloride by Automated Colourimetry	4	N/A	2024/05/09	CAM SOP-00463	SM 24 4500-Cl E m
Chemical Oxygen Demand	4	N/A	2024/05/08	CAM SOP-00416	SM 24 5220 D m
Colour	4	N/A	2024/05/08	CAM SOP-00412	SM 24 2120C m
Conductivity	1	N/A	2024/05/11	CAM SOP-00414	SM 24 2510 m
Conductivity	3	N/A	2024/05/05	CAM SOP-00414	SM 24 2510 m
Dissolved Organic Carbon (DOC) (1)	1	N/A	2024/05/06	CAM SOP-00446	SM 24 5310 B m
Hardness (calculated as CaCO3)	3	N/A	2024/05/08	CAM SOP 00102/00408/00447	SM 2340 B
Hardness (calculated as CaCO3)	1	N/A	2024/05/09	CAM SOP 00102/00408/00447	SM 2340 B
Dissolved Mercury in Water by CVAA	4	2024/05/07	2024/05/07	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS	1	N/A	2024/05/07	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICPMS	4	2024/05/07	2024/05/07	CAM SOP-00447	EPA 6020B m
Total Ammonia-N	4	N/A	2024/05/06	CAM SOP-00441	USGS I-2522-90 m
Nitrate & Nitrite as Nitrogen in Water (2)	3	N/A	2024/05/06	CAM SOP-00440	SM 24 4500-NO3I/NO2B
Nitrate & Nitrite as Nitrogen in Water (2)	1	N/A	2024/05/07	CAM SOP-00440	SM 24 4500-NO3I/NO2B
pH (3)	1	2024/05/04	2024/05/10	CAM SOP-00413	SM 24th - 4500H+ B
pH (3)	3	2024/05/04	2024/05/05	CAM SOP-00413	SM 24th - 4500H+ B
Phenols (4AAP)	4	N/A	2024/05/06	CAM SOP-00444	OMOE E3179 m
Field Measured pH (4)	1	N/A	2024/05/02		Field pH Meter
Field Measured pH (4)	3	N/A	2024/05/08		Field pH Meter
Sulphate by Automated Turbidimetry	4	N/A	2024/05/09	CAM SOP-00464	SM 24 4500-SO42- E m
Total Dissolved Solids	4	2024/05/06	2024/05/07	CAM SOP-00428	SM 24 2540C m
Field Temperature (4)	1	N/A	2024/05/02		Field Thermometer
Field Temperature (4)	3	N/A	2024/05/08		Field Thermometer
Total Kjeldahl Nitrogen in Water	3	2024/05/06	2024/05/07	CAM SOP-00938	OMOE E3516 m

Your Project #: 240205-04
Site Location: Lake St. Peter
Your C.O.C. #: 880972

Attention: MHH Distribution

BluMetric Environmental Inc
The Tower - The Woolen Mill
4 Cataraqui St
Kingston, ON
CANADA K7K 1Z7

Report Date: 2024/05/13
Report #: R8146441
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4D1287
Received: 2024/05/02, 09:11

Sample Matrix: Water
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total Kjeldahl Nitrogen in Water	1	2024/05/06	2024/05/08	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	4	2024/05/06	2024/05/07	CAM SOP-00407	SM 24 4500-P I
Total Suspended Solids	4	2024/05/06	2024/05/07	CAM SOP-00428	SM 24 2540D m
Turbidity	3	N/A	2024/05/04	CAM SOP-00417	SM 24 2130 B
Turbidity	1	N/A	2024/05/06	CAM SOP-00417	SM 24 2130 B
Un-ionized Ammonia (5)	1	2024/05/02	2024/05/08	Auto Calc.	PWQO
Un-ionized Ammonia (5)	3	2024/05/03	2024/05/08	Auto Calc.	PWQO

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.
(3) "The CCME method and Analytical Protocol (O. Reg 153/04, O. Reg. 406/19) requires pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for

Your Project #: 240205-04
Site Location: Lake St. Peter
Your C.O.C. #: 880972

Attention: MHH Distribution

BluMetric Environmental Inc
The Tower - The Woolen Mill
4 Cataraqui St
Kingston, ON
CANADA K7K 1Z7

Report Date: 2024/05/13
Report #: R8146441
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4D1287

Received: 2024/05/02, 09:11

compliance. All Laboratory pH analyses in this report are reported past the CCME and Analytical Protocol (O. Reg 153/04, O. Reg. 406/19) holding time. Bureau Veritas endeavors to analyze samples as soon as possible after receipt."

(4) This is a field test, therefore, the results relate to items that were not analysed at Bureau Veritas.
(5) Un-ionized ammonia is calculated using the total ammonia result and field data provided by the client for pH and temperature.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
Christine Gripton, Senior Project Manager
Email: Christine.Gripton@bureauveritas.com
Phone# (519)652-9444

==========

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Bureau Veritas Job #: C4D1287
Report Date: 2024/05/13

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter
Sampler Initials: BM

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		ZBG904			ZBG904			ZBG905		
Sampling Date		2024/04/30 18:00			2024/04/30 18:00			2024/04/30 17:30		
COC Number		880972			880972			880972		
	UNITS	LSP-SW1	RDL	QC Batch	LSP-SW1 Lab-Dup	RDL	QC Batch	LSP-SW2	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	8.2	1.0	9372985				10	1.0	9372985
Total Un-ionized Ammonia	mg/L	ND	0.00061	9372143				ND	0.00061	9372143
Field Measurements										
Field Temperature	Celsius	6.4	N/A	ONSITE				6.9	N/A	ONSITE
Field Measured pH	pH	5.94		ONSITE				6.1		ONSITE
Inorganics										
Total Ammonia-N	mg/L	ND	0.050	9375301				ND	0.050	9375301
Total BOD	mg/L	ND	2	9373881				ND	2	9373881
Total Chemical Oxygen Demand (COD)	mg/L	11	4.0	9375571	11	4.0	9375571	15	4.0	9375571
Colour	TCU	32	2	9378318				34	2	9378318
Conductivity	umho/cm	24	1.0	9374368				47	1.0	9374464
Total Dissolved Solids	mg/L	60	10	9375224				35	10	9375224
Total Kjeldahl Nitrogen (TKN)	mg/L	0.22	0.10	9375676				0.23	0.10	9375676
pH	pH	6.93		9374369				8.63		9374465
Phenols-4AAP	mg/L	ND	0.0010	9376307				ND	0.0010	9376307
Total Phosphorus	mg/L	ND	0.020	9375668				ND	0.020	9375668
Total Suspended Solids	mg/L	ND	10	9375085				ND	10	9375085
Dissolved Sulphate (SO4)	mg/L	4.0	1.0	9374390				4.4	1.0	9379697
Turbidity	NTU	0.3	0.1	9374385				0.3	0.1	9376110
Alkalinity (Total as CaCO3)	mg/L	10	1.0	9374367				17	1.0	9374462
Dissolved Chloride (Cl-)	mg/L	ND	1.0	9374387				ND	1.0	9379695
Nitrite (N)	mg/L	ND	0.010	9374237				ND	0.010	9374460
Nitrate (N)	mg/L	ND	0.10	9374237				ND	0.10	9374460
Nitrate + Nitrite (N)	mg/L	ND	0.10	9374237				ND	0.10	9374460

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
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N/A = Not Applicable

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Bureau Veritas Job #: C4D1287
Report Date: 2024/05/13

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter
Sampler Initials: BM

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		ZBG905			ZBG906		
Sampling Date		2024/04/30 17:30			2024/04/30 17:45		
COC Number		880972			880972		
	UNITS	LSP-SW2 Lab-Dup	RDL	QC Batch	LSP-DP1-21	RDL	QC Batch
Calculated Parameters							
Hardness (CaCO3)	mg/L				110	1.0	9371099
Total Un-ionized Ammonia	mg/L				0.00085	0.00061	9369071
Field Measurements							
Field Temperature	Celsius				6.4	N/A	ONSITE
Field Measured pH	pH				5.94		ONSITE
Inorganics							
Total Ammonia-N	mg/L				5.8	0.050	9375301
Total BOD	mg/L				9	2	9373881
Total Chemical Oxygen Demand (COD)	mg/L				46	4.0	9375571
Colour	TCU				6	2	9378318
Conductivity	umho/cm				390	1.0	9374368
Total Dissolved Solids	mg/L				250	10	9375224
Total Kjeldahl Nitrogen (TKN)	mg/L				6.4	0.50	9375676
Dissolved Organic Carbon	mg/L				11	0.4	9375697
pH	pH				6.99		9374369
Phenols-4AAP	mg/L				ND	0.0010	9376307
Total Phosphorus	mg/L				0.089	0.020	9375668
Total Suspended Solids	mg/L				68	10	9375085
Dissolved Sulphate (SO4)	mg/L				33	1.0	9374390
Turbidity	NTU				89	0.1	9374385
Alkalinity (Total as CaCO3)	mg/L				160	1.0	9374367
Dissolved Chloride (Cl-)	mg/L				9.7	1.0	9374387
Nitrite (N)	mg/L	ND	0.010	9374460	0.023	0.010	9374237
Nitrate (N)	mg/L	ND	0.10	9374460	ND	0.10	9374237
Nitrate + Nitrite (N)	mg/L	ND	0.10	9374460	ND	0.10	9374237

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N/A = Not Applicable
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Bureau Veritas Job #: C4D1287
Report Date: 2024/05/13

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter
Sampler Initials: BM

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		ZBG907		
Sampling Date		2024/04/30 18:00		
COC Number		880972		
	UNITS	LSP-QAQC-SW1	RDL	QC Batch
Calculated Parameters				
Hardness (CaCO3)	mg/L	8.0	1.0	9372985
Total Un-ionized Ammonia	mg/L	ND	0.00061	9372143
Field Measurements				
Field Temperature	Celsius	4.7	N/A	ONSITE
Field Measured pH	pH	6.25		ONSITE
Inorganics				
Total Ammonia-N	mg/L	ND	0.050	9375301
Total BOD	mg/L	ND	2	9373881
Total Chemical Oxygen Demand (COD)	mg/L	16	4.0	9375571
Colour	TCU	29	2	9378318
Conductivity	umho/cm	24	1.0	9374368
Total Dissolved Solids	mg/L	60	10	9375224
Total Kjeldahl Nitrogen (TKN)	mg/L	0.25	0.10	9375676
pH	pH	6.79		9374369
Phenols-4AAP	mg/L	ND	0.0010	9376307
Total Phosphorus	mg/L	ND	0.020	9375668
Total Suspended Solids	mg/L	ND	10	9375085
Dissolved Sulphate (SO4)	mg/L	3.9	1.0	9374390
Turbidity	NTU	0.4	0.1	9374385
Alkalinity (Total as CaCO3)	mg/L	7.3	1.0	9374367
Dissolved Chloride (Cl-)	mg/L	ND	1.0	9374387
Nitrite (N)	mg/L	ND	0.010	9374237
Nitrate (N)	mg/L	ND	0.10	9374237
Nitrate + Nitrite (N)	mg/L	ND	0.10	9374237

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Bureau Veritas Job #: C4D1287
Report Date: 2024/05/13

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter
Sampler Initials: BM

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		ZBG904	ZBG905			ZBG905			ZBG906		
Sampling Date		2024/04/30 18:00	2024/04/30 17:30			2024/04/30 17:30			2024/04/30 17:45		
COC Number		880972	880972			880972			880972		
	UNITS	LSP-SW1	LSP-SW2	RDL	QC Batch	LSP-SW2 Lab-Dup	RDL	QC Batch	LSP-DP1-21	RDL	QC Batch
Metals											
Dissolved (0.2u) Aluminum (Al)	ug/L	150	110	5	9375525	120	5	9375525	ND	5	9375525
Dissolved Mercury (Hg)	ug/L	ND	ND	0.10	9377640				ND	0.10	9377640
Total Arsenic (As)	ug/L	ND	ND	1.0	9377280				8.1	1.0	9377280
Dissolved Barium (Ba)	ug/L								290	2.0	9374949
Total Barium (Ba)	ug/L	9.6	9.8	2.0	9377280				310	2.0	9377280
Total Beryllium (Be)	ug/L	ND	ND	0.40	9377280				ND	0.40	9377280
Dissolved Boron (B)	ug/L								290	10	9374949
Total Boron (B)	ug/L	ND	ND	10	9377280				290	10	9377280
Total Cadmium (Cd)	ug/L	ND	ND	0.090	9377280				ND	0.090	9377280
Dissolved Calcium (Ca)	ug/L								35000	200	9374949
Total Calcium (Ca)	ug/L	2200	2800	200	9377280				37000	200	9377280
Total Chromium (Cr)	ug/L	ND	ND	5.0	9377280				26	5.0	9377280
Total Cobalt (Co)	ug/L	ND	ND	0.50	9377280				30	0.50	9377280
Total Copper (Cu)	ug/L	1.1	1.2	0.90	9377280				19	0.90	9377280
Dissolved Iron (Fe)	ug/L								26000	100	9374949
Total Iron (Fe)	ug/L	ND	120	100	9377280				37000	100	9377280
Total Lead (Pb)	ug/L	ND	ND	0.50	9377280				2.2	0.50	9377280
Dissolved Magnesium (Mg)	ug/L								6200	50	9374949
Total Magnesium (Mg)	ug/L	560	660	50	9377280				6200	50	9377280
Dissolved Manganese (Mn)	ug/L								7200	2.0	9374949
Total Manganese (Mn)	ug/L	3.3	11	2.0	9377280				7400	2.0	9377280
Total Molybdenum (Mo)	ug/L	ND	ND	0.50	9377280				2.6	0.50	9377280
Total Nickel (Ni)	ug/L	ND	ND	1.0	9377280				29	1.0	9377280
Total Potassium (K)	ug/L	830	1000	200	9377280				15000	200	9377280
Total Selenium (Se)	ug/L	ND	ND	2.0	9377280				ND	2.0	9377280
Total Silicon (Si)	ug/L	4100	4400	50	9377280				6300	50	9377280
Total Silver (Ag)	ug/L	ND	ND	0.090	9377280				ND	0.090	9377280
Dissolved Sodium (Na)	ug/L								13000	100	9374949
Total Sodium (Na)	ug/L	1200	1600	100	9377280				13000	100	9377280

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Bureau Veritas Job #: C4D1287
Report Date: 2024/05/13

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter
Sampler Initials: BM

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		ZBG904	ZBG905			ZBG905			ZBG906		
Sampling Date		2024/04/30 18:00	2024/04/30 17:30			2024/04/30 17:30			2024/04/30 17:45		
COC Number		880972	880972			880972			880972		
	UNITS	**LSP-SW1**	**LSP-SW2**	**RDL**	**QC Batch**	**LSP-SW2 Lab-Dup**	**RDL**	**QC Batch**	**LSP-DP1-21**	**RDL**	**QC Batch**
Total Strontium (Sr)	ug/L	14	17	1.0	9377280				210	1.0	9377280
Total Thallium (Tl)	ug/L	ND	ND	0.050	9377280				ND	0.050	9377280
Total Titanium (Ti)	ug/L	ND	ND	5.0	9377280				28	5.0	9377280
Total Vanadium (V)	ug/L	ND	0.61	0.50	9377280				5.5	0.50	9377280
Total Zinc (Zn)	ug/L	ND	ND	5.0	9377280				200	5.0	9377280

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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		ZBG907		
Sampling Date		2024/04/30 18:00		
COC Number		880972		
	UNITS	LSP-QAQC-SW1	RDL	QC Batch
Metals				
Dissolved (0.2u) Aluminum (Al)	ug/L	150	5	9375525
Dissolved Mercury (Hg)	ug/L	ND	0.10	9377640
Total Arsenic (As)	ug/L	ND	1.0	9377280
Total Barium (Ba)	ug/L	9.6	2.0	9377280
Total Beryllium (Be)	ug/L	ND	0.40	9377280
Total Boron (B)	ug/L	ND	10	9377280
Total Cadmium (Cd)	ug/L	ND	0.090	9377280
Total Calcium (Ca)	ug/L	2500	200	9377280
Total Chromium (Cr)	ug/L	ND	5.0	9377280
Total Cobalt (Co)	ug/L	ND	0.50	9377280
Total Copper (Cu)	ug/L	1.2	0.90	9377280
Total Iron (Fe)	ug/L	ND	100	9377280
Total Lead (Pb)	ug/L	ND	0.50	9377280
Total Magnesium (Mg)	ug/L	580	50	9377280
Total Manganese (Mn)	ug/L	3.3	2.0	9377280
Total Molybdenum (Mo)	ug/L	ND	0.50	9377280
Total Nickel (Ni)	ug/L	ND	1.0	9377280
Total Potassium (K)	ug/L	880	200	9377280
Total Selenium (Se)	ug/L	ND	2.0	9377280
Total Silicon (Si)	ug/L	4300	50	9377280
Total Silver (Ag)	ug/L	ND	0.090	9377280
Total Sodium (Na)	ug/L	1300	100	9377280
Total Strontium (Sr)	ug/L	14	1.0	9377280
Total Thallium (Tl)	ug/L	ND	0.050	9377280
Total Titanium (Ti)	ug/L	ND	5.0	9377280
Total Vanadium (V)	ug/L	0.56	0.50	9377280
Total Zinc (Zn)	ug/L	ND	5.0	9377280

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Bureau Veritas Job #: C4D1287
Report Date: 2024/05/13

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter
Sampler Initials: BM

TEST SUMMARY

Bureau Veritas ID: ZBG904
Sample ID: LSP-SW1
Matrix: Water

Collected: 2024/04/30
Shipped:
Received: 2024/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	9375525	N/A	2024/05/07	Indira HarryPaul
Alkalinity	AT	9374367	N/A	2024/05/05	Surinder Rai
Biochemical Oxygen Demand (BOD)	DO	9373881	2024/05/04	2024/05/09	Amrutha Anilkumar
Chloride by Automated Colourimetry	SKAL	9374387	N/A	2024/05/09	Massarat Jan
Chemical Oxygen Demand	SPEC	9375571	N/A	2024/05/08	Neil Dassanayake
Colour	SPEC	9378318	N/A	2024/05/08	Gyulshen Idriz
Conductivity	AT	9374368	N/A	2024/05/05	Surinder Rai
Hardness (calculated as CaCO3)		9372985	N/A	2024/05/08	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	9377640	2024/05/07	2024/05/07	Gagandeep Rai
Total Metals Analysis by ICPMS	ICP/MS	9377280	2024/05/07	2024/05/07	Thuy Linh Nguyen
Total Ammonia-N	LACH/NH4	9375301	N/A	2024/05/06	Yogesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	9374237	N/A	2024/05/06	Samuel Law
pH	AT	9374369	2024/05/04	2024/05/05	Surinder Rai
Phenols (4AAP)	TECH/PHEN	9376307	N/A	2024/05/06	Chandra Nandlal
Field Measured pH	PH	ONSITE	N/A	2024/05/08	Christine Gripton
Sulphate by Automated Turbidimetry	SKAL	9374390	N/A	2024/05/09	Massarat Jan
Total Dissolved Solids	BAL	9375224	2024/05/06	2024/05/07	Razieh Tabesh
Field Measured pH	PH	ONSITE	N/A	2024/05/08	Christine Gripton
Total Kjeldahl Nitrogen in Water	SKAL	9375676	2024/05/06	2024/05/07	Rajni Tyagi
Total Phosphorus (Colourimetric)	SKAL/P	9375668	2024/05/06	2024/05/07	Muskan
Total Suspended Solids	BAL	9375085	2024/05/06	2024/05/07	Razieh Tabesh
Turbidity	AT	9374385	N/A	2024/05/04	Kien Tran
Un-ionized Ammonia	CALC/NH3	9372143	2024/05/08	2024/05/08	Automated Statchk

Bureau Veritas ID: ZBG904 Dup
Sample ID: LSP-SW1
Matrix: Water

Collected: 2024/04/30
Shipped:
Received: 2024/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chemical Oxygen Demand	SPEC	9375571	N/A	2024/05/08	Neil Dassanayake

Bureau Veritas ID: ZBG905
Sample ID: LSP-SW2
Matrix: Water

Collected: 2024/04/30
Shipped:
Received: 2024/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	9375525	N/A	2024/05/07	Indira HarryPaul
Alkalinity	AT	9374462	N/A	2024/05/11	Nachiketa Gohil
Biochemical Oxygen Demand (BOD)	DO	9373881	2024/05/04	2024/05/09	Amrutha Anilkumar
Chloride by Automated Colourimetry	SKAL	9379695	N/A	2024/05/09	Alina Dobreanu
Chemical Oxygen Demand	SPEC	9375571	N/A	2024/05/08	Neil Dassanayake
Colour	SPEC	9378318	N/A	2024/05/08	Gyulshen Idriz
Conductivity	AT	9374464	N/A	2024/05/11	Nachiketa Gohil
Hardness (calculated as CaCO3)		9372985	N/A	2024/05/09	Automated Statchk

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Bureau Veritas Job #: C4D1287
Report Date: 2024/05/13

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter
Sampler Initials: BM

TEST SUMMARY

Bureau Veritas ID: ZBG905
Sample ID: LSP-SW2
Matrix: Water

Collected: 2024/04/30
Shipped:
Received: 2024/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Mercury in Water by CVAA	CV/AA	9377640	2024/05/07	2024/05/07	Gagandeep Rai
Total Metals Analysis by ICPMS	ICP/MS	9377280	2024/05/07	2024/05/07	Thuy Linh Nguyen
Total Ammonia-N	LACH/NH4	9375301	N/A	2024/05/06	Yogesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	9374460	N/A	2024/05/07	Jinal Chavda
pH	AT	9374465	2024/05/04	2024/05/10	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9376307	N/A	2024/05/06	Chandra Nandlal
Field Measured pH	PH	ONSITE	N/A	2024/05/08	Christine Gripton
Sulphate by Automated Turbidimetry	SKAL	9379697	N/A	2024/05/09	Alina Dobreanu
Total Dissolved Solids	BAL	9375224	2024/05/06	2024/05/07	Razieh Tabesh
Field Measured pH	PH	ONSITE	N/A	2024/05/08	Christine Gripton
Total Kjeldahl Nitrogen in Water	SKAL	9375676	2024/05/06	2024/05/07	Rajni Tyagi
Total Phosphorus (Colourimetric)	SKAL/P	9375668	2024/05/06	2024/05/07	Muskan
Total Suspended Solids	BAL	9375085	2024/05/06	2024/05/07	Razieh Tabesh
Turbidity	AT	9376110	N/A	2024/05/06	Gurparteek KAUR
Un-ionized Ammonia	CALC/NH3	9372143	2024/05/08	2024/05/08	Automated Statchk

Bureau Veritas ID: ZBG905 Dup
Sample ID: LSP-SW2
Matrix: Water

Collected: 2024/04/30
Shipped:
Received: 2024/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	9375525	N/A	2024/05/07	Indira HarryPaul
Nitrate & Nitrite as Nitrogen in Water	LACH	9374460	N/A	2024/05/07	Jinal Chavda

Bureau Veritas ID: ZBG906
Sample ID: LSP-DP1-21
Matrix: Water

Collected: 2024/04/30
Shipped:
Received: 2024/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	9375525	N/A	2024/05/07	Indira HarryPaul
Alkalinity	AT	9374367	N/A	2024/05/05	Surinder Rai
Biochemical Oxygen Demand (BOD)	DO	9373881	2024/05/04	2024/05/09	Amrutha Anilkumar
Chloride by Automated Colourimetry	SKAL	9374387	N/A	2024/05/09	Massarat Jan
Chemical Oxygen Demand	SPEC	9375571	N/A	2024/05/08	Neil Dassanayake
Colour	SPEC	9378318	N/A	2024/05/08	Gyulshen Idriz
Conductivity	AT	9374368	N/A	2024/05/05	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9375697	N/A	2024/05/06	Gyulshen Idriz
Hardness (calculated as CaCO3)		9371099	N/A	2024/05/08	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	9377640	2024/05/07	2024/05/07	Gagandeep Rai
Dissolved Metals by ICPMS	ICP/MS	9374949	N/A	2024/05/07	Azita Fazaeli
Total Metals Analysis by ICPMS	ICP/MS	9377280	2024/05/07	2024/05/07	Thuy Linh Nguyen
Total Ammonia-N	LACH/NH4	9375301	N/A	2024/05/06	Yogesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	9374237	N/A	2024/05/06	Samuel Law
pH	AT	9374369	2024/05/04	2024/05/05	Surinder Rai

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Bureau Veritas Job #: C4D1287
Report Date: 2024/05/13

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter
Sampler Initials: BM

TEST SUMMARY

Bureau Veritas ID: ZBG906
Sample ID: LSP-DP1-21
Matrix: Water

Collected: 2024/04/30
Shipped:
Received: 2024/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Phenols (4AAP)	TECH/PHEN	9376307	N/A	2024/05/06	Chandra Nandlal
Field Measured pH	PH	ONSITE	N/A	2024/05/02	Rupinder Kaur
Sulphate by Automated Turbidimetry	SKAL	9374390	N/A	2024/05/09	Massarat Jan
Total Dissolved Solids	BAL	9375224	2024/05/06	2024/05/07	Razieh Tabesh
Field Measured pH	PH	ONSITE	N/A	2024/05/02	Rupinder Kaur
Total Kjeldahl Nitrogen in Water	SKAL	9375676	2024/05/06	2024/05/08	Rajni Tyagi
Total Phosphorus (Colourimetric)	SKAL/P	9375668	2024/05/06	2024/05/07	Muskan
Total Suspended Solids	BAL	9375085	2024/05/06	2024/05/07	Razieh Tabesh
Turbidity	AT	9374385	N/A	2024/05/04	Kien Tran
Un-ionized Ammonia	CALC/NH3	9369071	2024/05/08	2024/05/08	Automated Statchk

Bureau Veritas ID: ZBG907
Sample ID: LSP-QAQC-SW1
Matrix: Water

Collected: 2024/04/30
Shipped:
Received: 2024/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	9375525	N/A	2024/05/07	Indira HarryPaul
Alkalinity	AT	9374367	N/A	2024/05/05	Surinder Rai
Biochemical Oxygen Demand (BOD)	DO	9373881	2024/05/04	2024/05/09	Amrutha Anilkumar
Chloride by Automated Colourimetry	SKAL	9374387	N/A	2024/05/09	Massarat Jan
Chemical Oxygen Demand	SPEC	9375571	N/A	2024/05/08	Neil Dassanayake
Colour	SPEC	9378318	N/A	2024/05/08	Gyulshen Idriz
Conductivity	AT	9374368	N/A	2024/05/05	Surinder Rai
Hardness (calculated as CaCO3)		9372985	N/A	2024/05/08	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	9377640	2024/05/07	2024/05/07	Gagandeep Rai
Total Metals Analysis by ICPMS	ICP/MS	9377280	2024/05/07	2024/05/07	Thuy Linh Nguyen
Total Ammonia-N	LACH/NH4	9375301	N/A	2024/05/06	Yogesh Patel
Nitrate & Nitrite as Nitrogen in Water	LACH	9374237	N/A	2024/05/06	Samuel Law
pH	AT	9374369	2024/05/04	2024/05/05	Surinder Rai
Phenols (4AAP)	TECH/PHEN	9376307	N/A	2024/05/06	Chandra Nandlal
Field Measured pH	PH	ONSITE	N/A	2024/05/08	Christine Gripton
Sulphate by Automated Turbidimetry	SKAL	9374390	N/A	2024/05/09	Massarat Jan
Total Dissolved Solids	BAL	9375224	2024/05/06	2024/05/07	Razieh Tabesh
Field Measured pH	PH	ONSITE	N/A	2024/05/08	Christine Gripton
Total Kjeldahl Nitrogen in Water	SKAL	9375676	2024/05/06	2024/05/07	Rajni Tyagi
Total Phosphorus (Colourimetric)	SKAL/P	9375668	2024/05/06	2024/05/07	Muskan
Total Suspended Solids	BAL	9375085	2024/05/06	2024/05/07	Razieh Tabesh
Turbidity	AT	9374385	N/A	2024/05/04	Kien Tran
Un-ionized Ammonia	CALC/NH3	9372143	2024/05/08	2024/05/08	Automated Statchk

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	1.0°C

Results relate only to the items tested.

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Bureau Veritas Job #: C4D1287
Report Date: 2024/05/13

QUALITY ASSURANCE REPORT

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter
Sampler Initials: BM

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9373881	Total BOD	2024/05/09					ND,RDL=2	mg/L	9.6	30	98	80 - 120
9374237	Nitrate (N)	2024/05/06	92	80 - 120	88	80 - 120	ND, RDL=0.10	mg/L	0.54	20		
9374237	Nitrite (N)	2024/05/06	84	80 - 120	101	80 - 120	ND, RDL=0.010	mg/L	NC	20		
9374367	Alkalinity (Total as CaCO3)	2024/05/05			101	85 - 115	ND, RDL=1.0	mg/L	1.8	20		
9374368	Conductivity	2024/05/05			102	85 - 115	ND, RDL=1.0	umho/cm	0	10		
9374369	pH	2024/05/05			102	98 - 103			0.98	N/A		
9374385	Turbidity	2024/05/04			99	80 - 120	ND, RDL=0.1	NTU	1.9	20		
9374387	Dissolved Chloride (Cl-)	2024/05/09	NC	80 - 120	102	80 - 120	ND, RDL=1.0	mg/L	0.017	20		
9374390	Dissolved Sulphate (SO4)	2024/05/09	NC	75 - 125	101	80 - 120	ND, RDL=1.0	mg/L	0.62	20		
9374460	Nitrate (N)	2024/05/07	99	80 - 120	100	80 - 120	ND, RDL=0.10	mg/L	NC	20		
9374460	Nitrite (N)	2024/05/07	102	80 - 120	103	80 - 120	ND, RDL=0.010	mg/L	NC	20		
9374462	Alkalinity (Total as CaCO3)	2024/05/11			100	85 - 115	ND, RDL=1.0	mg/L	4.2	20		
9374464	Conductivity	2024/05/11			101	85 - 115	ND, RDL=1.0	umho/cm	1.1	10		
9374465	pH	2024/05/10			102	98 - 103			0.24	N/A		
9374949	Dissolved Barium (Ba)	2024/05/07	100	80 - 120	96	80 - 120	ND, RDL=2.0	ug/L	1.8	20		
9374949	Dissolved Boron (B)	2024/05/07	100	80 - 120	97	80 - 120	ND, RDL=10	ug/L	1.2	20		
9374949	Dissolved Calcium (Ca)	2024/05/07	NC	80 - 120	94	80 - 120	ND, RDL=200	ug/L				
9374949	Dissolved Iron (Fe)	2024/05/07	104	80 - 120	100	80 - 120	ND, RDL=100	ug/L				
9374949	Dissolved Magnesium (Mg)	2024/05/07	NC	80 - 120	96	80 - 120	ND, RDL=50	ug/L				
9374949	Dissolved Manganese (Mn)	2024/05/07	100	80 - 120	97	80 - 120	ND, RDL=2.0	ug/L				
9374949	Dissolved Sodium (Na)	2024/05/07	NC	80 - 120	98	80 - 120	ND, RDL=100	ug/L	0.064	20		
9375085	Total Suspended Solids	2024/05/07			95	80 - 120	ND, RDL=10	mg/L	NC	20		
9375224	Total Dissolved Solids	2024/05/07			98	80 - 120	ND, RDL=10	mg/L	2.0	20		
9375301	Total Ammonia-N	2024/05/06	95	75 - 125	106	80 - 120	ND, RDL=0.050	mg/L	1.1	20		
9375525	Dissolved (0.2u) Aluminum (Al)	2024/05/07	98	80 - 120	95	80 - 120	ND,RDL=5	ug/L	1.1	20		
9375571	Total Chemical Oxygen Demand (COD)	2024/05/08	102	80 - 120	100	80 - 120	ND, RDL=4.0	mg/L	3.3	20		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9375668	Total Phosphorus	2024/05/07	91	80 - 120	97	80 - 120	ND, RDL=0.020	mg/L	1.8	20	96	80 - 120
9375676	Total Kjeldahl Nitrogen (TKN)	2024/05/08	NC	80 - 120	104	80 - 120	ND, RDL=0.10	mg/L	7.1	20	99	80 - 120
9375697	Dissolved Organic Carbon	2024/05/06	NC	80 - 120	99	80 - 120	ND, RDL=0.4	mg/L	0.047	20		
9376110	Turbidity	2024/05/06			99	80 - 120	ND, RDL=0.1	NTU	NC	20		
9376307	Phenols-4AAP	2024/05/06	98	80 - 120	99	80 - 120	ND, RDL=0.0010	mg/L	NC	20		
9377280	Total Arsenic (As)	2024/05/07	99	80 - 120	101	80 - 120	ND, RDL=1.0	ug/L	1.4	20		
9377280	Total Barium (Ba)	2024/05/07	97	80 - 120	98	80 - 120	ND, RDL=2.0	ug/L	0.086	20		
9377280	Total Beryllium (Be)	2024/05/07	96	80 - 120	96	80 - 120	ND, RDL=0.40	ug/L	NC	20		
9377280	Total Boron (B)	2024/05/07	97	80 - 120	96	80 - 120	ND, RDL=10	ug/L	3.0	20		
9377280	Total Cadmium (Cd)	2024/05/07	97	80 - 120	96	80 - 120	ND, RDL=0.090	ug/L	NC	20		
9377280	Total Calcium (Ca)	2024/05/07	NC	80 - 120	99	80 - 120	ND, RDL=200	ug/L	0.019	20		
9377280	Total Chromium (Cr)	2024/05/07	98	80 - 120	97	80 - 120	ND, RDL=5.0	ug/L	NC	20		
9377280	Total Cobalt (Co)	2024/05/07	99	80 - 120	98	80 - 120	ND, RDL=0.50	ug/L	NC	20		
9377280	Total Copper (Cu)	2024/05/07	100	80 - 120	99	80 - 120	ND, RDL=0.90	ug/L	NC	20		
9377280	Total Iron (Fe)	2024/05/07	101	80 - 120	98	80 - 120	ND, RDL=100	ug/L	0.69	20		
9377280	Total Lead (Pb)	2024/05/07	96	80 - 120	97	80 - 120	ND, RDL=0.50	ug/L	NC	20		
9377280	Total Magnesium (Mg)	2024/05/07	92	80 - 120	96	80 - 120	ND, RDL=50	ug/L	4.0	20		
9377280	Total Manganese (Mn)	2024/05/07	93	80 - 120	92	80 - 120	ND, RDL=2.0	ug/L	1.2	20		
9377280	Total Molybdenum (Mo)	2024/05/07	103	80 - 120	103	80 - 120	ND, RDL=0.50	ug/L	11	20		
9377280	Total Nickel (Ni)	2024/05/07	93	80 - 120	94	80 - 120	ND, RDL=1.0	ug/L	NC	20		
9377280	Total Potassium (K)	2024/05/07	98	80 - 120	98	80 - 120	ND, RDL=200	ug/L	0.027	20		
9377280	Total Selenium (Se)	2024/05/07	103	80 - 120	102	80 - 120	ND, RDL=2.0	ug/L	NC	20		
9377280	Total Silicon (Si)	2024/05/07	97	80 - 120	98	80 - 120	ND, RDL=50	ug/L	2.2	20		
9377280	Total Silver (Ag)	2024/05/07	91	80 - 120	91	80 - 120	ND, RDL=0.090	ug/L	NC	20		
9377280	Total Sodium (Na)	2024/05/07	99	80 - 120	101	80 - 120	ND, RDL=100	ug/L	1.0	20		
9377280	Total Strontium (Sr)	2024/05/07	92	80 - 120	93	80 - 120	ND, RDL=1.0	ug/L	1.2	20		
9377280	Total Thallium (Tl)	2024/05/07	97	80 - 120	97	80 - 120	ND, RDL=0.050	ug/L	NC	20		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9377280	Total Titanium (Ti)	2024/05/07	97	80 - 120	97	80 - 120	ND, RDL=5.0	ug/L	NC	20		
9377280	Total Vanadium (V)	2024/05/07	97	80 - 120	96	80 - 120	ND, RDL=0.50	ug/L	NC	20		
9377280	Total Zinc (Zn)	2024/05/07	98	80 - 120	101	80 - 120	ND, RDL=5.0	ug/L	NC	20		
9377640	Dissolved Mercury (Hg)	2024/05/07	95	75 - 125	94	80 - 120	ND, RDL=0.10	ug/L	NC	20		
9378318	Colour	2024/05/08			99	80 - 120	ND,RDL=2	TCU	NC	25		
9379695	Dissolved Chloride (Cl-)	2024/05/09	NC	80 - 120	95	80 - 120	ND, RDL=1.0	mg/L	0.56	20		
9379697	Dissolved Sulphate (SO4)	2024/05/09	92	75 - 125	97	80 - 120	ND, RDL=1.0	mg/L	0.25	20		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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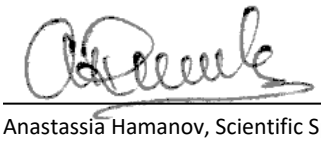
Bureau Veritas Job #: C4D1287
Report Date: 2024/05/13

BluMetric Environmental Inc
Client Project #: 240205-04
Site Location: Lake St. Peter
Sampler Initials: BM

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Anastassia Hamanov, Scientific Specialist

Christine Gripton, Senior Project Manager

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

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Lake St. Peter SW

Custody Tracking Form

T880972

Please use this form for custody tracking when submitting the work instructions via eCOC (electronic Chain of Custody). Please ensure your form has a barcode or a Bureau Veritas eCOC confirmation number in the top right hand side. This number links your electronic submission to your samples. This form should be placed in the cooler with your samples.

First Sample: LSP-SW1
Last Sample: LSP-QAQC-SW1
Sample Count: 4

Relinquished By				Received By			
Brad M'Callum	Brad M'Cal	Date	2024/05/01	VIJAY PATEL	VIJ	Date	2024/05/02
		Time (24 HR)	08:00			Time (24 HR)	09:11
Print	Sign	Date	YYYY/MM/DD	Print	Sign	Date	YYYY/MM/DD
		Time (24 HR)	HH:MM			Time (24 HR)	HH:MM
Print	Sign	Date	YYYY/MM/DD	Print	Sign	Date	YYYY/MM/DD
		Time (24 HR)	HH:MM			Time (24 HR)	HH:MM

Unless otherwise agreed to, submissions and use of services are governed by Bureau Veritas' standard terms and conditions which can be found at www.bvna.com.

Triage Information

Sampled By (Print): Brad M'Callum / Matthew DeGeer

# of Coolers/Pkgs: 1

Rush ☐ Immediate Test ☐ Food Residue ☐

Micro ☐ Food Chemistry ☐

*** LABORATORY USE ONLY ***

Received At

Labeled By

Verified By

Lab Comments:

02-May-24 09:11
Christine Gripton
C4D1287
AK0 ENV-1279

Custody Seal		Cooling Media	Temperature °C		
Present (Y/N)	Intact (Y/N)	Present (Y/N)	1	2	3
Y	Y	Y	0	2	1
Drinking Water Metals Preservation Check Done (Circle)			YES		NO

COR FCD-00383/4

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Appendix D

D-4 Groundwater QA/QC

Table D-4: Municpality of Hastings Highlands Groundwater QA/QC Results		Site Name	Lake St. Peter WDS	Lake St. Peter WDS	RPD	Lake St. Peter WDS	Lake St. Peter WDS	RPD
		Location	LSP4-19	LSP4-19		LSP6-23	LSP6-23	
Parameter	Units	Sample ID	LSP4-19	LSP-QAQC-GW1		LSP6-23	LSP-QAQC-GW1	
		Sample Date	2024-04-30	2024-04-30		2024-10-28	2024-10-28	
Anions		Detection Limit						
Chloride	mg/L	1	28	28	0%	<1	<1	NC
Nitrate as N	mg/L	0.1	2.9	2.93	1%	<0.1	<0.1	NC
Sulphate	mg/L	1	7.7	7.6	1%	6.4	6.4	0%
Cations								
Calcium (diss)	mg/L	0.2	35	34	3%	9.1	9.2	1%
Magnesium (diss)	mg/L	0.05	4.9	5	2%	2.6	2.7	4%
Sodium (diss)	mg/L	0.1	20	20	0%	2.5	2.6	4%
General Chemistry								
Alkalinity (as CaCO3)	mg/L	1	110	120	9%	41	40	2%
Ammonia as N	mg/L	0.05	1.8	1.8	0%	<0.05	<0.05	NC
Dissolved Organic Carbon	mg/L	0.4	5.5	5.5	0%	1.2	1.4	NC
Electrical Conductivity	uS/cm	1	370	370	0%	100	100	0%
Total Dissolved Solids	mg/L	10	315	315	0%	115	120	4%
Total Suspended Solids	mg/L	100, 200	40000	35000	13%	4500	4500	0%
pH	pH units		7.24	8.04	10%	7.33	7.22	2%
Metals								
Barium (diss)	mg/L	0.002	0.099	0.097	2%	0.0095	0.01	NC
Boron (diss)	mg/L	0.01	0.39	0.37	5%	0.017	0.016	NC
Iron (diss)	mg/L	0.1	<0.1	<0.1	NC	0.21	0.26	NC
Manganese (diss)	mg/L	0.002	3.9	3.9	0%	0.45	0.45	0%

Notes:

Detection Limit	May vary between sample locations and events
RPD	Relative Percent Difference
NC	No Calculation; the concentrations of at least one duplicate sample was non-detect or measured at a concentration less than 5 times the Detection Limit
Orange	RPD exceeds 10% for electrical conductivity and 20% for metals and inorganics

*Guidance Manual for Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment, Volume 1 Guidance Manual, Canadian Council of Ministers of the Environment, 2016

Table D-4: Municipality of Hastings Highlands Groundwater QA/QC Results - VOCs		Site Name	Lake St. Peter WDS	Lake St. Peter WDS	RPD
		Location	LSP4-19	LSP4-19	
		Interval	LSP4-19	LSP4-19	
Parameter	Units	Sample ID	LSP4-19	LSP-QAQC-GW1	
		Sample Date	2024-04-30	2024-04-30	
VOCs		**Detection Limit**			
1,1,1,2-Tetrachloroethane	mg/L	0.0005	<0.0005	<0.0005	NC
1,1,1-Trichloroethane	mg/L	0.0002	<0.0002	<0.0002	NC
1,1,2,2-Tetrachloroethane	mg/L	0.0004	<0.0004	<0.0004	NC
1,1,2-Trichloroethane	mg/L	0.0004	<0.0004	<0.0004	NC
1,1-Dichloroethane	mg/L	0.0002	0.00021	0.00022	NC
1,1-Dichloroethylene	mg/L	0.0002	<0.0002	<0.0002	NC
1,2-Dichlorobenzene	mg/L	0.0004	<0.0004	<0.0004	NC
1,2-Dichloroethane	mg/L	0.00049	<0.00049	<0.00049	NC
1,2-Dichloropropane	mg/L	0.0002	<0.0002	<0.0002	NC
1,3-Dichlorobenzene	mg/L	0.0004	<0.0004	<0.0004	NC
1,4-Dichlorobenzene	mg/L	0.0004	<0.0004	<0.0004	NC
Acetone	mg/L	0.01	<0.01	<0.01	NC
Benzene	mg/L	0.0002	0.00029	0.00029	NC
Bromodichloromethane	mg/L	0.0005	<0.0005	<0.0005	NC
Bromoform	mg/L	0.001	<0.001	<0.001	NC
Bromomethane	mg/L	0.0005	<0.0005	<0.0005	NC
Carbon Tetrachloride	mg/L	0.00019	<0.00019	<0.00019	NC
Chlorobenzene	mg/L	0.0002	<0.0002	<0.0002	NC
Chloroform	mg/L	0.0002	<0.0002	<0.0002	NC
Dibromochloromethane	mg/L	0.0005	<0.0005	<0.0005	NC
Dichlorodifluoromethane	mg/L	0.001	<0.001	<0.001	NC
Dichloromethane	mg/L	0.002	<0.002	<0.002	NC
Ethylbenzene	mg/L	0.0002	<0.0002	<0.0002	NC
Ethylene Dibromide	mg/L	0.00019	<0.00019	<0.00019	NC
Hexane	mg/L	0.001	<0.001	<0.001	NC
Methyl Ethyl Ketone	mg/L	0.01	<0.01	<0.01	NC
Methyl Isobutyl Ketone	mg/L	0.005	<0.005	<0.005	NC
Methyl tertiary-butyl ether (MTBE)	mg/L	0.0005	<0.0005	<0.0005	NC
Styrene	mg/L	0.0004	<0.0004	<0.0004	NC
Tetrachloroethylene	mg/L	0.0002	<0.0002	<0.0002	NC
Toluene	mg/L	0.0002	<0.0002	<0.0002	NC
Trichloroethylene	mg/L	0.0002	<0.0002	<0.0002	NC
Trichlorofluoromethane	mg/L	0.0005	<0.0005	<0.0005	NC
Vinyl Chloride	mg/L	0.0002	<0.0002	<0.0002	NC
Xylenes, m+p	mg/L	0.0002	<0.0002	<0.0002	NC
Xylenes, total	mg/L	0.0002	<0.0002	<0.0002	NC
cis-1,2-Dichloroethylene	mg/L	0.0005	<0.0005	<0.0005	NC
cis-1,3-Dichloropropene	mg/L	0.0003	<0.0003	<0.0003	NC
o-Xylene	mg/L	0.0002	<0.0002	<0.0002	NC
trans-1,2-Dichloroethylene	mg/L	0.0005	<0.0005	<0.0005	NC
trans-1,3-Dichloropropene	mg/L	0.0004	<0.0004	<0.0004	NC

Notes:

Detection Limit	May vary between sample locations and events
RPD	Relative Percent Difference
NC	No Calculation; the concentrations of at least one duplicate sample was non-detect or measured at a concentration less than 5 times the Detection Limit
Orange	RPD exceeds 10% for electrical conductivity and 20% for metals and inorganics

*Guidance Manual for Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment, Volume 1 Guidance Manual, Canadian Council of Ministers of the Environment, 2016

Appendix D

D-5 Surface Water QA/QC

Table D-5: Municipality of Hastings Highlands Surface Water QA/QC Results		Site Name	Lake St. Peter WDS	Lake St. Peter WDS	RPD
		Location	LSP-SW1	LSP-SW1	
		Interval	LSP-SW1	LSP-SW1	
Parameter	Units	Sample ID	LSP-SW1	LSP-QAQC-SW1	
		Sample Date	2024-04-30	2024-04-30	
Anions		**Detection Limit**			
Chloride	mg/L	1	<1	<1	NC
Nitrate + Nitrite	mg/L	0.1	<0.1	<0.1	NC
Nitrate as N	mg/L	0.1	<0.1	<0.1	NC
Nitrite as N	mg/L	0.01	<0.01	<0.01	NC
Sulphate	mg/L	1	4	3.9	NC
Cations					
Calcium (tot)	mg/L	0.2	2.2	2.5	13%
Magnesium (tot)	mg/L	0.05	0.56	0.58	4%
Potassium (tot)	mg/L	0.2	0.83	0.88	NC
Sodium (tot)	mg/L	0.1	1.2	1.3	8%
Field Parameters					
Temperature	deg. C		6.4	4.7	31%
pH (Field)	pH units		5.94	6.25	5%
General Chemistry					
Alkalinity (as CaCO3)	mg/L	1	10	7.3	31%
Ammonia as N	mg/L	0.05	<0.05	<0.05	NC
Biochemical Oxygen Demand	mg/L	2	<2	<2	NC
Chemical Oxygen Demand	mg/L	4	11	16	NC
Colour	TCU	2	32	29	10%
Electrical Conductivity	uS/cm	1	24	24	0%
Hardness (as CaCO3)	mg/L	1	8.2	8	2%
Phenols	mg/L	0.001	<0.001	<0.001	NC
Total Dissolved Solids	mg/L	10	60	60	0%
Total Kjeldahl Nitrogen	mg/L	0.1	0.22	0.25	NC
Total Phosphorus	mg/L	0.02	<0.02	<0.02	NC
Total Suspended Solids	mg/L	10	<10	<10	NC
Turbidity	NTU	0.1	0.3	0.4	NC
Unionized Ammonia (Calc)	mg/L	0.00061	<0.00061	<0.00061	NC
pH	pH units		6.93	6.79	2%
Metals					
Aluminum (diss, 0.2 µm)	mg/L	0.005	0.15	0.15	0%
Arsenic (tot)	mg/L	0.001	<0.001	<0.001	NC
Barium (tot)	mg/L	0.002	0.0096	0.0096	NC
Beryllium (tot)	mg/L	0.0004	<0.0004	<0.0004	NC
Boron (tot)	mg/L	0.01	<0.01	<0.01	NC
Cadmium (tot)	mg/L	0.00009	<0.00009	<0.00009	NC
Chromium (tot)	mg/L	0.005	<0.005	<0.005	NC
Cobalt (tot)	mg/L	0.0005	<0.0005	<0.0005	NC
Copper (tot)	mg/L	0.0009	0.0011	0.0012	NC
Iron (tot)	mg/L	0.1	<0.1	<0.1	NC
Lead (tot)	mg/L	0.0005	<0.0005	<0.0005	NC
Manganese (tot)	mg/L	0.002	0.0033	0.0033	NC
Mercury (diss)	mg/L	0.0001	<0.0001	<0.0001	NC
Molybdenum (tot)	mg/L	0.0005	<0.0005	<0.0005	NC
Nickel (tot)	mg/L	0.001	<0.001	<0.001	NC
Selenium (tot)	mg/L	0.002	<0.002	<0.002	NC
Silicon (tot)	mg/L	0.05	4.1	4.3	5%
Silver (tot)	mg/L	0.00009	<0.00009	<0.00009	NC
Strontium (tot)	mg/L	0.001	0.014	0.014	0%
Thallium (tot)	mg/L	0.00005	<0.00005	<0.00005	NC
Titanium (tot)	mg/L	0.005	<0.005	<0.005	NC
Vanadium (tot)	mg/L	0.0005	<0.0005	0.00056	NC
Zinc (tot)	mg/L	0.005	<0.005	<0.005	NC

Notes:

Detection Limit	May vary between sample locations and events
RPD	Relative Percent Difference
NC	No Calculation; the concentrations of at least one duplicate sample was non-detect or measured at a concentration less than 5 times the Detection Limit
Orange	RPD exceeds 10% for electrical conductivity and 20% for metals and inorganics

*Guidance Manual for Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment, Volume 1 Guidance Manual, Canadian Council of Ministers of the Environment, 2016

Appendix D

D-6 Surface Water Toxicity Reports

NAUTILUS ENVIRONMENTAL
B-11 Nicholas Beaver Road
Puslinch, ON N0B 2J0
Tel. (519) 763-4412
Fax. (519) 763-4419

TOXICITY TEST REPORT

Daphnia magna
EPS 1/RM/14

Work Order : 254949
Sample Number : 82638

SAMPLE IDENTIFICATION

Company :	Bureau Veritas Laboratories		
Location :	Mississauga ON	Sampling Date :	2024-06-03
Job Number :	C4G7005	Sampling Time :	10:35
Substance :	LSP-Culvert	Date Received :	2024-06-05
Sampling Method :	Not provided	Time Received :	14:30
Sampled By :	B. McCallum	Temperature at Receipt :	21 °C
Sample Description :	Clear, brown	Date Tested :	2024-06-06

Test Method : Reference Method for Determining Acute Lethality of Effluents to *Daphnia magna* . Environment Canada EPS 1/RM/14 (Second Edition, December 2000, with February 2016 amendments).

48-HOUR TEST RESULTS

Substance	Effect	Value
Control	Mean Immobility	0.0 %
	Mean Mortality	0.0 %
100%	Mean Immobility	0.0 %
	Mean Mortality	0.0 %

The results reported relate only to the sample tested and as received.

TEST ORGANISM

Species :	*Daphnia magna*	Time to First Brood :	7.8 days
Organism Batch :	Dm24-10	Average Brood Size :	33.8
Culture Mortality :	1.0% (previous 7 days)		

TEST CONDITIONS

Sample Treatment :	None	Number of Replicates :	3
pH Adjustment :	None	Organisms per Replicate :	10
Pre-aeration Rate :	~30 mL/min/L	Organisms per Test Level :	30
Duration of Pre-Aeration :	0 minutes	Organism Loading Rate :	15.0 mL/organism
Test Aeration :	None	Impaired Control Organisms :	0.0%
Hardness Adjustment :	None	Test Method Deviation(s) :	None

REFERENCE TOXICANT DATA

Toxicant :	Sodium Chloride		
Date Tested :	2024-06-04	LC50 :	6.3 g/L
Organism Batch :	Dm24-10	95% Confidence Limits :	5.8 - 6.8 g/L
Analyst(s) :	JN, AA	Historical Mean LC50 :	6.4 g/L
Statistical Method :	Binomial	Warning Limits (± 2SD) :	5.9 - 6.8 g/L

COMMENTS

- All test validity criteria as specified in the test method were satisfied.

Approved By : _____

Project Manager

Work Order : 254949
Sample Number : 82638

TEST DATA

	pH	Dissolved O_2 (mg/L)	Conductivity (µmhos/cm)	Temperature (°C)	O_2 Saturation (%)*	Hardness (as $CaCO_3$)
Initial Chemistry (100%) :	6.5	8.2	129	21	97	70 mg/L

0 HOURS

Date & Time : 2024-06-06 11:35
Analyst(s) : AA (PG)/JW

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature	O_2 Saturation*	Hardness
100	A	0	0	6.5	8.2	129	21	97	70
100	B	0	0	6.5	8.2	129	21	97	70
100	C	0	0	6.5	8.2	129	21	97	70
Control	A	0	0	8.1	8.5	457	21	100	140
Control	B	0	0	8.1	8.5	457	21	100	140
Control	C	0	0	8.1	8.5	457	21	100	140

Notes:

24 HOURS

Date & Time : 2024-06-07 10:50
Analyst(s) : GR (NM)

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature
100	A	–	0	–	–	–	20
100	B	–	0	–	–	–	20
100	C	–	0	–	–	–	20
Control	A	–	0	–	–	–	20
Control	B	–	0	–	–	–	20
Control	C	–	0	–	–	–	20

Notes:

48 HOURS

Date & Time : 2024-06-08 11:10
Analyst(s) : NM

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature
100	A	0	0	7.7	8.2	135	21
100	B	0	0	7.7	8.2	134	21
100	C	0	0	7.8	8.2	134	21
Control	A	0	0	8.4	8.3	464	21
Control	B	0	0	8.3	8.2	461	21
Control	C	0	0	8.4	8.2	463	21

Notes:

Number immobile does not include number dead.

"–" = not measured/not required

* adjusted for temperature and barometric pressure

Test Data Reviewed By : JL
Date : 2024-06-10

NAUTILUS ENVIRONMENTAL
B-11 Nicholas Beaver Road
Puslinch, ON N0B 2J0
Tel. (519) 763-4412
Fax. (519) 763-4419

TOXICITY TEST REPORT
Rainbow Trout
EPS 1/RM/13

Work Order : 254949
Sample Number : 82638

SAMPLE IDENTIFICATION

Company :	Bureau Veritas Laboratories		
Location :	Mississauga ON	Sampling Date :	2024-06-03
Job Number :	C4G7005	Sampling Time :	10:35
Substance :	LSP-Culvert	Date Received :	2024-06-05
Sampling Method :	Not provided	Time Received :	14:30
Sampled By :	B. McCallum	Temperature at Receipt :	21 °C
Sample Description :	Clear, brown	Date Tested :	2024-06-06

Test Method(s) : Reference Method for Determining Acute Lethality of Liquid Effluents to Rainbow Trout. Environment Canada, EPS 1/RM/13 (2nd Edition, December 2000, with May 2007, February 2016, and December 2023 amendments).

96-HOUR TEST RESULTS

Substance	Effect	Value
Control	Mean Impairment	0.0 %
	Mean Mortality	0.0 %
100%	Mean Impairment	0.0 %
	Mean Mortality	0.0 %

The results reported relate only to the sample tested and as received.

TEST ORGANISM

Test Organism :	*Oncorhynchus mykiss*	Mean Fork Length :	45.3 mm
Organism Batch :	T24-10	Range of Fork Lengths :	40 - 48 mm
Control Sample Size :	10	Mean Wet Weight :	0.8 g
Cumulative stock mortality rate :	0.2% (previous 7 days)	Organism Loading Rate :	0.4 g/L
Control organisms showing stress :	0 (at test completion)		

TEST CONDITIONS

Test Type :	Single concentration	Number of Replicates :	1
Sample pH Adjustment :	None	Organisms Per Replicate :	10
Sample Pre-aeration/Aeration Rate :	6.5 ± 1 mL/min/L	Organisms Per Test Level :	10
Duration of Sample Pre-Aeration :	30 minutes	Volume of Sample :	18 L
Control Pre-aeration/Aeration Rate :	6.5 ± 1 mL/L/min	Volume of Control :	18 L
Duration of Control Pre-aeration:	30 minutes	Test Method Deviation(s) :	None

REFERENCE TOXICANT DATA

Toxicant :	Potassium Chloride		
Organism Batch :	T24-10	LC50 :	4437 mg/L
Date Tested :	2024-06-03	95% Confidence Limits :	4211 - 4675 mg/L
Analyst(s) :	NP, FM, AJS, DT, JW	Historical Mean LC50 :	4276 mg/L
Statistical Method :	Spearman-Kärber	Warning Limits (± 2SD) :	3410 - 5362 mg/L

COMMENTS

•All test validity criteria as specified in the test method were satisfied.

Approved By : _____

Project Manager

Work Order : 254949
Sample Number : 82638

TEST DATA

	pH	Dissolved O_2 (mg/L)	Conductivity (µmhos/cm)	Temperature (°C)	O_2 Saturation (%)[3]
Initial Water Chemistry (100%) :	6.7	8.0	121	16	86
After 30 min pre-aeration :	6.9	8.4	119	16	91

0 HOURS

Date & Time 2024-06-06 9:45
Analyst(s) : DT

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	O_2 Saturation[3]
100%	0	0	6.9	8.4	119	16	91
Control	0	0	8.4	9.5	682	15	100

Notes:

24 HOURS

Date & Time 2024-06-07 9:20
Analyst(s) : JW

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature
100%	0	0	–	–	–	14
Control	0	0	–	–	–	14

Notes:

48 HOURS

Date & Time 2024-06-08 9:15
Analyst(s) : DT

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature
100%	0	0	–	–	–	15
Control	0	0	–	–	–	15

Notes:

72 HOURS

Date & Time 2024-06-09 8:20
Analyst(s) : DT

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature
100%	0	0	–	–	–	15
Control	0	0	–	–	–	15

Notes:

96 HOURS

Date & Time 2024-06-10 9:10
Analyst(s) : FM (PG)

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature
100%	0	0	7.7	9.3	122	15
Control	0	0	8.4	9.4	757	15

Notes:

"–" = not measured/not required
Number impaired does not include number dead.
[3] adjusted for temperature and barometric pressure

Test Data Reviewed By : JL
Date : 2024-06-11

CHAIN OF CUSTODY RECORD

NAUTILUS ENVIRONMENTAL

Nautilus Work Order No: 254949

Shipping Address: Nautilus Environmental Guelph.
B-11 Nicholas Beaver Road
Puslinch, Ontario Canada N0B 2J0

Voice: (519) 763-4412 **Fax:** (519) 763-4419

P.O. Number: C4G7005

Field Sampler Name (print): Blumetric - Brad McCallum

Signature:

Affiliation:

Sample Storage (prior to shipping):

Custody Relinquished by:

Date/Time Shipped:

Client: Bureau Veritas
6740 Campobello Rd,
Mississauga, ON

Phone: (905) 817-5700

Fax:

Contact: Christine Gripton christine.gripton@bureauveritas.com

Sample Identification					Analyses Requested										Sample Method and Volume		
Date Collected (yyyy-mm-dd)	Time Collected (e.g. 14:30, 24 hr clock)	Sample Name	Nautilus Sample Number	Temp. on arrival	Rainbow Trout Single Concentration	Rainbow Trout LC50	*Daphnia magna* Single Concentration	*Daphnia magna* LC50	Fathead Minnow Survival & Growth	*Ceriodaphnia dubia* Survival & Reproduction	*Lemna minor* Growth	*Pseudokirchneriella subcapitata* Growth	RISS Data Entry	Other (please specify below)	Grab	Composite	# of Containers and Volume (eg. 2 x 1L, 3 x 10L, etc.)
2024-06-03	10:35	LSP-Culvert	82638	21°C	✓		✓										1 x 20L
																	1 x 20L

For Lab Use Only

Received By: FM / PG

Date: 2024-06-05

Time: 14:30

Storage Location:

Storage Temp.(°C)

Please list any special requests or instructions:

NAUTILUS ENVIRONMENTAL
B-11 Nicholas Beaver Road
Puslinch, ON N0B 2J0
Tel. (519) 763-4412
Fax. (519) 763-4419

TOXICITY TEST REPORT

Daphnia magna
EPS 1/RM/14

Work Order : 256552
Sample Number : 85095

SAMPLE IDENTIFICATION

Company :	Bureau Veritas Laboratories	Sampling Date :	2024-11-26
Location :	Mississauga ON	Sampling Time :	10:47
Substance :	LSP-CULVERT	Date Received :	2024-11-27
Job Number :	C4AM836	Time Received :	14:15
Sampling Method :	Grab	Temperature at Receipt :	16 °C
Sampled By :	N. Wilson	Date Tested :	2024-11-28
Sample Description :	Clear, brown		

Test Method : Reference Method for Determining Acute Lethality of Effluents to *Daphnia magna* . Environment Canada EPS 1/RM/14 (Second Edition, December 2000, with February 2016 amendments).

48-HOUR TEST RESULTS

Substance	Effect	Value
Control	Mean Immobility	0.0 %
	Mean Mortality	0.0 %
100%	Mean Immobility	0.0 %
	Mean Mortality	0.0 %

The results reported relate only to the sample tested and as received.

TEST ORGANISM

Species :	*Daphnia magna*	Time to First Brood :	8.0 days
Organism Batch :	Dm24-22	Average Brood Size :	38.4
Culture Mortality :	1.3% (previous 7 days)		

TEST CONDITIONS

Sample Treatment :	None	Number of Replicates :	3
pH Adjustment :	None	Organisms per Replicate :	10
Pre-aeration Rate :	~30 mL/min/L	Organisms per Test Level :	30
Duration of Pre-Aeration :	30 minutes	Organism Loading Rate :	15.0 mL/organism
Test Aeration :	None	Impaired Control Organisms :	0.0%
Hardness Adjustment :	None	Test Method Deviation(s) :	None

REFERENCE TOXICANT DATA

Toxicant :	Sodium Chloride		
Date Tested :	2024-11-19	LC50 :	7.0 g/L
Organism Batch :	Dm24-22	95% Confidence Limits :	6.7 - 7.4 g/L
Analyst(s) :	CGR, MK	Historical Mean LC50 :	6.4 g/L
Statistical Method :	Spearman-Kärber	Warning Limits (± 2SD) :	5.7 - 7.2 g/L

COMMENTS

•All test validity criteria as specified in the test method were satisfied.

Approved By : Conrad Neufeld
I am approving this document
Nautilus
2024-12-10 15:27-05:00

Project Manager

Work Order : 256552
Sample Number : 85095

TEST DATA

	pH	Dissolved O_2 (mg/L)	Conductivity (µmhos/cm)	Temperature (°C)	O_2 Saturation (%)*	Hardness (as $CaCO_3$)
Initial Chemistry (100%) :	6.9	8.8	101	19	101	30 mg/L

0 HOURS

Date & Time : 2024-11-28 10:35
Analyst(s) : CB (PG)

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature	O_2 Saturation*	Hardness
100	A	0	0	7.3	8.3	101	19	96	30
100	B	0	0	7.3	8.3	101	19	96	30
100	C	0	0	7.3	8.3	101	19	96	30
Control	A	0	0	8.2	8.2	441	20	95	150
Control	B	0	0	8.2	8.2	441	20	95	150
Control	C	0	0	8.2	8.2	441	20	95	150

Notes:

24 HOURS

Date & Time : 2024-11-29 10:30
Analyst(s) : CB (PG)

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature
100	A	–	0	–	–	–	20
100	B	–	0	–	–	–	20
100	C	–	0	–	–	–	20
Control	A	–	0	–	–	–	20
Control	B	–	0	–	–	–	20
Control	C	–	0	–	–	–	20

Notes:

48 HOURS

Date & Time : 2024-11-30 10:05
Analyst(s) : MK (KP)

Concentration (%)	Replicate	Dead	Immobile	pH	Dissolved O_2	Conductivity	Temperature
100	A	0	0	8.0	8.4	109	20
100	B	0	0	8.1	8.4	110	20
100	C	0	0	8.1	8.4	115	20
Control	A	0	0	8.3	8.4	449	20
Control	B	0	0	8.3	8.3	449	20
Control	C	0	0	8.2	8.4	450	20

Notes: Some test organisms in the Control, replicate C were floating but mobile.

Number immobile does not include number dead.

"–" = not measured/not required
* adjusted for temperature and barometric pressure

Test Data Reviewed By : JJ
Date : 2024-12-05

NAUTILUS ENVIRONMENTAL
B-11 Nicholas Beaver Road
Puslinch, ON N0B 2J0
Tel. (519) 763-4412
Fax. (519) 763-4419

TOXICITY TEST REPORT

Rainbow Trout
EPS 1/RM/13

Work Order : 256552
Sample Number : 85095

SAMPLE IDENTIFICATION

Company :	Bureau Veritas Laboratories		
Location :	Mississauga ON	Sampling Date :	2024-11-26
Job Number :	C4AM836	Sampling Time :	10:47
Substance :	LSP-CULVERT	Date Received :	2024-11-27
Sampling Method :	Grab	Time Received :	14:15
Sampled By :	N. Wilson	Temperature at Receipt :	16 °C
Sample Description :	Clear, brown	Date Tested :	2024-11-28

Test Method(s) : Reference Method for Determining Acute Lethality of Liquid Effluents to Rainbow Trout. Environment Canada, EPS 1/RM/13 (2nd Edition, December 2000, with May 2007, February 2016, and December 2023 amendments).

96-HOUR TEST RESULTS

Substance	Effect	Value
Control	Mean Impairment	0.0 %
	Mean Mortality	0.0 %
100%	Mean Impairment	0.0 %
	Mean Mortality	0.0 %

The results reported relate only to the sample tested and as received.

TEST ORGANISM

Test Organism :	*Oncorhynchus mykiss*	Mean Fork Length :	39.0 mm
Organism Batch :	T24-24	Range of Fork Lengths :	36 - 43 mm
Control Sample Size :	10	Mean Wet Weight :	0.5 g
Cumulative stock mortality rate :	0% (previous 7 days)	Organism Loading Rate :	0.3 g/L
Control organisms showing stress :	0 (at test completion)		

TEST CONDITIONS

Test Type :	Single concentration	Number of Replicates :	1
Sample pH Adjustment :	None	Organisms Per Replicate :	10
Sample Pre-aeration/Aeration Rate :	6.5 ± 1 mL/min/L	Organisms Per Test Level :	10
Duration of Sample Pre-Aeration :	30 minutes	Volume of Sample :	16 L
Control Pre-aeration/Aeration Rate :	6.5 ± 1 mL/min/L	Volume of Control :	16 L
Duration of Control Pre-aeration:	30 minutes	Test Method Deviation(s) :	None

REFERENCE TOXICANT DATA

Toxicant :	Potassium Chloride		
Organism Batch :	T24-24	LC50 :	4317 mg/L
Date Tested :	2024-11-09	95% Confidence Limits :	4026 - 4628 mg/L
Analyst(s) :	FM, JGR, GR, AJS	Historical Mean LC50 :	3491 mg/L
Statistical Method :	Spearman-Kärber	Warning Limits (± 2SD) :	2528 - 4822 mg/L

COMMENTS

•All test validity criteria as specified in the test method were satisfied.

Approved By : Conrad Neufeld
I am approving this document
Nautilus
2024-12-10 15:27-05:00

Project Manager

Work Order : 256552
Sample Number : 85095

TEST DATA

	pH	Dissolved O_2 (mg/L)	Conductivity (µmhos/cm)	Temperature (°C)	O_2 Saturation (%)[3]
Initial Water Chemistry (100%) :	6.7	9.4	112	14	98
After 30 min pre-aeration :	6.8	9.4	112	14	98

0 HOURS

Date & Time 2024-11-28 10:15
Analyst(s) : GR (JGR)

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature	O_2 Saturation[3]
100%	0	0	6.8	9.4	112	14	98
Control	0	0	8.3	9.5	749	14	100

Notes:

24 HOURS

Date & Time 2024-11-29 10:55
Analyst(s) : GR (AJS)

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature
100%	0	0	–	–	–	15
Control	0	0	–	–	–	15

Notes:

48 HOURS

Date & Time 2024-11-30 8:50
Analyst(s) : AJS

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature
100%	0	0	–	–	–	15
Control	0	0	–	–	–	15

Notes:

72 HOURS

Date & Time 2024-12-01 8:20
Analyst(s) : SV

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature
100%	0	0	–	–	–	14
Control	0	0	–	–	–	14

Notes:

96 HOURS

Date & Time 2024-12-02 10:30
Analyst(s) : GR (NWP)

Concentration	Dead	Impaired	pH	Dissolved O_2	Conductivity	Temperature
100%	0	0	7.4	9.2	114	15
Control	0	0	8.3	9.1	707	15

Notes:

"–" = not measured/not required
Number impaired does not include number dead.
[3] adjusted for temperature and barometric pressure

Test Data Reviewed By : JL
Date : 2024-12-02

CHAIN OF CUSTODY RECORD

NAUTILUS ENVIRONMENTAL

Nautilus Work Order No: 256552

Shipping Address: Nautilus Environmental Guelph.
B-11 Nicholas Beaver Road
Puslinch, Ontario Canada N0B 2J0

Voice: (519) 763-4412 **Fax:** (519) 763-4419

P.O. Number: C4AM836

Field Sampler Name (print): ** Nathan Wilson

Signature:

Affiliation:

Sample Storage (prior to shipping):

Custody Relinquished by:

Date/Time Shipped:

Client: Bureau Veritas
6740 Campobello Rd.
Mississauga, ON
L5N 2L8

Phone:

Fax:

Contact: Elora.di-bratto@bureauveritas.com

Sample Identification					Analyses Requested										Sample Method and Volume		
Date Collected (yyyy-mm-dd)	Time Collected (e.g. 14:30, 24 hr clock)	Sample Name	Nautilus Sample Number	Temp. on arrival	Rainbow Trout Single Concentration	Rainbow Trout LC50	*Daphnia magna* Single Concentration	*Daphnia magna* LC50	Fathead Minnow Survival & Growth	*Ceriodaphnia dubia* Survival & Reproduction	*Lemna minor* Growth	*Pseudokirchneriella subcapitata* Growth	RISS Data Entry	Other (please specify below)	Grab	Composite	# of Containers and Volume (eg. 2 x 1L, 3 x 10L, etc.)
2024-11-26	10:47	LSP-CULVERT	85095	16	✓		✓								✓		1 x20L

For Lab Use Only

Received By: CB/FM

Date: 2024-11-27

Time: 14:15

Storage Location:

Storage Temp.(°C)

EK

Please list any special requests or instructions:

Reg TAT BV ~~JOB# C4Y2219~~: Client Project # 240205-04

***

* Grab according to pail label. FN 2024-11-27

** Sampler name according to pail label. FN 2024-11-27

~~***~~ Client confirmed via email job # is C4AM836 CN 2024-11-28

Appendix E

Historical Groundwater and Surface Water Chemistry

Appendix E

E-1 Historical Groundwater Chemistry

Table E-1: Municipality of Hastings Highlands Historical Analytical Results Anions, Cations, General Chemistry and Dissolved Metals in Groundwater						Site Name	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS
						Location	LSP-DP1-21	LSP-DP1-21	LSP-DP1-21	LSP-DP1-21	LSP-DP1-21	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03
						Sample ID	LSP-DP1-21	LSP-DP1-21	LSP-DPI-21	LSP-DP1-21	LSP-DP1-21	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03
Parameter	Units	PWQO-INTERIM	PWQO-GENERAL	ODWQS-ALL-MERGED	RUV-LSP	Sample Date	2021-Oct-19	2022-May-02	2022-Oct-17	2023-May-04	2023-Oct-17	2006-May-09	2006-Nov-21	2007-May-02	2007-Nov-21	2008-May-08
Anions						**Detection Limit**										
Chloride	mg/L	-	-	250	125.3	0.1, 0.12, 0.5, 1	16.1	9.31	13.8	5.47	27	-	-	25	13	17
Nitrate as N	mg/L	-	-	10	2.5	0.05, 0.1, 0.25	<0.05	<0.05	0.12	<0.05	<0.1	4.11	1.76	0.28	4.69	4.66
Sulphate	mg/L	-	-	500	252.6	0.1, 0.5, 1	36.9	35.2	34.3	37.1	29	12	28	30	18	8
Cations																
Calcium (diss)	mg/L	-	-	-	-	0.05, 0.2	50.3	44.3	53	-	58	34	40	54	52	37
Magnesium (diss)	mg/L	-	-	-	-	0.05	10	8.61	9.12	5.77	9.7	6	6	8	7	5
Potassium (diss)	mg/L	-	-	-	-	0.5, 1	-	-	20.2	14.6	-	18	23	22	27	20
Sodium (diss)	mg/L	-	-	200	100.8	0.05, 0.1	20.1	17.8	19.1	12.9	17	10	15	19	15	11
General Chemistry																
Alkalinity (as CaCO3)	mg/L	-	See Factsheet	30 - 500	256.3	1, 5	232	197	241	146	220	102	136	168	191	111
Ammonia as N	mg/L	-	-	-	-	0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.1, 0.18, 0.25	7.12	6.27	6.12	4.95	7.8	-	-	0.24	1.42	0.58
Biochemical Oxygen Demand	mg/L	-	-	-	-	2, 5, 6	8	-	-	-	-	-	-	-	-	-
Chemical Oxygen Demand	mg/L	-	-	-	-	5	59	53	16	-	-	-	-	<5	<5	<5
Dissolved Organic Carbon	mg/L	-	-	5	4.3	0.4, 0.5	**14.8**	**12.3**	**14.1**	**9.7**	**13**	-	-	**7.4**	**6.2**	2.4
Electrical Conductivity	uS/cm	-	-	-	-	1, 2, 5	567	515	611	370	580	317	399	482	481	331
Hardness (as CaCO3)	mg/L	-	-	80 - 100	-		**166.8**	**146.1**	**169.9**	-	-	**109.6**	**124.6**	**167.8**	**158.7**	**113**
pH	pH units	-	6.5 - 8.5	6.5 - 8.5	-		6.97	6.73	6.87	6.75	7.11	7.06	6.59	6.72	6.78	7.07
Total Dissolved Solids	mg/L	-	-	500	267	5, 10, 20	292	288	298	216	315	-	-	313	313	215
Total Suspended Solids	mg/L	-	-	-	-	10, 20, 50, 100, 200, 500	2080	932	-	336	150	-	-	-	-	-
Metals																
Aluminum (diss, 0.45 µm)	mg/L	Calculated	-	0.1	-	0.004, 0.01	-	-	0.048	-	-	0.05	0.01	0.02	<0.01	<0.01
Barium (diss)	mg/L	-	-	1	-	0.002	0.612	0.477	-	0.298	0.49	0.13	0.22	0.28	0.34	0.19
Beryllium (diss)	mg/L	-	Calculated	-	-	0.001	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001
Boron (diss)	mg/L	0.2	-	5	-	0.01	0.448	0.285	0.449	0.259	0.42	0.14	0.21	0.22	0.32	0.14
Cadmium (diss)	mg/L	Calculated	-	0.005	-	0.0001	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (diss)	mg/L	-	-	0.05	-	0.001	-	-	-	-	-	0.001	0.002	0.002	0.003	0.002
Cobalt (diss)	mg/L	0.0009	-	-	-	0.0002	-	-	-	-	-	0.0023	0.003	0.0029	0.0045	0.0011
Copper (diss)	mg/L	Calculated	-	1	-	0.001	-	-	-	-	-	0.003	0.002	0.006	0.004	0.003
Iron (diss)	mg/L	-	0.3	0.3	0.21	0.01, 0.02, 0.1	24.5	18.8	25.2	12.7	47	0.18	0.03	0.08	<0.03	<0.03
Lead (diss)	mg/L	Calculated	-	0.01	-	0.0005, 0.001	-	-	<0.0005	-	-	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese (diss)	mg/L	-	-	0.05	0.051	0.002, 0.01, 0.02	**10.8**	**9.69**	**10.3**	**6.52**	**11**	**0.78**	**0.34**	**1.18**	**0.98**	**0.45**
Molybdenum (diss)	mg/L	0.04	-	-	-	0.005	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel (diss)	mg/L	-	0.025	-	-	0.005	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005
Silicon (diss)	mg/L	-	-	-	-	0.1	-	-	-	-	-	6.1	6.8	6	7	7.3
Silver (diss)	mg/L	-	0.0001	-	-	0.0001	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Strontium (diss)	mg/L	-	-	-	-	0.001, 0.005	-	-	0.357	-	-	0.172	0.221	0.221	0.253	0.194
Thallium (diss)	mg/L	0.0003	-	-	-	0.0001	-	-	-	-	-	0.0001	0.0002	0.0004	0.0004	0.0002
Titanium (diss)	mg/L	-	-	-	-	0.01	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium (diss)	mg/L	0.006	-	-	-	0.001	-	-	-	-	-	0.002	0.002	0.002	0.005	0.002
Zinc (diss)	mg/L	0.02	-	5	-	0.005, 0.01	-	-	0.05	-	-	<0.01	<0.01	<0.01	<0.01	<0.01

Notes:

Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General
Concentration exceeds ODWQS-ALL-MERGED	Ontario Drinking Water Quality Standards All Types Merged
Concentration exceeds RUV-LSP	Reasonable Use Values Lake St Peter

Table E-1: Municipality of Hastings Highlands Historical Analytical Results Anions, Cations, General Chemistry and Dissolved Metals in Groundwater						Site Name	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS
						Location	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03
						Sample ID	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03
Parameter	Units	PWQO-INTERIM	PWQO-GENERAL	ODWQS-ALL-MERGED	RUV-LSP	Sample Date	2008-Oct-08	2009-Jun-04	2009-Oct-21	2010-May-18	2010-Oct-19	2011-May-19	2011-Nov-02	2012-Apr-17	2012-Oct-17	2013-Apr-16
Anions						**Detection Limit**										
Chloride	mg/L	-	-	250	125.3	0.1, 0.12, 0.5, 1	16	17	13	4	8	23	14	9	11	6.06
Nitrate as N	mg/L	-	-	10	2.5	0.05, 0.1, 0.25	6	1.57	6.4	1.74	2.6	2.61	4.66	4.6	3.1	1.47
Sulphate	mg/L	-	-	500	252.6	0.1, 0.5, 1	36	16	26	14	22	14	10	7	13	7.81
Cations																
Calcium (diss)	mg/L	-	-	-	-	0.05, 0.2	53	28	42	30	40	41	49	19.7	38.6	22.3
Magnesium (diss)	mg/L	-	-	-	-	0.05	7	3	5	3	4	4	5	3.53	4.71	2.02
Potassium (diss)	mg/L	-	-	-	-	0.5, 1	22	13	17	11	11	12	14	7.39	13	8.24
Sodium (diss)	mg/L	-	-	200	100.8	0.05, 0.1	15	11	13	8	9	14	12	7.03	10.7	5.34
General Chemistry																
Alkalinity (as CaCO3)	mg/L	-	See Factsheet	30 - 500	256.3	1, 5	147	82	123	98	122	126	141	86	129	58
Ammonia as N	mg/L	-	-	-	-	0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.1, 0.18, 0.25	0.69	0.16	0.46	<0.02	0.09	0.35	0.72	0.04	0.03	0.25
Biochemical Oxygen Demand	mg/L	-	-	-	-	2, 5, 6	-	-	-	-	-	-	-	-	-	-
Chemical Oxygen Demand	mg/L	-	-	-	-	5	20	5	23	5	5	13	12	26	17	<5
Dissolved Organic Carbon	mg/L	-	-	5	4.3	0.4, 0.5	**5.9**	2.6	4.2	2.3	3	3.5	3	2.8	3.6	1.4
Electrical Conductivity	uS/cm	-	-	-	-	1, 2, 5	463	268	391	251	319	372	368	282	344	167
Hardness (as CaCO3)	mg/L	-	-	80 - 100	-		**161.2**	82.3	**125.5**	87.3	**116.4**	**118.8**	**142.9**	**63.7**	**115.8**	**64**
pH	pH units	-	6.5 - 8.5	6.5 - 8.5	-		6.82	6.6	6.88	6.84	6.64	7.09	6.51	7.2	6.3	7.45
Total Dissolved Solids	mg/L	-	-	500	267	5, 10, 20	301	174	254	163	207	242	239	246	164	110
Total Suspended Solids	mg/L	-	-	-	-	10, 20, 50, 100, 200, 500	-	-	-	-	-	-	-	-	-	-
Metals																
Aluminum (diss, 0.45 µm)	mg/L	Calculated	-	0.1	-	0.004, 0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	0.007	0.005	0.011
Barium (diss)	mg/L	-	-	1	-	0.002	0.27	0.12	0.15	0.08	0.11	0.13	0.16	0.074	0.14	0.072
Beryllium (diss)	mg/L	-	Calculated	-	-	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Boron (diss)	mg/L	0.2	-	5	-	0.01	0.28	0.12	0.24	0.13	0.23	0.2	0.2	0.142	0.23	0.081
Cadmium (diss)	mg/L	Calculated	-	0.005	-	0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.002
Chromium (diss)	mg/L	-	-	0.05	-	0.001	0.001	0.001	0.002	<0.001	<0.001	0.002	0.001	<0.001	<0.001	<0.003
Cobalt (diss)	mg/L	0.0009	-	-	-	0.0002	0.0029	0.0007	0.0011	0.0002	0.0002	0.0007	0.0023	<0.0005	0.0022	<0.001
Copper (diss)	mg/L	Calculated	-	1	-	0.001	0.003	0.002	0.003	0.002	0.002	0.002	0.002	0.001	0.0021	<0.003
Iron (diss)	mg/L	-	0.3	0.3	0.21	0.01, 0.02, 0.1	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.1	<0.1	<0.01
Lead (diss)	mg/L	Calculated	-	0.01	-	0.0005, 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0001	<0.002
Manganese (diss)	mg/L	-	-	0.05	0.051	0.002, 0.01, 0.02	**0.57**	**0.37**	**0.3**	0.04	**0.06**	**0.54**	**0.71**	**0.12**	**0.214**	**0.201**
Molybdenum (diss)	mg/L	0.04	-	-	-	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0005	<0.0005	<0.002
Nickel (diss)	mg/L	-	0.025	-	-	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.001	0.002	<0.003
Silicon (diss)	mg/L	-	-	-	-	0.1	7.1	5.9	6.6	4.9	5.5	5.7	5.5	4.59	6.02	6.32
Silver (diss)	mg/L	-	0.0001	-	-	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.002
Strontium (diss)	mg/L	-	-	-	-	0.001, 0.005	0.211	0.16	0.213	0.162	0.206	0.199	0.201	0.138	0.187	0.103
Thallium (diss)	mg/L	0.0003	-	-	-	0.0001	0.0002	0.0001	0.0002	<0.0001	<0.0001	0.0001	0.0002	<0.0001	<0.0001	<0.006
Titanium (diss)	mg/L	-	-	-	-	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.002
Vanadium (diss)	mg/L	0.006	-	-	-	0.001	0.001	0.001	0.003	<0.001	<0.001	0.002	0.002	0.0016	0.0011	<0.002
Zinc (diss)	mg/L	0.02	-	5	-	0.005, 0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005

Notes:

Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General
Concentration exceeds ODWQS-ALL-MERGED	Ontario Drinking Water Quality Standards All Types Merged
Concentration exceeds RUV-LSP	Reasonable Use Values Lake St Peter

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						Location	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03
						Sample ID	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03
Parameter	Units	PWQO-INTERIM	PWQO-GENERAL	ODWQS-ALL-MERGED	RUV-LSP	Sample Date	2013-Oct-29	2014-May-12	2014-Oct-15	2015-May-05	2015-Oct-27	2016-Apr-27	2016-Oct-27	2017-May-12	2017-Oct-24	2018-May-08
Anions						**Detection Limit**										
Chloride	mg/L	-	-	250	125.3	0.1, 0.12, 0.5, 1	31.3	79.4	79.6	79.7	39.2	151	51.9	140	29.9	78.3
Nitrate as N	mg/L	-	-	10	2.5	0.05, 0.1, 0.25	0.44	<0.05	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.1	<0.25
Sulphate	mg/L	-	-	500	252.6	0.1, 0.5, 1	23.6	35.4	0.58	5.13	27.8	4.21	5.84	4.42	17.6	14.7
Cations																
Calcium (diss)	mg/L	-	-	-	-	0.05, 0.2	45.1	66.6	97.4	64.7	72.9	132	90.3	84.6	74.7	80
Magnesium (diss)	mg/L	-	-	-	-	0.05	4.45	8.12	12	8.07	7.73	20.5	11.4	12.9	8.7	10.1
Potassium (diss)	mg/L	-	-	-	-	0.5, 1	11.7	14.9	41.4	26.6	37.6	56.9	38.1	-	-	-
Sodium (diss)	mg/L	-	-	200	100.8	0.05, 0.1	18.1	45.3	62.1	48.6	34.4	126	49	74	33.3	44.2
General Chemistry																
Alkalinity (as CaCO3)	mg/L	-	See Factsheet	30 - 500	256.3	1, 5	114	193	395	300	305	**601**	443	392	359	386
Ammonia as N	mg/L	-	-	-	-	0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.1, 0.18, 0.25	<0.02	0.69	14.7	11.6	15.9	31.8	19.3	15	15.4	13.5
Biochemical Oxygen Demand	mg/L	-	-	-	-	2, 5, 6	-	-	-	-	-	-	-	-	-	-
Chemical Oxygen Demand	mg/L	-	-	-	-	5	12	31	173	112	81	266	97	148	79	62
Dissolved Organic Carbon	mg/L	-	-	5	4.3	0.4, 0.5	2.7	**12.9**	**61.4**	**44.2**	**26.7**	**114**	**42.3**	**68**	**34.7**	**27.7**
Electrical Conductivity	uS/cm	-	-	-	-	1, 2, 5	364	681	1040	858	790	1500	1070	1300	718	913
Hardness (as CaCO3)	mg/L	-	-	80 - 100	-		**130.9**	**199.7**	**292.6**	**194.8**	**213.9**	**414**	**272.4**	**264.4**	**222.4**	**241.4**
pH	pH units	-	6.5 - 8.5	6.5 - 8.5	-		7.16	7.09	7.17	6.64	7.26	7.64	7.44	7.48	6.91	6.81
Total Dissolved Solids	mg/L	-	-	500	267	5, 10, 20	220	392	**748**	**510**	376	**868**	**550**	**652**	426	498
Total Suspended Solids	mg/L	-	-	-	-	10, 20, 50, 100, 200, 500	-	-	-	-	-	-	-	384	353	355
Metals																
Aluminum (diss, 0.45 µm)	mg/L	Calculated	-	0.1	-	0.004, 0.01	0.021	0.007	**0.106**	**0.111**	0.088	**0.137**	0.085	-	-	-
Barium (diss)	mg/L	-	-	1	-	0.002	0.171	0.176	0.85	0.473	0.558	**1.15**	0.862	0.799	0.645	1
Beryllium (diss)	mg/L	-	Calculated	-	-	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Boron (diss)	mg/L	0.2	-	5	-	0.01	0.202	0.217	1.35	0.786	0.64	1.1	0.571	0.271	0.532	0
Cadmium (diss)	mg/L	Calculated	-	0.005	-	0.0001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	-	-	-
Chromium (diss)	mg/L	-	-	0.05	-	0.001	<0.003	<0.003	0.004	<0.003	0.003	0.009	0.006	-	-	-
Cobalt (diss)	mg/L	0.0009	-	-	-	0.0002	0.002	0.015	0.105	0.089	0.036	0.067	0.042	-	-	-
Copper (diss)	mg/L	Calculated	-	1	-	0.001	<0.003	0.004	<0.003	<0.003	<0.003	<0.003	<0.003	-	-	-
Iron (diss)	mg/L	-	0.3	0.3	0.21	0.01, 0.02, 0.1	<0.01	2.54	178	117	73.9	148	102	170	120	94.1
Lead (diss)	mg/L	Calculated	-	0.01	-	0.0005, 0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	-	-
Manganese (diss)	mg/L	-	-	0.05	0.051	0.002, 0.01, 0.02	**0.309**	**11.9**	**8.92**	**4.95**	**2.61**	**5.05**	**6.96**	**10.4**	**5.65**	**6.7**
Molybdenum (diss)	mg/L	0.04	-	-	-	0.005	<0.002	<0.002	0.008	0.002	0.005	0.007	0.002	-	-	-
Nickel (diss)	mg/L	-	0.025	-	-	0.005	<0.003	<0.003	0.005	0.006	0.006	0.009	0.006	-	-	-
Silicon (diss)	mg/L	-	-	-	-	0.1	6.6	5.39	10.5	11.9	10	11.1	9.98	-	-	-
Silver (diss)	mg/L	-	0.0001	-	-	0.0001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	-	-
Strontium (diss)	mg/L	-	-	-	-	0.001, 0.005	0.233	0.331	0.551	0.359	0.315	0.601	0.402	-	-	-
Thallium (diss)	mg/L	0.0003	-	-	-	0.0001	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	-	-	-
Titanium (diss)	mg/L	-	-	-	-	0.01	<0.002	<0.002	0.004	0.002	0.002	0.004	0.003	-	-	-
Vanadium (diss)	mg/L	0.006	-	-	-	0.001	<0.002	<0.002	0.011	0.006	0.008	0.013	0.011	-	-	-
Zinc (diss)	mg/L	0.02	-	5	-	0.005, 0.01	0.038	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	-	-

Notes:

Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General
Concentration exceeds ODWQS-ALL-MERGED	Ontario Drinking Water Quality Standards All Types Merged
Concentration exceeds RUV-LSP	Reasonable Use Values Lake St Peter

Table E-1: Municipality of Hastings Highlands Historical Analytical Results Anions, Cations, General Chemistry and Dissolved Metals in Groundwater						Site Name	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS
						Location	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03
						Sample ID	LSP1-03	LSP1-03	LSP-QAQC GW-S19 (LSP1-03)	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP-QAQC GW-F21 (LSP1-03)	LSP1-03
Parameter	Units	PWQO-INTERIM	PWQO-GENERAL	ODWQS-ALL-MERGED	RUV-LSP	Sample Date	2018-Oct-23	2019-May-08	2019-May-08	2019-Oct-23	2020-May-07	2020-Oct-07	2021-Apr-21	2021-Oct-19	2021-Oct-19	2022-May-02
Anions						**Detection Limit**										
Chloride	mg/L	-	-	250	125.3	0.1, 0.12, 0.5, 1	48.5	88.6	86.5	59.4	121	69.8	75.7	60.7	60.6	58.8
Nitrate as N	mg/L	-	-	10	2.5	0.05, 0.1, 0.25	<0.25	<0.25	<0.25	<1	<0.25	0.55	<0.25	<0.05	<0.05	<0.05
Sulphate	mg/L	-	-	500	252.6	0.1, 0.5, 1	6.91	14.5	14.3	34.9	16.6	9.98	7.84	8.85	8.4	6.08
Cations																
Calcium (diss)	mg/L	-	-	-	-	0.05, 0.2	79.5	83.7	86.3	66.8	95.5	98.1	98.1	67.8	65	70.3
Magnesium (diss)	mg/L	-	-	-	-	0.05	8	8.79	8.97	6.59	11.5	9.29	11.5	6.52	6.2	5.91
Potassium (diss)	mg/L	-	-	-	-	0.5, 1	-	-	-	-	-	-	-	-	-	-
Sodium (diss)	mg/L	-	-	200	100.8	0.05, 0.1	29.8	39.2	40.6	29.7	52.3	37.2	49.4	35.5	34.3	25.1
General Chemistry																
Alkalinity (as CaCO3)	mg/L	-	See Factsheet	30 - 500	256.3	1, 5	341	464	387	291	357	321	360	275	255	247
Ammonia as N	mg/L	-	-	-	-	0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.1, 0.18, 0.25	13.8	7.8	9	13.7	12.6	16.7	15	12.4	11.6	11.5
Biochemical Oxygen Demand	mg/L	-	-	-	-	2, 5, 6	-	<5	7	8	8	3	<6	8	8	-
Chemical Oxygen Demand	mg/L	-	-	-	-	5	59	67	78	54	79	55	58	57	58	61
Dissolved Organic Carbon	mg/L	-	-	5	4.3	0.4, 0.5	**22.5**	**18.3**	**23.3**	**19.8**	**24.2**	**21.5**	**22.7**	**15.9**	**16.1**	**17.6**
Electrical Conductivity	uS/cm	-	-	-	-	1, 2, 5	896	1060	1030	873	1340	812	941	725	714	703
Hardness (as CaCO3)	mg/L	-	-	80 - 100	-		**231.5**	**245.2**	**252.4**	**193.9**	**285.8**	**283.2**	**292.3**	**196.1**	**187.8**	**199.9**
pH	pH units	-	6.5 - 8.5	6.5 - 8.5	-		6.85	6.6	6.63	7.15	6.36	7.14	6.77	6.89	6.77	6.63
Total Dissolved Solids	mg/L	-	-	500	267	5, 10, 20	422	**570**	**612**	494	**574**	448	498	332	358	370
Total Suspended Solids	mg/L	-	-	-	-	10, 20, 50, 100, 200, 500	382	343	325	552	235	334	290	271	420	460
Metals																
Aluminum (diss, 0.45 µm)	mg/L	Calculated	-	0.1	-	0.004, 0.01	-	-	-	-	-	-	-	-	-	-
Barium (diss)	mg/L	-	-	1	-	0.002	1	0.604	0.629	0.515	0.631	0.693	0.567	0.452	0.452	0.529
Beryllium (diss)	mg/L	-	Calculated	-	-	0.001	-	-	-	-	-	-	-	-	-	-
Boron (diss)	mg/L	0.2	-	5	-	0.01	1	0.378	0.376	0.465	0.567	0.663	0.762	0.608	0.61	0.397
Cadmium (diss)	mg/L	Calculated	-	0.005	-	0.0001	-	-	-	-	-	-	-	-	-	-
Chromium (diss)	mg/L	-	-	0.05	-	0.001	-	-	-	-	-	-	-	-	-	-
Cobalt (diss)	mg/L	0.0009	-	-	-	0.0002	-	-	-	-	-	-	-	-	-	-
Copper (diss)	mg/L	Calculated	-	1	-	0.001	-	-	-	-	-	-	-	-	-	-
Iron (diss)	mg/L	-	0.3	0.3	0.21	0.01, 0.02, 0.1	**114**	**129**	**127**	**89.3**	**78.5**	**80.2**	**43**	**50.6**	**51.1**	**81.3**
Lead (diss)	mg/L	Calculated	-	0.01	-	0.0005, 0.001	-	-	-	-	-	-	-	-	-	-
Manganese (diss)	mg/L	-	-	0.05	0.051	0.002, 0.01, 0.02	**4.96**	**4.84**	**5.13**	**3.71**	**6.99**	**3.35**	**4.74**	**4.51**	**4.68**	**2.45**
Molybdenum (diss)	mg/L	0.04	-	-	-	0.005	-	-	-	-	-	-	-	-	-	-
Nickel (diss)	mg/L	-	0.025	-	-	0.005	-	-	-	-	-	-	-	-	-	-
Silicon (diss)	mg/L	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-
Silver (diss)	mg/L	-	0.0001	-	-	0.0001	-	-	-	-	-	-	-	-	-	-
Strontium (diss)	mg/L	-	-	-	-	0.001, 0.005	-	-	-	-	-	-	-	-	-	-
Thallium (diss)	mg/L	0.0003	-	-	-	0.0001	-	-	-	-	-	-	-	-	-	-
Titanium (diss)	mg/L	-	-	-	-	0.01	-	-	-	-	-	-	-	-	-	-
Vanadium (diss)	mg/L	0.006	-	-	-	0.001	-	-	-	-	-	-	-	-	-	-
Zinc (diss)	mg/L	0.02	-	5	-	0.005, 0.01	-	-	-	-	-	-	-	-	-	-

Notes:

Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General
Concentration exceeds ODWQS-ALL-MERGED	Ontario Drinking Water Quality Standards All Types Merged
Concentration exceeds RUV-LSP	Reasonable Use Values Lake St Peter

Table E-1: Municipality of Hastings Highlands Historical Analytical Results Anions, Cations, General Chemistry and Dissolved Metals in Groundwater						Site Name	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS
						Location	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03
						Sample ID	LSP-QAQC GW-S22 (LSP1-03)	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03
Parameter	Units	PWQO-INTERIM	PWQO-GENERAL	ODWQS-ALL-MERGED	RUV-LSP	Sample Date	2022-May-02	2022-Oct-17	2023-May-04	2023-Oct-17	2024-Apr-30	2024-Oct-28	2006-May-09	2006-Nov-21	2007-May-02	2007-Nov-21
Anions						**Detection Limit**										
Chloride	mg/L	-	-	250	125.3	0.1, 0.12, 0.5, 1	57.2	0.5	128	72	120	65	-	-	3	1
Nitrate as N	mg/L	-	-	10	2.5	0.05, 0.1, 0.25	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sulphate	mg/L	-	-	500	252.6	0.1, 0.5, 1	6.12	4.01	5.09	4.3	6.5	5.8	8	21	8	8
Cations																
Calcium (diss)	mg/L	-	-	-	-	0.05, 0.2	70.5	66.3	-	92	95	92	5	4	5	3
Magnesium (diss)	mg/L	-	-	-	-	0.05	5.92	5.48	9.3	9.5	12	9.2	1	1	1	<1
Potassium (diss)	mg/L	-	-	-	-	0.5, 1	-	17.9	25.9	-	-	-	1	1	1	<1
Sodium (diss)	mg/L	-	-	200	100.8	0.05, 0.1	25.4	21.2	77.8	40	64	39	<2	<2	<2	<2
General Chemistry																
Alkalinity (as CaCO3)	mg/L	-	See Factsheet	30 - 500	256.3	1, 5	254	282	398	330	310	340	**14**	**11**	**12**	**10**
Ammonia as N	mg/L	-	-	-	-	0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.1, 0.18, 0.25	11.4	12.2	15.4	20	9.6	17	-	-	0.1	<0.02
Biochemical Oxygen Demand	mg/L	-	-	-	-	2, 5, 6	-	-	-	-	-	-	-	-	-	-
Chemical Oxygen Demand	mg/L	-	-	-	-	5	64	66	-	-	-	-	-	-	8	10
Dissolved Organic Carbon	mg/L	-	-	5	4.3	0.4, 0.5	**18.3**	**18.8**	**23.8**	**19**	**14**	**21**	-	-	**10.5**	**8.3**
Electrical Conductivity	uS/cm	-	-	-	-	1, 2, 5	702	782	1160	900	1000	890	51	46	47	44
Hardness (as CaCO3)	mg/L	-	-	80 - 100	-		**200.4**	**188.1**	-	-	-	-	**16.6**	**14.1**	**16.6**	**9.6**
pH	pH units	-	6.5 - 8.5	6.5 - 8.5	-		6.6	6.74	6.71	7.36	7.2	7.23	6.55	6.34	6.23	6.52
Total Dissolved Solids	mg/L	-	-	500	267	5, 10, 20	352	372	**566**	420	**545**	490	-	-	31	29
Total Suspended Solids	mg/L	-	-	-	-	10, 20, 50, 100, 200, 500	550	-	756	490	580	1500	-	-	-	-
Metals																
Aluminum (diss, 0.45 µm)	mg/L	Calculated	-	0.1	-	0.004, 0.01	-	0.065	-	-	-	-	**0.16**	0.1	0.06	0.05
Barium (diss)	mg/L	-	-	1	-	0.002	0.55	-	0.607	0.56	0.5	0.53	0.01	0.01	0.01	0.01
Beryllium (diss)	mg/L	-	Calculated	-	-	0.001	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001
Boron (diss)	mg/L	0.2	-	5	-	0.01	0.406	0.418	0.648	0.66	0.55	0.71	<0.01	0.01	0.01	<0.01
Cadmium (diss)	mg/L	Calculated	-	0.005	-	0.0001	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (diss)	mg/L	-	-	0.05	-	0.001	-	-	-	-	-	-	<0.001	<0.001	<0.001	0.001
Cobalt (diss)	mg/L	0.0009	-	-	-	0.0002	-	-	-	-	-	-	0.0022	0.0018	0.0018	0.0021
Copper (diss)	mg/L	Calculated	-	1	-	0.001	-	-	-	-	-	-	0.003	0.002	0.003	0.001
Iron (diss)	mg/L	-	0.3	0.3	0.21	0.01, 0.02, 0.1	75.3	64.3	75.4	64	13	67	0.42	0.48	0.32	0.23
Lead (diss)	mg/L	Calculated	-	0.01	-	0.0005, 0.001	-	<0.0005	-	-	-	-	<0.001	<0.001	<0.001	<0.001
Manganese (diss)	mg/L	-	-	0.05	0.051	0.002, 0.01, 0.02	2.5	1.58	2.67	2.2	3.5	2.1	**0.08**	**0.07**	**0.07**	**0.07**
Molybdenum (diss)	mg/L	0.04	-	-	-	0.005	-	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005
Nickel (diss)	mg/L	-	0.025	-	-	0.005	-	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005
Silicon (diss)	mg/L	-	-	-	-	0.1	-	-	-	-	-	-	6.4	6.3	6.7	6
Silver (diss)	mg/L	-	0.0001	-	-	0.0001	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001
Strontium (diss)	mg/L	-	-	-	-	0.001, 0.005	-	0.257	-	-	-	-	0.033	0.027	0.029	0.026
Thallium (diss)	mg/L	0.0003	-	-	-	0.0001	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001
Titanium (diss)	mg/L	-	-	-	-	0.01	-	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01
Vanadium (diss)	mg/L	0.006	-	-	-	0.001	-	-	-	-	-	-	0.001	<0.001	<0.001	<0.001
Zinc (diss)	mg/L	0.02	-	5	-	0.005, 0.01	-	<0.005	-	-	-	-	<0.01	<0.01	<0.01	<0.01

Notes:

Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General
Concentration exceeds ODWQS-ALL-MERGED	Ontario Drinking Water Quality Standards All Types Merged
Concentration exceeds RUV-LSP	Reasonable Use Values Lake St Peter

Table E-1: Municipality of Hastings Highlands Historical Analytical Results Anions, Cations, General Chemistry and Dissolved Metals in Groundwater						Site Name	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS
						Location	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03
						Sample ID	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03
Parameter	Units	PWQO-INTERIM	PWQO-GENERAL	ODWQS-ALL-MERGED	RUV-LSP	Sample Date	2008-May-08	2008-Oct-08	2009-Jun-04	2009-Oct-21	2010-May-18	2010-Oct-19	2011-May-19	2011-Nov-02	2012-Apr-17	2012-Oct-17
Anions						**Detection Limit**										
Chloride	mg/L	-	-	250	125.3	0.1, 0.12, 0.5, 1	<1	<1	2	1	2	<1	2	2	<1	<1
Nitrate as N	mg/L	-	-	10	2.5	0.05, 0.1, 0.25	<0.1	<0.1	<0.1	<0.1	0.15	0.16	<0.1	<0.1	<0.1	<0.1
Sulphate	mg/L	-	-	500	252.6	0.1, 0.5, 1	8	7	8	7	7	6	7	6	5	5
Cations																
Calcium (diss)	mg/L	-	-	-	-	0.05, 0.2	6	4	4	4	4	3	4	4	4.28	3.65
Magnesium (diss)	mg/L	-	-	-	-	0.05	2	1	1	1	<1	<1	<1	<1	0.962	1.01
Potassium (diss)	mg/L	-	-	-	-	0.5, 1	1	<1	1	1	<1	<1	<1	<1	0.839	0.92
Sodium (diss)	mg/L	-	-	200	100.8	0.05, 0.1	3	<2	3	<2	<2	<2	<2	<2	1.6	1.73
General Chemistry																
Alkalinity (as CaCO3)	mg/L	-	See Factsheet	30 - 500	256.3	1, 5	**9**	**15**	**13**	**14**	**12**	**9**	**13**	**14**	**12**	**11**
Ammonia as N	mg/L	-	-	-	-	0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.1, 0.18, 0.25	0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.01
Biochemical Oxygen Demand	mg/L	-	-	-	-	2, 5, 6	-	-	-	-	-	-	-	-	-	-
Chemical Oxygen Demand	mg/L	-	-	-	-	5	16	13	30	26	15	10	23	18	35	27
Dissolved Organic Carbon	mg/L	-	-	5	4.3	0.4, 0.5	8.4	5.7	11	8	7.4	5.9	7.9	4.5	6.3	7.3
Electrical Conductivity	uS/cm	-	-	-	-	1, 2, 5	46	43	45	50	44	42	42	38	46	39
Hardness (as CaCO3)	mg/L	-	-	80 - 100	-		**23.2**	**14.1**	**14.1**	**14.1**	**12**	**9.6**	**12**	**12**	**14.6**	**13.3**
pH	pH units	-	6.5 - 8.5	6.5 - 8.5	-		6.76	6.5	6.4	6.62	6.77	6.38	6.65	6	6.6	5.8
Total Dissolved Solids	mg/L	-	-	500	267	5, 10, 20	30	28	29	33	29	27	27	25	105	42
Total Suspended Solids	mg/L	-	-	-	-	10, 20, 50, 100, 200, 500	-	-	-	-	-	-	-	-	-	-
Metals																
Aluminum (diss, 0.45 µm)	mg/L	Calculated	-	0.1	-	0.004, 0.01	0.07	0.08	0.06	0.09	0.05	0.05	0.05	0.1	0.047	0.062
Barium (diss)	mg/L	-	-	1	-	0.002	0.01	0.01	0.01	0.01	<0.01	<0.01	<0.01	0.01	0.008	0.01
Beryllium (diss)	mg/L	-	Calculated	-	-	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005
Boron (diss)	mg/L	0.2	-	5	-	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium (diss)	mg/L	Calculated	-	0.005	-	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (diss)	mg/L	-	-	0.05	-	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt (diss)	mg/L	0.0009	-	-	-	0.0002	0.0014	0.0015	0.0018	0.002	0.0018	0.0019	0.0017	0.0023	0.0017	0.0019
Copper (diss)	mg/L	Calculated	-	1	-	0.001	0.002	0.002	0.003	0.002	0.001	0.001	0.002	0.002	0.0012	0.0017
Iron (diss)	mg/L	-	0.3	0.3	0.21	0.01, 0.02, 0.1	0.26	0.24	0.15	0.18	0.13	0.07	0.09	0.17	<0.1	0.125
Lead (diss)	mg/L	Calculated	-	0.01	-	0.0005, 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0001
Manganese (diss)	mg/L	-	-	0.05	0.051	0.002, 0.01, 0.02	**0.06**	**0.06**	**0.06**	0.04	0.05	0.05	0.05	**0.08**	0.047	**0.067**
Molybdenum (diss)	mg/L	0.04	-	-	-	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0005	<0.0005
Nickel (diss)	mg/L	-	0.025	-	-	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001
Silicon (diss)	mg/L	-	-	-	-	0.1	6.7	7.1	6.5	6.7	5.6	6.1	6	5.4	5.87	7
Silver (diss)	mg/L	-	0.0001	-	-	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Strontium (diss)	mg/L	-	-	-	-	0.001, 0.005	0.026	0.024	0.031	0.026	0.026	0.026	0.025	0.02	0.024	0.025
Thallium (diss)	mg/L	0.0003	-	-	-	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Titanium (diss)	mg/L	-	-	-	-	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005
Vanadium (diss)	mg/L	0.006	-	-	-	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0005	<0.0005
Zinc (diss)	mg/L	0.02	-	5	-	0.005, 0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005

Notes:

Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General
Concentration exceeds ODWQS-ALL-MERGED	Ontario Drinking Water Quality Standards All Types Merged
Concentration exceeds RUV-LSP	Reasonable Use Values Lake St Peter

Table E-1: Municipality of Hastings Highlands Historical Analytical Results Anions, Cations, General Chemistry and Dissolved Metals in Groundwater						Site Name	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS
						Location	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03
						Sample ID	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03
Parameter	Units	PWQO-INTERIM	PWQO-GENERAL	ODWQS-ALL-MERGED	RUV-LSP	Sample Date	2013-Apr-16	2013-Oct-29	2014-May-12	2014-Oct-15	2015-May-05	2015-Oct-27	2016-Apr-27	2016-Oct-27	2017-May-12	2017-Oct-24
Anions						**Detection Limit**										
Chloride	mg/L	-	-	250	125.3	0.1, 0.12, 0.5, 1	0.48	0.51	0.44	0.36	0.48	0.24	0.45	0.3	0.5	0.31
Nitrate as N	mg/L	-	-	10	2.5	0.05, 0.1, 0.25	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	-	-	500	252.6	0.1, 0.5, 1	5.43	5.66	5.92	5.77	5.72	4.97	5.21	4.91	5.28	4.93
Cations																
Calcium (diss)	mg/L	-	-	-	-	0.05, 0.2	3.77	3.93	3.91	3.59	3.75	3.61	3.66	3.64	3.43	3.65
Magnesium (diss)	mg/L	-	-	-	-	0.05	1.02	1.11	1.03	0.98	1.04	1.03	1.06	0.92	0.91	1
Potassium (diss)	mg/L	-	-	-	-	0.5, 1	0.92	1.07	1.02	0.89	1.03	0.98	1.03	0.88	-	-
Sodium (diss)	mg/L	-	-	200	100.8	0.05, 0.1	1.62	1.7	1.74	1.61	1.67	1.75	1.64	1.44	1.53	1.62
General Chemistry																
Alkalinity (as CaCO3)	mg/L	-	See Factsheet	30 - 500	256.3	1, 5	**11**	**11**	**10**	**12**	**11**	**13**	**13**	**12**	**14**	**12**
Ammonia as N	mg/L	-	-	-	-	0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.1, 0.18, 0.25	0.17	<0.02	0.04	0.15	<0.02	<0.02	0.04	0.19	<0.02	1.12
Biochemical Oxygen Demand	mg/L	-	-	-	-	2, 5, 6	-	-	-	-	-	-	-	-	-	-
Chemical Oxygen Demand	mg/L	-	-	-	-	5	<5	19	5	12	12	15	10	12	13	<5
Dissolved Organic Carbon	mg/L	-	-	5	4.3	0.4, 0.5	2	2.3	3.1	3.6	3.5	3.6	4	3.7	2.6	3.8
Electrical Conductivity	uS/cm	-	-	-	-	1, 2, 5	39	40	40	46	40	40	41	39	45	35
Hardness (as CaCO3)	mg/L	-	-	80 - 100	-		**13.6**	**14.4**	**14**	**13**	**13.6**	**13.3**	**13.5**	**12.9**	**12.3**	**13.2**
pH	pH units	-	6.5 - 8.5	6.5 - 8.5	-		6.83	6.87	6.66	7.3	6.81	6.52	6.72	6.49	6.64	6.46
Total Dissolved Solids	mg/L	-	-	500	267	5, 10, 20	48	52	52	32	46	32	40	34	48	34
Total Suspended Solids	mg/L	-	-	-	-	10, 20, 50, 100, 200, 500	-	-	-	-	-	-	-	-	208	353
Metals																
Aluminum (diss, 0.45 µm)	mg/L	Calculated	-	0.1	-	0.004, 0.01	0.057	0.064	0.051	0.05	0.057	0.059	0.065	0.051	-	-
Barium (diss)	mg/L	-	-	1	-	0.002	0.009	0.009	0.008	0.01	0.009	0.009	0.012	0.009	0.011	0.009
Beryllium (diss)	mg/L	-	Calculated	-	-	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-
Boron (diss)	mg/L	0.2	-	5	-	0.01	<0.01	<0.01	<0.01	1.35	<0.01	<0.01	0	0	<0.01	<0.01
Cadmium (diss)	mg/L	Calculated	-	0.005	-	0.0001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	-	-
Chromium (diss)	mg/L	-	-	0.05	-	0.001	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	-
Cobalt (diss)	mg/L	0.0009	-	-	-	0.0002	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.003	-	-
Copper (diss)	mg/L	Calculated	-	1	-	0.001	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	-
Iron (diss)	mg/L	-	0.3	0.3	0.21	0.01, 0.02, 0.1	0.07	0.077	0.047	0.121	0.077	0.06	0.053	0.329	0.018	0.035
Lead (diss)	mg/L	Calculated	-	0.01	-	0.0005, 0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	-
Manganese (diss)	mg/L	-	-	0.05	0.051	0.002, 0.01, 0.02	**0.051**	**0.054**	0.05	**0.059**	**0.051**	0.046	**0.053**	**0.055**	0.048	**0.051**
Molybdenum (diss)	mg/L	0.04	-	-	-	0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	-
Nickel (diss)	mg/L	-	0.025	-	-	0.005	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	-
Silicon (diss)	mg/L	-	-	-	-	0.1	6.21	5.96	6.02	6.1	6.15	5.95	6.49	6.17	-	-
Silver (diss)	mg/L	-	0.0001	-	-	0.0001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	-
Strontium (diss)	mg/L	-	-	-	-	0.001, 0.005	0.025	0.028	0.025	0.026	0.025	0.025	0.026	0.025	-	-
Thallium (diss)	mg/L	0.0003	-	-	-	0.0001	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	-	-
Titanium (diss)	mg/L	-	-	-	-	0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	-
Vanadium (diss)	mg/L	0.006	-	-	-	0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	-
Zinc (diss)	mg/L	0.02	-	5	-	0.005, 0.01	<0.005	0.066	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	-

Notes:

Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General
Concentration exceeds ODWQS-ALL-MERGED	Ontario Drinking Water Quality Standards All Types Merged
Concentration exceeds RUV-LSP	Reasonable Use Values Lake St Peter

Table E-1: Municipality of Hastings Highlands Historical Analytical Results Anions, Cations, General Chemistry and Dissolved Metals in Groundwater						Site Name	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS
						Location	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03
						Sample ID	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP3-03	LSP2-03	LSP2-03
Parameter	Units	PWQO-INTERIM	PWQO-GENERAL	ODWQS-ALL-MERGED	RUV-LSP	Sample Date	2018-May-08	2018-Oct-23	2019-May-08	2019-Oct-23	2020-May-07	2020-Oct-07	2021-Apr-21	2021-Oct-19	2022-May-02	2022-Oct-17
Anions						**Detection Limit**										
Chloride	mg/L	-	-	250	125.3	0.1, 0.12, 0.5, 1	0.4	0.3	0.54	0.3	0.35	0.6	0.39	0.43	0.41	62.1
Nitrate as N	mg/L	-	-	10	2.5	0.05, 0.1, 0.25	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	-	-	500	252.6	0.1, 0.5, 1	5.48	5.28	4.41	4.83	4.26	3.9	4.05	4.05	3.86	1.89
Cations																
Calcium (diss)	mg/L	-	-	-	-	0.05, 0.2	3.57	3.43	3.39	3.36	3.53	3.97	3.45	3.26	3.34	3.85
Magnesium (diss)	mg/L	-	-	-	-	0.05	0.95	0.9	0.9	0.9	0.89	0.92	0.93	0.84	0.88	0.97
Potassium (diss)	mg/L	-	-	-	-	0.5, 1	-	-	-	-	-	-	-	-	-	1.09
Sodium (diss)	mg/L	-	-	200	100.8	0.05, 0.1	1.53	1.54	1.48	1.49	1.44	1.5	1.55	1.47	1.45	1.47
General Chemistry																
Alkalinity (as CaCO3)	mg/L	-	See Factsheet	30 - 500	256.3	1, 5	**12**	**11**	**13**	**12**	**16**	**13**	**12**	**16**	**14**	**15**
Ammonia as N	mg/L	-	-	-	-	0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.1, 0.18, 0.25	<0.02	<0.02	<0.2	0.04	0.02	<0.02	<0.02	0.08	<0.02	<0.02
Biochemical Oxygen Demand	mg/L	-	-	-	-	2, 5, 6	-	-	<5	<5	<5	<2	<2	<2	-	-
Chemical Oxygen Demand	mg/L	-	-	-	-	5	<5	<5	9	<5	<5	21	<5	<5	10	9
Dissolved Organic Carbon	mg/L	-	-	5	4.3	0.4, 0.5	3.2	3.8	3.2	2.8	2.7	3.8	3.2	3.2	2.6	2.6
Electrical Conductivity	uS/cm	-	-	-	-	1, 2, 5	39	41	42	82	47	34	38	37	39	39
Hardness (as CaCO3)	mg/L	-	-	80 - 100	-		**12.8**	**12.3**	**12.2**	**12.1**	**12.5**	**13.7**	**12.4**	**132.4**	**12**	**13.6**
pH	pH units	-	6.5 - 8.5	6.5 - 8.5	-		6.23	6.44	6.32	6.53	6.31	6.45	6.46	6.6	6.38	6.48
Total Dissolved Solids	mg/L	-	-	500	267	5, 10, 20	38	50	28	48	36	28	36	30	38	30
Total Suspended Solids	mg/L	-	-	-	-	10, 20, 50, 100, 200, 500	356	883	114	334	266	493	351	279	278	-
Metals																
Aluminum (diss, 0.45 µm)	mg/L	Calculated	-	0.1	-	0.004, 0.01	-	-	-	-	-	-	-	-	-	0.077
Barium (diss)	mg/L	-	-	1	-	0.002	0.01	0.013	0.01	0.01	0.01	0.009	0.008	0.009	0.01	-
Beryllium (diss)	mg/L	-	Calculated	-	-	0.001	-	-	-	-	-	-	-	-	-	-
Boron (diss)	mg/L	0.2	-	5	-	0.01	0.015	<0.01	0.015	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	0.01
Cadmium (diss)	mg/L	Calculated	-	0.005	-	0.0001	-	-	-	-	-	-	-	-	-	-
Chromium (diss)	mg/L	-	-	0.05	-	0.001	-	-	-	-	-	-	-	-	-	-
Cobalt (diss)	mg/L	0.0009	-	-	-	0.0002	-	-	-	-	-	-	-	-	-	-
Copper (diss)	mg/L	Calculated	-	1	-	0.001	-	-	-	-	-	-	-	-	-	-
Iron (diss)	mg/L	-	0.3	0.3	0.21	0.01, 0.02, 0.1	0.014	0.088	0.02	0.057	<0.01	0.095	0.142	0.118	0.108	0.271
Lead (diss)	mg/L	Calculated	-	0.01	-	0.0005, 0.001	-	-	-	-	-	-	-	-	-	<0.0005
Manganese (diss)	mg/L	-	-	0.05	0.051	0.002, 0.01, 0.02	0.049	**0.051**	**0.052**	**0.053**	**0.057**	0.05	0.046	0.045	**0.052**	**0.054**
Molybdenum (diss)	mg/L	0.04	-	-	-	0.005	-	-	-	-	-	-	-	-	-	-
Nickel (diss)	mg/L	-	0.025	-	-	0.005	-	-	-	-	-	-	-	-	-	-
Silicon (diss)	mg/L	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-
Silver (diss)	mg/L	-	0.0001	-	-	0.0001	-	-	-	-	-	-	-	-	-	-
Strontium (diss)	mg/L	-	-	-	-	0.001, 0.005	-	-	-	-	-	-	-	-	-	0.026
Thallium (diss)	mg/L	0.0003	-	-	-	0.0001	-	-	-	-	-	-	-	-	-	-
Titanium (diss)	mg/L	-	-	-	-	0.01	-	-	-	-	-	-	-	-	-	-
Vanadium (diss)	mg/L	0.006	-	-	-	0.001	-	-	-	-	-	-	-	-	-	-
Zinc (diss)	mg/L	0.02	-	5	-	0.005, 0.01	-	-	-	-	-	-	-	-	-	<0.005

Notes:

Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General
Concentration exceeds ODWQS-ALL-MERGED	Ontario Drinking Water Quality Standards All Types Merged
Concentration exceeds RUV-LSP	Reasonable Use Values Lake St Peter

Table E-1: Municipality of Hastings Highlands Historical Analytical Results Anions, Cations, General Chemistry and Dissolved Metals in Groundwater						Site Name	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS
						Location	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP2-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03
						Sample ID	LSP2-03	LSP-QAQC-GW1 (LSP2-03)	LSP2-03	LSP2-03	LSP2-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03
Parameter	Units	PWQO-INTERIM	PWQO-GENERAL	ODWQS-ALL-MERGED	RUV-LSP	Sample Date	2023-May-04	2023-May-04	2023-Oct-17	2024-Apr-30	2024-Oct-28	2007-May-02	2007-Nov-21	2008-May-08	2008-Oct-08	2009-Jun-04
Anions						**Detection Limit**										
Chloride	mg/L	-	-	250	125.3	0.1, 0.12, 0.5, 1	0.42	0.41	<1	<1	<1	29	10	33	12	13
Nitrate as N	mg/L	-	-	10	2.5	0.05, 0.1, 0.25	<0.05	<0.05	<0.1	<0.1	<0.1	3.17	<0.1	0.93	0.23	<0.1
Sulphate	mg/L	-	-	500	252.6	0.1, 0.5, 1	3.49	3.5	2.4	3.3	3.7	46	15	26	20	21
Cations																
Calcium (diss)	mg/L	-	-	-	-	0.05, 0.2	-	-	3.4	3.6	3.2	47	26	41	37	38
Magnesium (diss)	mg/L	-	-	-	-	0.05	0.78	0.87	0.84	0.95	0.82	8	4	6	9	6
Potassium (diss)	mg/L	-	-	-	-	0.5, 1	0.94	0.84	-	-	-	30	15	25	22	24
Sodium (diss)	mg/L	-	-	200	100.8	0.05, 0.1	1.71	1.49	1.7	1.6	1.7	15	11	14	14	11
General Chemistry																
Alkalinity (as CaCO3)	mg/L	-	See Factsheet	30 - 500	256.3	1, 5	**14**	**13**	**13**	**14**	**13**	130	118	113	167	146
Ammonia as N	mg/L	-	-	-	-	0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.1, 0.18, 0.25	<0.02	<0.02	<0.05	<0.05	<0.05	1.18	3.09	0.45	1	1
Biochemical Oxygen Demand	mg/L	-	-	-	-	2, 5, 6	-	-	-	-	-	-	-	-	-	-
Chemical Oxygen Demand	mg/L	-	-	-	-	5	-	-	-	-	-	21	51	17	30	28
Dissolved Organic Carbon	mg/L	-	-	5	4.3	0.4, 0.5	2.9	2.6	3.5	2.7	3.5	**12.7**	**25.6**	**6.4**	**10.4**	**9.6**
Electrical Conductivity	uS/cm	-	-	-	-	1, 2, 5	41	42	35	36	38	490	297	408	409	374
Hardness (as CaCO3)	mg/L	-	-	80 - 100	-		-	-	-	-	-	**150.3**	81.4	**127.1**	**129.5**	**119.6**
pH	pH units	-	6.5 - 8.5	6.5 - 8.5	-		6.66	6.59	6.66	7.27	6.67	6.59	6.74	7.12	6.87	6.7
Total Dissolved Solids	mg/L	-	-	500	267	5, 10, 20	38	42	50	45	10	319	193	265	266	243
Total Suspended Solids	mg/L	-	-	-	-	10, 20, 50, 100, 200, 500	487	769	400	240	380	-	-	-	-	-
Metals																
Aluminum (diss, 0.45 µm)	mg/L	Calculated	-	0.1	-	0.004, 0.01	-	-	-	-	-	0.03	0.02	0.02	0.02	0.01
Barium (diss)	mg/L	-	-	1	-	0.002	0.01	0.01	0.013	0.0094	0.013	0.25	0.25	0.24	0.27	0.23
Beryllium (diss)	mg/L	-	Calculated	-	-	0.001	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001
Boron (diss)	mg/L	0.2	-	5	-	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.2	0.13	0.16	0.23	0.19
Cadmium (diss)	mg/L	Calculated	-	0.005	-	0.0001	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (diss)	mg/L	-	-	0.05	-	0.001	-	-	-	-	-	0.002	0.002	0.003	0.001	0.001
Cobalt (diss)	mg/L	0.0009	-	-	-	0.0002	-	-	-	-	-	0.0138	0.0475	0.0066	0.0285	0.011
Copper (diss)	mg/L	Calculated	-	1	-	0.001	-	-	-	-	-	0.006	0.002	0.004	0.005	0.004
Iron (diss)	mg/L	-	0.3	0.3	0.21	0.01, 0.02, 0.1	0.131	0.127	0.12	0.12	0.11	0.86	19.2	0.06	2.72	1.29
Lead (diss)	mg/L	Calculated	-	0.01	-	0.0005, 0.001	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese (diss)	mg/L	-	-	0.05	0.051	0.002, 0.01, 0.02	**0.052**	**0.052**	0.048	**0.051**	0.039	**0.72**	**1.4**	**0.64**	**1.95**	**0.88**
Molybdenum (diss)	mg/L	0.04	-	-	-	0.005	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel (diss)	mg/L	-	0.025	-	-	0.005	-	-	-	-	-	<0.005	<0.005	<0.005	0.006	<0.005
Silicon (diss)	mg/L	-	-	-	-	0.1	-	-	-	-	-	6.9	7.2	6.8	7	5.7
Silver (diss)	mg/L	-	0.0001	-	-	0.0001	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Strontium (diss)	mg/L	-	-	-	-	0.001, 0.005	-	-	-	-	-	0.171	0.11	0.155	0.155	0.184
Thallium (diss)	mg/L	0.0003	-	-	-	0.0001	-	-	-	-	-	0.0006	<0.0001	0.0003	0.0001	0.0003
Titanium (diss)	mg/L	-	-	-	-	0.01	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium (diss)	mg/L	0.006	-	-	-	0.001	-	-	-	-	-	0.002	0.004	0.003	0.002	0.002
Zinc (diss)	mg/L	0.02	-	5	-	0.005, 0.01	-	-	-	-	-	0.01	0.01	<0.01	<0.01	<0.01

Notes:

Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General
Concentration exceeds ODWQS-ALL-MERGED	Ontario Drinking Water Quality Standards All Types Merged
Concentration exceeds RUV-LSP	Reasonable Use Values Lake St Peter

Table E-1: Municipality of Hastings Highlands Historical Analytical Results Anions, Cations, General Chemistry and Dissolved Metals in Groundwater						Site Name	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS
						Location	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03
						Sample ID	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03
Parameter	Units	PWQO-INTERIM	PWQO-GENERAL	ODWQS-ALL-MERGED	RUV-LSP	Sample Date	2009-Oct-21	2010-May-18	2010-Oct-19	2011-May-19	2011-Nov-02	2012-Apr-17	2012-Oct-17	2013-Apr-16	2013-Oct-29	2014-May-12
Anions						**Detection Limit**										
Chloride	mg/L	-	-	250	125.3	0.1, 0.12, 0.5, 1	7	9	16	32	12	7	9	49.2	15.6	7.96
Nitrate as N	mg/L	-	-	10	2.5	0.05, 0.1, 0.25	0.57	2.08	0.27	<0.1	<0.01	0.3	<0.0001	1.86	0.76	0.44
Sulphate	mg/L	-	-	500	252.6	0.1, 0.5, 1	11	47	37	13	11	46	24	46.5	17.4	24.3
Cations																
Calcium (diss)	mg/L	-	-	-	-	0.05, 0.2	29	58	37	28	22	24.8	14.6	64.9	29.8	43.1
Magnesium (diss)	mg/L	-	-	-	-	0.05	4	11	4	4	3	5.39	3.56	12.8	6.65	7.47
Potassium (diss)	mg/L	-	-	-	-	0.5, 1	16	19	14	10	11	10.5	9.13	13.2	8.66	22
Sodium (diss)	mg/L	-	-	200	100.8	0.05, 0.1	8	7	7	6	10	7.96	8.49	13	15	8.94
General Chemistry																
Alkalinity (as CaCO3)	mg/L	-	See Factsheet	30 - 500	256.3	1, 5	119	163	97	70	91	92	84	109	101	143
Ammonia as N	mg/L	-	-	-	-	0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.1, 0.18, 0.25	1.87	0.37	1.46	0.79	2.27	0.03	1.44	0.08	0.63	0.09
Biochemical Oxygen Demand	mg/L	-	-	-	-	2, 5, 6	-	-	-	-	-	-	-	-	-	-
Chemical Oxygen Demand	mg/L	-	-	-	-	5	27	25	20	23	22	23	39	<5	21	<5
Dissolved Organic Carbon	mg/L	-	-	5	4.3	0.4, 0.5	**9.6**	**11.4**	**6.9**	**8.5**	**7.3**	**8.3**	**9.5**	3.7	4.1	5
Electrical Conductivity	uS/cm	-	-	-	-	1, 2, 5	286	469	321	285	234	335	263	473	288	361
Hardness (as CaCO3)	mg/L	-	-	80 - 100	-		88.9	**190.1**	**108.9**	86.4	**67.3**	84.1	**51.1**	**214.8**	**101.8**	**138.4**
pH	pH units	-	6.5 - 8.5	6.5 - 8.5	-		6.69	6.91	6.55	7	6.32	6.7	6.1	7.4	7.1	7.01
Total Dissolved Solids	mg/L	-	-	500	267	5, 10, 20	186	305	209	185	152	273	169	306	168	200
Total Suspended Solids	mg/L	-	-	-	-	10, 20, 50, 100, 200, 500	-	-	-	-	-	-	-	-	-	-
Metals																
Aluminum (diss, 0.45 µm)	mg/L	Calculated	-	0.1	-	0.004, 0.01	0.02	0.01	0.01	<0.01	<0.01	0.011	0.021	0.015	0.008	0.01
Barium (diss)	mg/L	-	-	1	-	0.002	0.17	0.19	0.15	0.14	0.17	0.215	0.169	0.251	0.16	0.315
Beryllium (diss)	mg/L	-	Calculated	-	-	0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001
Boron (diss)	mg/L	0.2	-	5	-	0.01	0.14	0.19	0.12	0.11	0.1	0.358	0.341	0.409	0.225	0.289
Cadmium (diss)	mg/L	Calculated	-	0.005	-	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.002	<0.002	<0.002
Chromium (diss)	mg/L	-	-	0.05	-	0.001	0.001	<0.001	<0.001	0.001	0.001	<0.001	<0.001	<0.003	<0.003	<0.003
Cobalt (diss)	mg/L	0.0009	-	-	-	0.0002	0.0541	0.0063	0.0563	0.0456	0.0219	0.0036	0.0376	0.005	0.014	0.003
Copper (diss)	mg/L	Calculated	-	1	-	0.001	0.004	0.004	0.004	0.002	0.002	0.0021	0.0016	<0.003	<0.003	<0.003
Iron (diss)	mg/L	-	0.3	0.3	0.21	0.01, 0.02, 0.1	**7.38**	**0.49**	**1.91**	**2.58**	**0.46**	**0.458**	**14.5**	**0.377**	**0.323**	0.167
Lead (diss)	mg/L	Calculated	-	0.01	-	0.0005, 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0001	<0.002	<0.002	<0.002
Manganese (diss)	mg/L	-	-	0.05	0.051	0.002, 0.01, 0.02	**1.36**	**0.33**	**3.66**	**0.98**	**0.88**	0.036	**1.19**	**0.099**	**0.778**	**0.103**
Molybdenum (diss)	mg/L	0.04	-	-	-	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0005	<0.0005	<0.002	<0.002	<0.002
Nickel (diss)	mg/L	-	0.025	-	-	0.005	0.006	<0.005	<0.005	<0.005	<0.005	0.002	0.004	0.009	0.004	<0.003
Silicon (diss)	mg/L	-	-	-	-	0.1	7.3	4.4	6.2	5.6	6.3	5.1	7.1	6.4	5.65	5.04
Silver (diss)	mg/L	-	0.0001	-	-	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.002	<0.002	<0.002
Strontium (diss)	mg/L	-	-	-	-	0.001, 0.005	0.15	0.235	0.154	0.118	0.099	0.157	0.127	0.242	0.131	0.197
Thallium (diss)	mg/L	0.0003	-	-	-	0.0001	0.0002	0.0001	0.0002	0.0001	<0.0001	<0.0001	<0.0001	<0.006	<0.006	<0.006
Titanium (diss)	mg/L	-	-	-	-	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.002	<0.002	<0.002
Vanadium (diss)	mg/L	0.006	-	-	-	0.001	0.002	<0.001	<0.001	<0.001	0.001	0.0012	0.001	<0.002	<0.002	<0.002
Zinc (diss)	mg/L	0.02	-	5	-	0.005, 0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	0.023	<0.005

Notes:

Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General
Concentration exceeds ODWQS-ALL-MERGED	Ontario Drinking Water Quality Standards All Types Merged
Concentration exceeds RUV-LSP	Reasonable Use Values Lake St Peter

Table E-1: Municipality of Hastings Highlands Historical Analytical Results Anions, Cations, General Chemistry and Dissolved Metals in Groundwater						Site Name	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS
						Location	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03
						Sample ID	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03
Parameter	Units	PWQO-INTERIM	PWQO-GENERAL	ODWQS-ALL-MERGED	RUV-LSP	Sample Date	2014-Oct-15	2015-May-05	2015-Oct-27	2016-Apr-27	2016-Oct-27	2017-May-12	2017-Oct-24	2018-May-08	2018-Oct-23	2019-May-08
Anions						**Detection Limit**										
Chloride	mg/L	-	-	250	125.3	0.1, 0.12, 0.5, 1	6.36	11.4	7.32	101	12.2	101	10.3	14.4	20	26
Nitrate as N	mg/L	-	-	10	2.5	0.05, 0.1, 0.25	0.63	0.15	<0.05	<0.25	<0.05	<0.5	<0.1	10.2	<0.05	<0.05
Sulphate	mg/L	-	-	500	252.6	0.1, 0.5, 1	16.3	23.8	18.6	101	30.9	38.3	32.7	24.5	11.9	19.5
Cations																
Calcium (diss)	mg/L	-	-	-	-	0.05, 0.2	38.9	45.2	27.3	104	69.5	200	76.4	69.5	44.2	67
Magnesium (diss)	mg/L	-	-	-	-	0.05	7.3	6.7	3.88	17.7	6.41	28.8	6.17	6.13	3.43	6.24
Potassium (diss)	mg/L	-	-	-	-	0.5, 1	14.3	15.4	10.5	24.8	17.8	-	-	-	-	-
Sodium (diss)	mg/L	-	-	200	100.8	0.05, 0.1	7.31	5.5	8.7	69.4	17.5	127	11.1	13.6	7.57	10.8
General Chemistry																
Alkalinity (as CaCO3)	mg/L	-	See Factsheet	30 - 500	256.3	1, 5	138	131	97	313	242	**951**	285	214	142	195
Ammonia as N	mg/L	-	-	-	-	0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.1, 0.18, 0.25	0.99	0.36	1.74	0.87	11	11	14	5	5	1.3
Biochemical Oxygen Demand	mg/L	-	-	-	-	2, 5, 6	-	-	-	-	-	-	-	-	-	<5
Chemical Oxygen Demand	mg/L	-	-	-	-	5	12	6	27	159	90	371	54	25	32	29
Dissolved Organic Carbon	mg/L	-	-	5	4.3	0.4, 0.5	**5.6**	**5.6**	**8.1**	**74.4**	**44.8**	**166**	**21.6**	**6.1**	**9.5**	**10.7**
Electrical Conductivity	uS/cm	-	-	-	-	1, 2, 5	342	345	260	995	588	2180	562	532	402	513
Hardness (as CaCO3)	mg/L	-	-	80 - 100	-		**127.2**	**140.5**	84.1	**332.6**	**199.9**	**618**	**216.2**	**198.8**	**124.5**	**193**
pH	pH units	-	6.5 - 8.5	6.5 - 8.5	-		7.44	7.02	6.94	7.06	7.57	7.32	7.09	7.44	6.77	6.5
Total Dissolved Solids	mg/L	-	-	500	267	5, 10, 20	180	212	146	**664**	334	**1420**	306	308	214	266
Total Suspended Solids	mg/L	-	-	-	-	10, 20, 50, 100, 200, 500	-	-	-	-	-	188	893	278	455	91
Metals																
Aluminum (diss, 0.45 µm)	mg/L	Calculated	-	0.1	-	0.004, 0.01	0.01	0.01	0.014	**0.102**	0.092	-	-	-	-	-
Barium (diss)	mg/L	-	-	1	-	0.002	0.233	0.192	0.211	0.705	0.526	**1.18**	0.358	0.234	0.24	0.334
Beryllium (diss)	mg/L	-	Calculated	-	-	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-
Boron (diss)	mg/L	0.2	-	5	-	0.01	0.22	0.211	0.158	0.206	0.705	1.05	0.46	0.508	0.217	0.239
Cadmium (diss)	mg/L	Calculated	-	0.005	-	0.0001	<0.002	<0.002	<0.002	<0.002	<0.001	-	-	-	-	-
Chromium (diss)	mg/L	-	-	0.05	-	0.001	<0.003	<0.003	<0.003	0.006	0.003	-	-	-	-	-
Cobalt (diss)	mg/L	0.0009	-	-	-	0.0002	0.008	0.006	0.032	0.587	0.087	-	-	-	-	-
Copper (diss)	mg/L	Calculated	-	1	-	0.001	0.004	0.003	<0.003	0.029	0.007	-	-	-	-	-
Iron (diss)	mg/L	-	0.3	0.3	0.21	0.01, 0.02, 0.1	0.099	0.089	**13.4**	**29.6**	**82.9**	**261**	**58.4**	**17**	**38.3**	**0.72**
Lead (diss)	mg/L	Calculated	-	0.01	-	0.0005, 0.001	<0.002	<0.002	<0.002	<0.002	<0.002	-	-	-	-	-
Manganese (diss)	mg/L	-	-	0.05	0.051	0.002, 0.01, 0.02	**1.1**	**0.255**	**1.05**	**10.5**	**2.61**	**11.1**	**2**	**1.89**	**1.71**	**4**
Molybdenum (diss)	mg/L	0.04	-	-	-	0.005	<0.002	<0.002	<0.002	<0.002	0.01	-	-	-	-	-
Nickel (diss)	mg/L	-	0.025	-	-	0.005	<0.003	<0.003	<0.003	0.027	0.007	-	-	-	-	-
Silicon (diss)	mg/L	-	-	-	-	0.1	5.37	4.66	6.16	7.57	5.81	-	-	-	-	-
Silver (diss)	mg/L	-	0.0001	-	-	0.0001	<0.002	<0.002	<0.002	<0.002	<0.002	-	-	-	-	-
Strontium (diss)	mg/L	-	-	-	-	0.001, 0.005	0.177	0.183	0.133	0.518	0.37	-	-	-	-	-
Thallium (diss)	mg/L	0.0003	-	-	-	0.0001	<0.006	<0.006	<0.006	<0.006	<0.006	-	-	-	-	-
Titanium (diss)	mg/L	-	-	-	-	0.01	<0.002	<0.002	<0.002	0.003	0.003	-	-	-	-	-
Vanadium (diss)	mg/L	0.006	-	-	-	0.001	<0.002	<0.002	<0.002	<0.002	0.006	-	-	-	-	-
Zinc (diss)	mg/L	0.02	-	5	-	0.005, 0.01	<0.005	<0.005	<0.005	0.008	<0.005	-	-	-	-	-

Notes:

Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General
Concentration exceeds ODWQS-ALL-MERGED	Ontario Drinking Water Quality Standards All Types Merged
Concentration exceeds RUV-LSP	Reasonable Use Values Lake St Peter

Table E-1: Municipality of Hastings Highlands Historical Analytical Results Anions, Cations, General Chemistry and Dissolved Metals in Groundwater						Site Name	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS
						Location	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03
						Sample ID	LSP3-03	LSP3-03	LSP3-03	LSP3-03	LSP-QAQC GW-S21 (LSP3-03)	LSP2-03	LSP3-03	LSP3-03	LSP3-03	LSP3-03
Parameter	Units	PWQO-INTERIM	PWQO-GENERAL	ODWQS-ALL-MERGED	RUV-LSP	Sample Date	2019-Oct-23	2020-May-07	2020-Oct-07	2021-Apr-21	2021-Apr-21	2021-Oct-19	2022-May-02	2022-Oct-17	2023-May-04	2023-Oct-17
Anions						**Detection Limit**										
Chloride	mg/L	-	-	250	125.3	0.1, 0.12, 0.5, 1	34.1	33.8	96.1	27.7	27.9	6.94	29.3	134	74	77
Nitrate as N	mg/L	-	-	10	2.5	0.05, 0.1, 0.25	<0.05	0.07	0.39	0.11	0.11	<0.05	<0.05	<0.05	<0.05	<0.1
Sulphate	mg/L	-	-	500	252.6	0.1, 0.5, 1	25.5	28.7	16	14.3	14.4	19	12.8	4.1	14.4	2.4
Cations																
Calcium (diss)	mg/L	-	-	-	-	0.05, 0.2	48.9	60.2	67	43.6	43.6	46.6	29.6	37.6	-	47
Magnesium (diss)	mg/L	-	-	-	-	0.05	5.53	5.94	6.32	4.22	4.26	3.9	2.22	3.16	3.97	5.4
Potassium (diss)	mg/L	-	-	-	-	0.5, 1	-	-	-	-	-	-	-	13.8	13.2	-
Sodium (diss)	mg/L	-	-	200	100.8	0.05, 0.1	23.1	12.8	26.2	13.6	13.5	12	15.4	83	34.8	50
General Chemistry																
Alkalinity (as CaCO3)	mg/L	-	See Factsheet	30 - 500	256.3	1, 5	202	155	177	129	128	161	91	151	141	170
Ammonia as N	mg/L	-	-	-	-	0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.1, 0.18, 0.25	10.7	0.1	6.15	0.38	0.43	2.79	0.52	4.78	0.84	7.4
Biochemical Oxygen Demand	mg/L	-	-	-	-	2, 5, 6	<5	<5	3	3	2	4	-	-	-	-
Chemical Oxygen Demand	mg/L	-	-	-	-	5	56	12	27	<5	<5	8	10	31	-	-
Dissolved Organic Carbon	mg/L	-	-	5	4.3	0.4, 0.5	**17.9**	**6.4**	**7.6**	**5.1**	5	**6.4**	3.4	**14.7**	**6.9**	**16**
Electrical Conductivity	uS/cm	-	-	-	-	1, 2, 5	615	564	628	366	368	359	305	775	556	620
Hardness (as CaCO3)	mg/L	-	-	80 - 100	-		**144.9**	**174.8**	**193.3**	**126.2**	**126.4**	**11.6**	83.1	**106.9**	-	-
pH	pH units	-	6.5 - 8.5	6.5 - 8.5	-		7.28	6.3	7.07	6.61	6.58	6.88	6.53	6.76	6.56	7.15
Total Dissolved Solids	mg/L	-	-	500	267	5, 10, 20	266	276	394	224	210	204	128	332	286	330
Total Suspended Solids	mg/L	-	-	-	-	10, 20, 50, 100, 200, 500	1670	55	57	18	30	26	59	-	331	140
Metals																
Aluminum (diss, 0.45 µm)	mg/L	Calculated	-	0.1	-	0.004, 0.01	-	-	-	-	-	-	-	0.055	-	-
Barium (diss)	mg/L	-	-	1	-	0.002	0.382	0.252	0.386	0.167	0.165	0.202	0.135	-	0.253	0.39
Beryllium (diss)	mg/L	-	Calculated	-	-	0.001	-	-	-	-	-	-	-	-	-	-
Boron (diss)	mg/L	0.2	-	5	-	0.01	0.638	0.344	0.268	0.216	0.212	0.192	0.054	0.139	0.135	0.23
Cadmium (diss)	mg/L	Calculated	-	0.005	-	0.0001	-	-	-	-	-	-	-	-	-	-
Chromium (diss)	mg/L	-	-	0.05	-	0.001	-	-	-	-	-	-	-	-	-	-
Cobalt (diss)	mg/L	0.0009	-	-	-	0.0002	-	-	-	-	-	-	-	-	-	-
Copper (diss)	mg/L	Calculated	-	1	-	0.001	-	-	-	-	-	-	-	-	-	-
Iron (diss)	mg/L	-	0.3	0.3	0.21	0.01, 0.02, 0.1	45.5	0.133	1.39	0.542	0.572	1.69	7.83	50	0.83	38
Lead (diss)	mg/L	Calculated	-	0.01	-	0.0005, 0.001	-	-	-	-	-	-	-	<0.0005	-	-
Manganese (diss)	mg/L	-	-	0.05	0.051	0.002, 0.01, 0.02	**1.16**	**1.33**	**3.26**	**1.05**	**1.08**	**1.57**	**0.835**	**1.19**	**1.79**	**1**
Molybdenum (diss)	mg/L	0.04	-	-	-	0.005	-	-	-	-	-	-	-	-	-	-
Nickel (diss)	mg/L	-	0.025	-	-	0.005	-	-	-	-	-	-	-	-	-	-
Silicon (diss)	mg/L	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-
Silver (diss)	mg/L	-	0.0001	-	-	0.0001	-	-	-	-	-	-	-	-	-	-
Strontium (diss)	mg/L	-	-	-	-	0.001, 0.005	-	-	-	-	-	-	-	0.19	-	-
Thallium (diss)	mg/L	0.0003	-	-	-	0.0001	-	-	-	-	-	-	-	-	-	-
Titanium (diss)	mg/L	-	-	-	-	0.01	-	-	-	-	-	-	-	-	-	-
Vanadium (diss)	mg/L	0.006	-	-	-	0.001	-	-	-	-	-	-	-	-	-	-
Zinc (diss)	mg/L	0.02	-	5	-	0.005, 0.01	-	-	-	-	-	-	-	<0.005	-	-

Notes:

Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General
Concentration exceeds ODWQS-ALL-MERGED	Ontario Drinking Water Quality Standards All Types Merged
Concentration exceeds RUV-LSP	Reasonable Use Values Lake St Peter

Table E-1: Municipality of Hastings Highlands Historical Analytical Results Anions, Cations, General Chemistry and Dissolved Metals in Groundwater						Site Name	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS
						Location	LSP3-03	LSP3-03	LSP4-19	LSP4-19	LSP4-19	LSP4-19	LSP4-19	LSP4-19	LSP4-19	LSP4-19
						Sample ID	LSP3-03	LSP3-03	LSP4-19	LSP-QAQC GW-F19 (LSP4-19)	LSP4-19	LSP4-19-QAQC GW (LSP4-19)	LSP4-19	LSP-QAQC GW-F20 (LSP4-19)	LSP4-19	LSP4-19
Parameter	Units	PWQO-INTERIM	PWQO-GENERAL	ODWQS-ALL-MERGED	RUV-LSP	Sample Date	2024-Apr-30	2024-Oct-28	2019-Oct-23	2019-Oct-23	2020-May-07	2020-May-07	2020-Oct-07	2020-Oct-07	2021-Apr-21	2021-Oct-19
Anions						**Detection Limit**										
Chloride	mg/L	-	-	250	125.3	0.1, 0.12, 0.5, 1	17	50	51.3	50.8	25.9	26.1	71.7	70.5	15.9	47.2
Nitrate as N	mg/L	-	-	10	2.5	0.05, 0.1, 0.25	<0.1	<0.1	2	2.09	1.83	1.86	1.6	1.68	3.02	5.36
Sulphate	mg/L	-	-	500	252.6	0.1, 0.5, 1	11	7	17.2	17.3	10.7	10.7	11.7	11.4	8.66	12
Cations																
Calcium (diss)	mg/L	-	-	-	-	0.05, 0.2	37	41	52.7	52.3	20	19.8	47.2	45.9	16.5	35.5
Magnesium (diss)	mg/L	-	-	-	-	0.05	4.8	4.7	7.91	8.02	2.84	2.82	6.74	6.63	2.74	5.28
Potassium (diss)	mg/L	-	-	-	-	0.5, 1	-	-	-	-	-	-	-	-	-	-
Sodium (diss)	mg/L	-	-	200	100.8	0.05, 0.1	16	35	38.8	38.6	16.8	16.6	27	26.8	13.4	22.7
General Chemistry																
Alkalinity (as CaCO3)	mg/L	-	See Factsheet	30 - 500	256.3	1, 5	130	150	238	233	115	94	192	180	61	114
Ammonia as N	mg/L	-	-	-	-	0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.1, 0.18, 0.25	0.73	5	3.73	3.68	1.24	1.28	3.21	3.21	0.52	1.7
Biochemical Oxygen Demand	mg/L	-	-	-	-	2, 5, 6	-	-	<5	<5	<5	<5	<2	<2	<2	3
Chemical Oxygen Demand	mg/L	-	-	-	-	5	-	-	43	32	26	31	40	41	<5	26
Dissolved Organic Carbon	mg/L	-	-	5	4.3	0.4, 0.5	5.9	11	12.4	12.2	4.5	4.8	8	8.2	4.1	6.7
Electrical Conductivity	uS/cm	-	-	-	-	1, 2, 5	340	500	722	706	381	380	582	562	219	445
Hardness (as CaCO3)	mg/L	-	-	80 - 100	-		-	-	**164.2**	**163.6**	**61.6**	**61.1**	**145.6**	**141.9**	**52.5**	**110.4**
pH	pH units	-	6.5 - 8.5	6.5 - 8.5	-		7.16	7.28	7.23	7.34	6.37	6.44	7.1	7.13	6.75	6.72
Total Dissolved Solids	mg/L	-	-	500	267	5, 10, 20	195	315	334	338	168	174	320	320	136	302
Total Suspended Solids	mg/L	-	-	-	-	10, 20, 50, 100, 200, 500	5500	96	25300	23600	31800	35300	30400	23300	33300	18900
Metals																
Aluminum (diss, 0.45 µm)	mg/L	Calculated	-	0.1	-	0.004, 0.01	-	-	-	-	-	-	-	-	-	-
Barium (diss)	mg/L	-	-	1	-	0.002	0.17	0.28	0.223	0.22	0.13	0.129	0.232	0.233	0.061	0.158
Beryllium (diss)	mg/L	-	Calculated	-	-	0.001	-	-	-	-	-	-	-	-	-	-
Boron (diss)	mg/L	0.2	-	5	-	0.01	0.14	0.14	0.445	0.471	0.181	0.163	0.284	0.284	0.137	0.227
Cadmium (diss)	mg/L	Calculated	-	0.005	-	0.0001	-	-	-	-	-	-	-	-	-	-
Chromium (diss)	mg/L	-	-	0.05	-	0.001	-	-	-	-	-	-	-	-	-	-
Cobalt (diss)	mg/L	0.0009	-	-	-	0.0002	-	-	-	-	-	-	-	-	-	-
Copper (diss)	mg/L	Calculated	-	1	-	0.001	-	-	-	-	-	-	-	-	-	-
Iron (diss)	mg/L	-	0.3	0.3	0.21	0.01, 0.02, 0.1	6.2	6.2	<0.01	<0.01	<0.01	<0.01	0.011	0.016	0.035	0.03
Lead (diss)	mg/L	Calculated	-	0.01	-	0.0005, 0.001	-	-	-	-	-	-	-	-	-	-
Manganese (diss)	mg/L	-	-	0.05	0.051	0.002, 0.01, 0.02	0.57	1.6	9.43	9.48	2.85	2.77	8.16	8.08	1.69	5.8
Molybdenum (diss)	mg/L	0.04	-	-	-	0.005	-	-	-	-	-	-	-	-	-	-
Nickel (diss)	mg/L	-	0.025	-	-	0.005	-	-	-	-	-	-	-	-	-	-
Silicon (diss)	mg/L	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-
Silver (diss)	mg/L	-	0.0001	-	-	0.0001	-	-	-	-	-	-	-	-	-	-
Strontium (diss)	mg/L	-	-	-	-	0.001, 0.005	-	-	-	-	-	-	-	-	-	-
Thallium (diss)	mg/L	0.0003	-	-	-	0.0001	-	-	-	-	-	-	-	-	-	-
Titanium (diss)	mg/L	-	-	-	-	0.01	-	-	-	-	-	-	-	-	-	-
Vanadium (diss)	mg/L	0.006	-	-	-	0.001	-	-	-	-	-	-	-	-	-	-
Zinc (diss)	mg/L	0.02	-	5	-	0.005, 0.01	-	-	-	-	-	-	-	-	-	-

Notes:

Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General
Concentration exceeds ODWQS-ALL-MERGED	Ontario Drinking Water Quality Standards All Types Merged
Concentration exceeds RUV-LSP	Reasonable Use Values Lake St Peter

Table E-1: Municipality of Hastings Highlands Historical Analytical Results Anions, Cations, General Chemistry and Dissolved Metals in Groundwater						Site Name	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS
						Location	LSP4-19	LSP4-19	LSP4-19	LSP4-19	LSP4-19	LSP4-19	LSP4-19	LSP5-19	LSP5-19	LSP5-19
						Sample ID	LSP4-19	LSP4-19	LSP4-19	LSP4-19	LSP4-19	LSP-QAQC-GW1 (LSP4-19)	LSP4-19	LSP5-19	LSP5-19	LSP5-19
Parameter	Units	PWQO-INTERIM	PWQO-GENERAL	ODWQS-ALL-MERGED	RUV-LSP	Sample Date	2022-May-02	2022-Oct-17	2023-May-04	2023-Oct-17	2024-Apr-30	2024-Apr-30	2024-Oct-28	2019-Oct-23	2020-May-07	2020-Oct-07
Anions						**Detection Limit**										
Chloride	mg/L	-	-	250	125.3	0.1, 0.12, 0.5, 1	22.8	82.9	14.4	43	28	28	57	0.96	0.96	4.31
Nitrate as N	mg/L	-	-	10	2.5	0.05, 0.1, 0.25	6.21	7.58	4.96	4.62	2.9	2.93	6.45	0.07	0.06	0.11
Sulphate	mg/L	-	-	500	252.6	0.1, 0.5, 1	7.24	16	11.7	10	7.7	7.6	6.8	5.58	4.12	3.98
Cations																
Calcium (diss)	mg/L	-	-	-	-	0.05, 0.2	20.1	73	-	54	35	34	64	2.11	1.96	3.28
Magnesium (diss)	mg/L	-	-	-	-	0.05	3.06	10.3	2.36	8.1	4.9	5	9	0.53	0.33	0.58
Potassium (diss)	mg/L	-	-	-	-	0.5, 1	-	24.1	7.61	-	-	-	-	-	-	-
Sodium (diss)	mg/L	-	-	200	100.8	0.05, 0.1	12.7	36	14.9	33	20	20	26	2.76	1.95	2.76
General Chemistry																
Alkalinity (as CaCO3)	mg/L	-	See Factsheet	30 - 500	256.3	1, 5	53	205	55	190	110	120	190	**11**	**8**	**10**
Ammonia as N	mg/L	-	-	-	-	0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.1, 0.18, 0.25	0.74	4.21	0.1	4.9	1.8	1.8	6.5	0.02	0.03	0.03
Biochemical Oxygen Demand	mg/L	-	-	-	-	2, 5, 6	-	-	-	-	-	-	-	<5	<5	<2
Chemical Oxygen Demand	mg/L	-	-	-	-	5	31	30	-	-	-	-	-	36	23	31
Dissolved Organic Carbon	mg/L	-	-	5	4.3	0.4, 0.5	3.2	**9.8**	3.3	**8.2**	**5.5**	**5.5**	**7.2**	1.6	2.2	1.7
Electrical Conductivity	uS/cm	-	-	-	-	1, 2, 5	249	764	223	600	370	370	650	76	34	41
Hardness (as CaCO3)	mg/L	-	-	80 - 100	-		**62.8**	**224.7**	-	-	-	-	-	**7.5**	**6.3**	**10.6**
pH	pH units	-	6.5 - 8.5	6.5 - 8.5	-		6.56	6.61	6.56	7.78	7.24	8.04	7.12	6.46	6.21	6.36
Total Dissolved Solids	mg/L	-	-	500	267	5, 10, 20	160	370	140	335	315	315	430	52	34	34
Total Suspended Solids	mg/L	-	-	-	-	10, 20, 50, 100, 200, 500	24100	-	14200	42000	40000	35000	43000	11700	6950	6580
Metals																
Aluminum (diss, 0.45 µm)	mg/L	Calculated	-	0.1	-	0.004, 0.01	-	0.035	-	-	-	-	-	-	-	-
Barium (diss)	mg/L	-	-	1	-	0.002	0.081	-	0.097	0.17	0.099	0.097	0.19	0.014	0.01	0.013
Beryllium (diss)	mg/L	-	Calculated	-	-	0.001	-	-	-	-	-	-	-	-	-	-
Boron (diss)	mg/L	0.2	-	5	-	0.01	0.102	0.466	0.217	0.55	0.39	0.37	0.45	<0.01	<0.01	<0.01
Cadmium (diss)	mg/L	Calculated	-	0.005	-	0.0001	-	-	-	-	-	-	-	-	-	-
Chromium (diss)	mg/L	-	-	0.05	-	0.001	-	-	-	-	-	-	-	-	-	-
Cobalt (diss)	mg/L	0.0009	-	-	-	0.0002	-	-	-	-	-	-	-	-	-	-
Copper (diss)	mg/L	Calculated	-	1	-	0.001	-	-	-	-	-	-	-	-	-	-
Iron (diss)	mg/L	-	0.3	0.3	0.21	0.01, 0.02, 0.1	<0.01	0.033	0.032	<0.1	<0.1	<0.1	<0.1	0.026	<0.01	0.027
Lead (diss)	mg/L	Calculated	-	0.01	-	0.0005, 0.001	-	<0.0005	-	-	-	-	-	-	-	-
Manganese (diss)	mg/L	-	-	0.05	0.051	0.002, 0.01, 0.02	**2.54**	**12.1**	**1.56**	**8.7**	**3.9**	**3.9**	**8.2**	**0.088**	0.016	0.006
Molybdenum (diss)	mg/L	0.04	-	-	-	0.005	-	-	-	-	-	-	-	-	-	-
Nickel (diss)	mg/L	-	0.025	-	-	0.005	-	-	-	-	-	-	-	-	-	-
Silicon (diss)	mg/L	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-
Silver (diss)	mg/L	-	0.0001	-	-	0.0001	-	-	-	-	-	-	-	-	-	-
Strontium (diss)	mg/L	-	-	-	-	0.001, 0.005	-	0.974	-	-	-	-	-	-	-	-
Thallium (diss)	mg/L	0.0003	-	-	-	0.0001	-	-	-	-	-	-	-	-	-	-
Titanium (diss)	mg/L	-	-	-	-	0.01	-	-	-	-	-	-	-	-	-	-
Vanadium (diss)	mg/L	0.006	-	-	-	0.001	-	-	-	-	-	-	-	-	-	-
Zinc (diss)	mg/L	0.02	-	5	-	0.005, 0.01	-	<0.005	-	-	-	-	-	-	-	-

Notes:

Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General
Concentration exceeds ODWQS-ALL-MERGED	Ontario Drinking Water Quality Standards All Types Merged
Concentration exceeds RUV-LSP	Reasonable Use Values Lake St Peter

Table E-1: Municipality of Hastings Highlands Historical Analytical Results Anions, Cations, General Chemistry and Dissolved Metals in Groundwater						Site Name	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS
						Location	LSP5-19	LSP5-19	LSP5-19	LSP5-19	LSP5-19	LSP5-19	LSP5-19	LSP5-19	LSP5-19	LSP6-23
						Sample ID	LSP5-19	LSP5-19	LSP5-19	LSP5-19	LSP-QAQC-GW1-F22 (LSP5-19)	LSP5-19	LSP5-19	LSP5-19	LSP5-19	LSP6-23
Parameter	Units	PWQO-INTERIM	PWQO-GENERAL	ODWQS-ALL-MERGED	RUV-LSP	Sample Date	2021-Apr-21	2021-Oct-19	2022-May-02	2022-Oct-17	2022-Oct-17	2023-May-04	2023-Oct-17	2024-Apr-30	2024-Oct-28	2023-Oct-17
Anions						**Detection Limit**										
Chloride	mg/L	-	-	250	125.3	0.1, 0.12, 0.5, 1	0.8	0.5	0.39	3.06	2.52	0.25	3.4	<1	<1	1.8
Nitrate as N	mg/L	-	-	10	2.5	0.05, 0.1, 0.25	0.13	0.08	0.1	0.19	0.2	<0.05	0.1	0.12	<0.1	<0.1
Sulphate	mg/L	-	-	500	252.6	0.1, 0.5, 1	3.91	3.79	3.74	3.99	4	2.34	2.7	2.7	3.3	8.2
Cations																
Calcium (diss)	mg/L	-	-	-	-	0.05, 0.2	2.5	2.27	2.5	4.44	4.46	-	2.9	2.7	2.8	16
Magnesium (diss)	mg/L	-	-	-	-	0.05	0.45	0.38	0.44	0.81	0.8	0.23	0.49	0.46	0.47	3.8
Potassium (diss)	mg/L	-	-	-	-	0.5, 1	-	-	-	0.91	0.93	<0.5	-	-	-	-
Sodium (diss)	mg/L	-	-	200	100.8	0.05, 0.1	2.09	1.58	1.51	2.67	2.59	0.89	1.9	1.4	1.7	5.5
General Chemistry																
Alkalinity (as CaCO3)	mg/L	-	See Factsheet	30 - 500	256.3	1, 5	**8**	**10**	**9**	**13**	**17**	**5**	**7.9**	**10**	**8.7**	56
Ammonia as N	mg/L	-	-	-	-	0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.1, 0.18, 0.25	<0.02	0.11	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	0.073
Biochemical Oxygen Demand	mg/L	-	-	-	-	2, 5, 6	7	<2	-	-	-	-	-	-	-	-
Chemical Oxygen Demand	mg/L	-	-	-	-	5	<5	10	8	15	15	-	-	-	-	-
Dissolved Organic Carbon	mg/L	-	-	5	4.3	0.4, 0.5	**8.3**	2.1	1.8	1.2	1.2	2.8	1.5	1.8	1.8	2
Electrical Conductivity	uS/cm	-	-	-	-	1, 2, 5	30	27	35	46	50	19	29	26	31	140
Hardness (as CaCO3)	mg/L	-	-	80 - 100	-		**8.1**	**7.2**	**8.1**	**14.4**	**14.4**	-	-	-	-	-
pH	pH units	-	6.5 - 8.5	6.5 - 8.5	-		6.43	6.46	6.31	6.56	6.83	6.21	6.75	6.78	6.7	7.72
Total Dissolved Solids	mg/L	-	-	500	267	5, 10, 20	40	18	20	20	38	33	40	55	60	210
Total Suspended Solids	mg/L	-	-	-	-	10, 20, 50, 100, 200, 500	4320	2760	1840	-	-	1830	6800	2000	7100	19000
Metals																
Aluminum (diss, 0.45 µm)	mg/L	Calculated	-	0.1	-	0.004, 0.01	-	-	-	0.031	0.031	-	-	-	-	-
Barium (diss)	mg/L	-	-	1	-	0.002	0.01	0.01	0.009	-	-	0.007	0.01	0.01	0.012	0.012
Beryllium (diss)	mg/L	-	Calculated	-	-	0.001	-	-	-	-	-	-	-	-	-	-
Boron (diss)	mg/L	0.2	-	5	-	0.01	<0.01	<0.01	<0.01	0.013	0.011	<0.01	<0.01	<0.01	<0.01	0.031
Cadmium (diss)	mg/L	Calculated	-	0.005	-	0.0001	-	-	-	-	-	-	-	-	-	-
Chromium (diss)	mg/L	-	-	0.05	-	0.001	-	-	-	-	-	-	-	-	-	-
Cobalt (diss)	mg/L	0.0009	-	-	-	0.0002	-	-	-	-	-	-	-	-	-	-
Copper (diss)	mg/L	Calculated	-	1	-	0.001	-	-	-	-	-	-	-	-	-	-
Iron (diss)	mg/L	-	0.3	0.3	0.21	0.01, 0.02, 0.1	0.033	0.016	<0.01	0.021	0.018	0.024	<0.1	<0.1	<0.1	<0.1
Lead (diss)	mg/L	Calculated	-	0.01	-	0.0005, 0.001	-	-	-	<0.0005	<0.0005	-	-	-	-	-
Manganese (diss)	mg/L	-	-	0.05	0.051	0.002, 0.01, 0.02	0.005	0.004	<0.002	0.003	0.002	0.005	0.0021	0.0022	0.0045	**0.49**
Molybdenum (diss)	mg/L	0.04	-	-	-	0.005	-	-	-	-	-	-	-	-	-	-
Nickel (diss)	mg/L	-	0.025	-	-	0.005	-	-	-	-	-	-	-	-	-	-
Silicon (diss)	mg/L	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-
Silver (diss)	mg/L	-	0.0001	-	-	0.0001	-	-	-	-	-	-	-	-	-	-
Strontium (diss)	mg/L	-	-	-	-	0.001, 0.005	-	-	-	0.036	0.038	-	-	-	-	-
Thallium (diss)	mg/L	0.0003	-	-	-	0.0001	-	-	-	-	-	-	-	-	-	-
Titanium (diss)	mg/L	-	-	-	-	0.01	-	-	-	-	-	-	-	-	-	-
Vanadium (diss)	mg/L	0.006	-	-	-	0.001	-	-	-	-	-	-	-	-	-	-
Zinc (diss)	mg/L	0.02	-	5	-	0.005, 0.01	-	-	-	<0.005	<0.005	-	-	-	-	-

Notes:

Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General
Concentration exceeds ODWQS-ALL-MERGED	Ontario Drinking Water Quality Standards All Types Merged
Concentration exceeds RUV-LSP	Reasonable Use Values Lake St Peter

Table E-1: Municipality of Hastings Highlands Historical Analytical Results Anions, Cations, General Chemistry and Dissolved Metals in Groundwater						Site Name	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS
						Location	LSP6-23	LSP6-23	LSP6-23	LSP7-23	LSP7-23	LSP7-23	LSP8-23	LSP8-23	LSP8-23
						Sample ID	LSP6-23	LSP6-23	LSP-QAQC-GW1 (LSP6-23)	LSP7-23	LSP7-23	LSP7-23	LSP8-23	LSP-QAQC-GW1 (LSP8-23)	LSP8-23	LSP8-23
Parameter	Units	PWQO-INTERIM	PWQO-GENERAL	ODWQS-ALL-MERGED	RUV-LSP	Sample Date	2024-Apr-30	2024-Oct-28	2024-Oct-28	2023-Oct-17	2024-Apr-30	2024-Oct-28	2023-Oct-17	2023-Oct-17	2024-Apr-30	2024-Oct-28
Anions						**Detection Limit**										
Chloride	mg/L	-	-	250	125.3	0.1, 0.12, 0.5, 1	<1	<1	<1	7.1	11	10	50	45	48	29
Nitrate as N	mg/L	-	-	10	2.5	0.05, 0.1, 0.25	<0.1	<0.1	<0.1	0.13	0.14	0.13	<0.1	<0.1	<0.1	<0.1
Sulphate	mg/L	-	-	500	252.6	0.1, 0.5, 1	4.5	6.4	6.4	4.1	4.6	3.7	12	11	15	13
Cations																
Calcium (diss)	mg/L	-	-	-	-	0.05, 0.2	10	9.1	9.2	5.4	6	5.1	56	56	79	51
Magnesium (diss)	mg/L	-	-	-	-	0.05	2.8	2.6	2.7	1	1.2	1	9.2	9.3	13	7.9
Potassium (diss)	mg/L	-	-	-	-	0.5, 1	-	-	-	-	-	-	-	-	-	-
Sodium (diss)	mg/L	-	-	200	100.8	0.05, 0.1	3	2.5	2.6	5	4.6	4.8	44	44	53	31
General Chemistry																
Alkalinity (as CaCO3)	mg/L	-	See Factsheet	30 - 500	256.3	1, 5	59	41	40	**17**	**15**	**8.4**	260	270	350	240
Ammonia as N	mg/L	-	-	-	-	0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.1, 0.18, 0.25	<0.05	<0.05	<0.05	0.057	<0.05	<0.05	12	12	19	12
Biochemical Oxygen Demand	mg/L	-	-	-	-	2, 5, 6	-	-	-	-	-	-	-	-	-	-
Chemical Oxygen Demand	mg/L	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	-	-	5	4.3	0.4, 0.5	1.1	1.2	1.4	1.4	1.5	1.8	**37**	**36**	**37**	**28**
Electrical Conductivity	uS/cm	-	-	-	-	1, 2, 5	100	100	100	76	77	72	690	680	900	580
Hardness (as CaCO3)	mg/L	-	-	80 - 100	-		-	-	-	-	-	-	-	-	-	-
pH	pH units	-	6.5 - 8.5	6.5 - 8.5	-		7.5	7.33	7.22	6.93	6.8	6.69	7.04	6.76	7.18	6.99
Total Dissolved Solids	mg/L	-	-	500	267	5, 10, 20	405	115	120	110	175	175	395	355	465	355
Total Suspended Solids	mg/L	-	-	-	-	10, 20, 50, 100, 200, 500	11000	4500	4500	15000	14000	28000	5500	8000	1500	1900
Metals																
Aluminum (diss, 0.45 µm)	mg/L	Calculated	-	0.1	-	0.004, 0.01	-	-	-	-	-	-	-	-	-	-
Barium (diss)	mg/L	-	-	1	-	0.002	0.01	0.0095	0.01	0.014	0.02	0.021	0.47	0.47	0.69	0.44
Beryllium (diss)	mg/L	-	Calculated	-	-	0.001	-	-	-	-	-	-	-	-	-	-
Boron (diss)	mg/L	0.2	-	5	-	0.01	0.017	0.017	0.016	<0.01	<0.01	<0.01	0.26	0.27	0.4	0.25
Cadmium (diss)	mg/L	Calculated	-	0.005	-	0.0001	-	-	-	-	-	-	-	-	-	-
Chromium (diss)	mg/L	-	-	0.05	-	0.001	-	-	-	-	-	-	-	-	-	-
Cobalt (diss)	mg/L	0.0009	-	-	-	0.0002	-	-	-	-	-	-	-	-	-	-
Copper (diss)	mg/L	Calculated	-	1	-	0.001	-	-	-	-	-	-	-	-	-	-
Iron (diss)	mg/L	-	0.3	0.3	0.21	0.01, 0.02, 0.1	0.17	0.21	0.26	<0.1	<0.1	0.14	**92**	**93**	**91**	**80**
Lead (diss)	mg/L	Calculated	-	0.01	-	0.0005, 0.001	-	-	-	-	-	-	-	-	-	-
Manganese (diss)	mg/L	-	-	0.05	0.051	0.002, 0.01, 0.02	**0.58**	**0.45**	**0.45**	**0.24**	**0.093**	0.033	**4.8**	**4.9**	**4.9**	**4.9**
Molybdenum (diss)	mg/L	0.04	-	-	-	0.005	-	-	-	-	-	-	-	-	-	-
Nickel (diss)	mg/L	-	0.025	-	-	0.005	-	-	-	-	-	-	-	-	-	-
Silicon (diss)	mg/L	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-
Silver (diss)	mg/L	-	0.0001	-	-	0.0001	-	-	-	-	-	-	-	-	-	-
Strontium (diss)	mg/L	-	-	-	-	0.001, 0.005	-	-	-	-	-	-	-	-	-	-
Thallium (diss)	mg/L	0.0003	-	-	-	0.0001	-	-	-	-	-	-	-	-	-	-
Titanium (diss)	mg/L	-	-	-	-	0.01	-	-	-	-	-	-	-	-	-	-
Vanadium (diss)	mg/L	0.006	-	-	-	0.001	-	-	-	-	-	-	-	-	-	-
Zinc (diss)	mg/L	0.02	-	5	-	0.005, 0.01	-	-	-	-	-	-	-	-	-	-

Notes:

Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General
Concentration exceeds ODWQS-ALL-MERGED	Ontario Drinking Water Quality Standards All Types Merged
Concentration exceeds RUV-LSP	Reasonable Use Values Lake St Peter

Appendix E

E-2 Historical Groundwater VOC Chemistry

Table E-2: Municipality of Hastings Highlands Historical Analytical Results Volatile Organic Compounds					Site Name	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS
					Location	LSP-DP1-21	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP1-03	LSP2-03	LSP3-03	LSP4-19	LSP4-19	LSP5-19
Parameter	Units	ODWQS-ALL-MERGED	PWQO-INTERIM	PWQO-GENERAL	Sample ID	Trip Blank (LSP-DP1 21-GW)	LSP1-03	LSP-QAQC GW-F21 (LSP1-03)	LSP1-03	LSP1-03	LSP1-03	LSP2-03	LSP3-03	LSP4-19	LSP-QAQC-GW1 (LSP4-19)	LSP5-19
					Sample Date	2024-Apr-30	2021-Oct-19	2021-Oct-19	2022-Oct-17	2023-May-04	2024-Apr-30	2024-Apr-30	2024-Apr-30	2024-Apr-30	2024-Apr-30	2024-Apr-30
VOCs					**Detection Limit**											
1,1,1,2-Tetrachloroethane	mg/L	-	0.02	-	0.0001, 0.0002, 0.0005	<0.0005	<0.0001	<0.0001	<0.0001	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
1,1,1-Trichloroethane	mg/L	-	0.01	-	0.0002, 0.0003, 0.0006	<0.0002	<0.0003	<0.0003	<0.0003	<0.0006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
1,1,2,2-Tetrachloroethane	mg/L	-	0.07	-	0.0001, 0.0002, 0.0004	<0.0004	<0.0001	<0.0001	<0.0001	<0.0002	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
1,1,2-Trichloroethane	mg/L	-	0.8	-	0.0002, 0.0004	<0.0004	<0.0002	<0.0002	<0.0002	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
1,1-Dichloroethane	mg/L	-	0.2	-	0.0002, 0.0003, 0.0006	<0.0002	<0.0003	<0.0003	<0.0003	<0.0006	0.00044	<0.0002	<0.0002	0.00021	0.00022	<0.0002
1,1-Dichloroethylene	mg/L	0.014	0.04	-	0.0002, 0.0006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
1,2,4-Trichlorobenzene	mg/L	-	-	0.0005	0.0003	-	<0.0003	<0.0003	<0.0003	-	-	-	-	-	-	-
1,2-Dichlorobenzene	mg/L	0.003	-	0.0025	0.0001, 0.0002, 0.0004	<0.0004	<0.0001	<0.0001	<0.0001	<0.0002	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
1,2-Dichloroethane	mg/L	0.005	0.1	-	0.0002, 0.0004, 0.00049	<0.00049	<0.0002	<0.0002	<0.0002	<0.0004	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049	<0.00049
1,2-Dichloropropane	mg/L	-	0.0007	-	0.0002, 0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
1,3-Dichlorobenzene	mg/L	-	-	0.0025	0.0001, 0.0002, 0.0004	<0.0004	<0.0001	<0.0001	<0.0001	<0.0002	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
1,3-Dichloropropene (Cis + Trans)	mg/L	-	-	-	0.0003	-	<0.0003	<0.0003	<0.0003	-	-	-	-	-	-	-
1,4-Dichlorobenzene	mg/L	0.001	-	0.004	0.0001, 0.0002, 0.0004	<0.0004	<0.0001	<0.0001	<0.0001	0.00098	0.0012	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
2-Hexanone	mg/L	-	-	-	0.001	-	<0.001	<0.001	<0.001	-	-	-	-	-	-	-
Acetone	mg/L	-	-	-	0.001, 0.002, 0.01	<0.01	<0.001	<0.001	<0.001	<0.002	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Benzene	mg/L	0.001	0.1	-	0.0002, 0.0004	<0.0002	0.00184	0.00156	<0.0002	0.00193	0.0023	<0.0002	<0.0002	0.00029	0.00029	<0.0002
Bromodichloromethane	mg/L	-	0.2	-	0.0002, 0.0004, 0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0004	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Bromoform	mg/L	-	0.06	-	0.0001, 0.0002, 0.001	<0.001	<0.0001	<0.0001	<0.0001	<0.0002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromomethane	mg/L	-	0.0009	-	0.0002, 0.0004, 0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0004	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Carbon Tetrachloride	mg/L	0.002	-	-	0.00019, 0.0002, 0.0004	<0.00019	<0.0002	<0.0002	<0.0002	<0.0004	<0.00019	<0.00019	<0.00019	<0.00019	<0.00019	<0.00019
Chlorobenzene	mg/L	-	-	0.015	0.0001, 0.0002	<0.0002	<0.0001	<0.0001	<0.0001	0.00068	0.00037	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chloroethane	mg/L	-	-	-	0.0002	-	0.00516	0.00479	<0.0002	-	-	-	-	-	-	-
Chloroform	mg/L	-	-	-	0.0002, 0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chloromethane	mg/L	-	0.7	-	0.0002, 0.0004	-	<0.0004	<0.0004	<0.0002	-	-	-	-	-	-	-
cis-1,2-Dichloroethylene	mg/L	-	-	-	0.0002, 0.0004, 0.0005	<0.0005	0.00083	0.00064	<0.0002	<0.0004	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
cis-1,3-Dichloropropene	mg/L	-	-	-	0.0002, 0.0003	<0.0003	<0.0002	<0.0002	<0.0002	-	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Dibromochloromethane	mg/L	-	-	-	0.0001, 0.0002, 0.0005	<0.0005	<0.0001	<0.0001	<0.0001	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Dichlorodifluoromethane	mg/L	-	-	-	0.0002, 0.0004, 0.0008, 0.001	<0.001	<0.0002	<0.0002	<0.0004	<0.0008	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dichloromethane	mg/L	0.05	-	-	0.002	<0.002	-	-	-	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Ethylbenzene	mg/L	0.0016	0.008	-	0.0001, 0.0002	<0.0002	0.00041	0.00033	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Ethylene Dibromide	mg/L	-	0.005	-	0.0001, 0.00019, 0.0002	<0.00019	<0.0001	<0.0001	<0.0001	<0.0002	<0.00019	<0.00019	<0.00019	<0.00019	<0.00019	<0.00019
Hexane	mg/L	-	-	-	0.001	<0.001	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
m & p-Xylene	mg/L	-	-	-	0.0002, 0.0004	-	<0.0002	<0.0002	<0.0002	<0.0004	-	-	-	-	-	-
Methylene Chloride	mg/L	-	0.1	-	0.0003, 0.0006	-	<0.0003	<0.0003	<0.0003	<0.0006	-	-	-	-	-	-
Methyl Ethyl Ketone	mg/L	-	0.4	-	0.001, 0.002, 0.01	<0.01	<0.001	<0.001	<0.001	<0.002	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Methyl Isobutyl Ketone	mg/L	-	-	-	0.001, 0.002, 0.005	<0.005	<0.001	<0.001	<0.001	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Methyl tertiary-butyl ether (MTBE)	mg/L	0.015	0.2	-	0.0002, 0.0004, 0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0004	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
n-Hexane	mg/L	-	-	-	0.0002, 0.0004	-	<0.0002	<0.0002	<0.0002	<0.0004	-	-	-	-	-	-
o-Xylene	mg/L	-	0.04	-	0.0001, 0.0002	<0.0002	0.00022	0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Styrene	mg/L	-	0.004	-	0.0001, 0.0002, 0.0004	<0.0004	<0.0001	<0.0001	<0.0001	<0.0002	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Tetrachloroethylene	mg/L	0.01	0.05	-	0.0002, 0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Toluene	mg/L	0.024	0.0008	-	0.0002, 0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
trans-1,2-Dichloroethylene	mg/L	-	-	-	0.0002, 0.0004, 0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0004	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
trans-1,3-Dichloropropene	mg/L	-	-	-	0.0003, 0.0004	<0.0004	<0.0003	<0.0003	<0.0003	-	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Trichloroethylene	mg/L	0.005	0.02	-	0.0002, 0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Trichlorofluoromethane	mg/L	-	-	-	0.0004, 0.0005, 0.0008	<0.0005	<0.0004	<0.0004	<0.0004	<0.0008	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Vinyl Chloride	mg/L	0.001	0.6	-	0.00017, 0.0002, 0.00034	<0.0002	<0.00017	<0.00017	<0.00017	<0.00034	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Xylene Mixture	mg/L	0.02	-	-	0.0002	-	0.00022	0.0002	<0.0002	<0.0002	-	-	-	-	-	-
Xylenes, m+p	mg/L	-	-	-	0.0002	<0.0002	-	-	-	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Xylenes, total	mg/L	-	-	-	0.0002	<0.0002	-	-	-	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Notes:

Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds ODWQS-ALL-MERGED	Ontario Drinking Water Quality Standards All Types Merged
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General

Table E-2: Municipality of Hastings Highlands Historical Analytical Results Volatile Organic Compounds					Site Name	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS
					Location	LSP6-23	LSP7-23	LSP8-23
Parameter	Units	ODWQS-ALL-MERGED	PWQO-INTERIM	PWQO-GENERAL	Sample ID	LSP6-23	LSP7-23	LSP8-23
					Sample Date	2024-Apr-30	2024-Apr-30	2024-Apr-30
VOCs					Detection Limit			
1,1,1,2-Tetrachloroethane	mg/L	-	0.02	-	0.0001, 0.0002, 0.0005	<0.0005	<0.0005	<0.0005
1,1,1-Trichloroethane	mg/L	-	0.01	-	0.0002, 0.0003, 0.0006	<0.0002	<0.0002	<0.0002
1,1,2,2-Tetrachloroethane	mg/L	-	0.07	-	0.0001, 0.0002, 0.0004	<0.0004	<0.0004	<0.0004
1,1,2-Trichloroethane	mg/L	-	0.8	-	0.0002, 0.0004	<0.0004	<0.0004	<0.0004
1,1-Dichloroethane	mg/L	-	0.2	-	0.0002, 0.0003, 0.0006	<0.0002	<0.0002	<0.0002
1,1-Dichloroethylene	mg/L	0.014	0.04	-	0.0002, 0.0006	<0.0002	<0.0002	<0.0002
1,2,4-Trichlorobenzene	mg/L	-	-	0.0005	0.0003	-	-	-
1,2-Dichlorobenzene	mg/L	0.003	-	0.0025	0.0001, 0.0002, 0.0004	<0.0004	<0.0004	<0.0004
1,2-Dichloroethane	mg/L	0.005	0.1	-	0.0002, 0.0004, 0.00049	<0.00049	<0.00049	<0.00049
1,2-Dichloropropane	mg/L	-	0.0007	-	0.0002, 0.0004	<0.0002	<0.0002	<0.0002
1,3-Dichlorobenzene	mg/L	-	-	0.0025	0.0001, 0.0002, 0.0004	<0.0004	<0.0004	<0.0004
1,3-Dichloropropene (Cis + Trans)	mg/L	-	-	-	0.0003	-	-	-
1,4-Dichlorobenzene	mg/L	0.001	-	0.004	0.0001, 0.0002, 0.0004	<0.0004	<0.0004	0.00042
2-Hexanone	mg/L	-	-	-	0.001	-	-	-
Acetone	mg/L	-	-	-	0.001, 0.002, 0.01	<0.01	<0.01	<0.01
Benzene	mg/L	0.001	0.1	-	0.0002, 0.0004	<0.0002	<0.0002	0.00094
Bromodichloromethane	mg/L	-	0.2	-	0.0002, 0.0004, 0.0005	<0.0005	<0.0005	<0.0005
Bromoform	mg/L	-	0.06	-	0.0001, 0.0002, 0.001	<0.001	<0.001	<0.001
Bromomethane	mg/L	-	0.0009	-	0.0002, 0.0004, 0.0005	<0.0005	<0.0005	<0.0005
Carbon Tetrachloride	mg/L	0.002	-	-	0.00019, 0.0002, 0.0004	<0.00019	<0.00019	<0.00019
Chlorobenzene	mg/L	-	-	0.015	0.0001, 0.0002	<0.0002	<0.0002	<0.0002
Chloroethane	mg/L	-	-	-	0.0002	-	-	-
Chloroform	mg/L	-	-	-	0.0002, 0.0004	<0.0002	<0.0002	<0.0002
Chloromethane	mg/L	-	0.7	-	0.0002, 0.0004	-	-	-
cis-1,2-Dichloroethylene	mg/L	-	-	-	0.0002, 0.0004, 0.0005	<0.0005	<0.0005	<0.0005
cis-1,3-Dichloropropene	mg/L	-	-	-	0.0002, 0.0003	<0.0003	<0.0003	<0.0003
Dibromochloromethane	mg/L	-	-	-	0.0001, 0.0002, 0.0005	<0.0005	<0.0005	<0.0005
Dichlorodifluoromethane	mg/L	-	-	-	0.0002, 0.0004, 0.0008, 0.001	<0.001	<0.001	<0.001
Dichloromethane	mg/L	0.05	-	-	0.002	<0.002	<0.002	<0.002
Ethylbenzene	mg/L	0.0016	0.008	-	0.0001, 0.0002	<0.0002	<0.0002	<0.0002
Ethylene Dibromide	mg/L	-	0.005	-	0.0001, 0.00019, 0.0002	<0.00019	<0.00019	<0.00019
Hexane	mg/L	-	-	-	0.001	<0.001	<0.001	<0.001
m & p-Xylene	mg/L	-	-	-	0.0002, 0.0004	-	-	-
Methylene Chloride	mg/L	-	0.1	-	0.0003, 0.0006	-	-	-
Methyl Ethyl Ketone	mg/L	-	0.4	-	0.001, 0.002, 0.01	<0.01	<0.01	<0.01
Methyl Isobutyl Ketone	mg/L	-	-	-	0.001, 0.002, 0.005	<0.005	<0.005	<0.005
Methyl tertiary-butyl ether (MTBE)	mg/L	0.015	0.2	-	0.0002, 0.0004, 0.0005	<0.0005	<0.0005	<0.0005
n-Hexane	mg/L	-	-	-	0.0002, 0.0004	-	-	-
o-Xylene	mg/L	-	0.04	-	0.0001, 0.0002	<0.0002	<0.0002	<0.0002
Styrene	mg/L	-	0.004	-	0.0001, 0.0002, 0.0004	<0.0004	<0.0004	<0.0004
Tetrachloroethylene	mg/L	0.01	0.05	-	0.0002, 0.0004	<0.0002	<0.0002	<0.0002
Toluene	mg/L	0.024	0.0008	-	0.0002, 0.0004	<0.0002	<0.0002	<0.0002
trans-1,2-Dichloroethylene	mg/L	-	-	-	0.0002, 0.0004, 0.0005	<0.0005	<0.0005	<0.0005
trans-1,3-Dichloropropene	mg/L	-	-	-	0.0003, 0.0004	<0.0004	<0.0004	<0.0004
Trichloroethylene	mg/L	0.005	0.02	-	0.0002, 0.0004	<0.0002	<0.0002	<0.0002
Trichlorofluoromethane	mg/L	-	-	-	0.0004, 0.0005, 0.0008	<0.0005	<0.0005	<0.0005
Vinyl Chloride	mg/L	0.001	0.6	-	0.00017, 0.0002, 0.00034	<0.0002	<0.0002	<0.0002
Xylene Mixture	mg/L	0.02	-	-	0.0002	-	-	-
Xylenes, m+p	mg/L	-	-	-	0.0002	<0.0002	<0.0002	<0.0002
Xylenes, total	mg/L	-	-	-	0.0002	<0.0002	<0.0002	<0.0002

Notes:

Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds ODWQS-ALL-MERGED	Ontario Drinking Water Quality Standards All Types Merged
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General

Appendix E

E-3 Historical Surface Water Chemistry

Table E-3: Municipality of Hastings Highlands Historical Analytical Results Anions, Cations, General Chemistry and Dissolved Metals in Surface Water						Site Name	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS
						Location	LSP-DP1-21	LSP-DP1-21	LSP-DP1-21	LSP-DP1-21	LSP-SW1	LSP-SW1	LSP-SW1	LSP-SW1	LSP-SW1	LSP-SW1	LSP-SW1	LSP-SW1	LSP-SW1	LSP-SW1
Parameter	Units	MECP-GD-TA	MECP-GD-TB	PWQO-INTERIM	PWQO-GENERAL	Sample ID	LSP-DP1-21	LSP-DP1-21	LSP-DP1-21	LSP-DP1-21	LSP-SW1	LSP-SW1	LSP-SW1	LSP-SW1	LSP-SW1	LSP-SW1	LSP-SW1	LSP-SW1-QAQC (LSP-SW1)	LSP-SW1	LSP-QAQC SW-F20 (LSP-SW1)
						Sample Date	2023-May-04	2023-Oct-17	2024-Apr-30	2024-Oct-28	2014-Oct-15	2015-May-05	2016-Apr-27	2017-May-12	2017-Oct-24	2018-May-08	2019-May-08	2020-May-07	2020-May-07	2020-Oct-07
Anions						Detection Limit														
Chloride	mg/L	180	128	-	-	0.1, 1	5.34	-	9.7	16	0.67	0.37	0.3	0.23	0.56	0.33	0.22	0.27	0.34	0.59	0.6
Nitrate + Nitrite	mg/L	-	-	-	-	0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate as N	mg/L	-	-	-	-	0.05, 0.1	<0.05	-	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	0.09	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrite as N	mg/L	-	-	-	-	0.01, 0.05	<0.05	<0.01	0.023	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	100	-	-	-	0.1, 1	32.1	-	33	25	2.22	-	3.34	3.07	0.85	3.06	2.86	3.18	3.24	1.44	1.43
Cations																					
Calcium (diss)	mg/L	-	-	-	-	0.2	-	-	35	50	-	-	-	-	-	-	-	-	-	-	-
Calcium (tot)	mg/L	-	-	-	-	0.05, 0.16, 0.2, 0.32	35.2	60	37	48	2.78	2.5	1.6	1.74	3.09	2.19	1.7	2.01	2.01	2.34	2.37
Magnesium (diss)	mg/L	-	-	-	-	0.05	-	-	6.2	8.2	-	-	-	-	-	-	-	-	-	-	-
Magnesium (tot)	mg/L	-	-	-	-	0.05, 0.1, 0.17, 0.34	7.12	10	6.2	8.2	0.73	0.69	0.4	0.4	0.85	0.58	0.43	0.49	0.57	0.58	0.58
Potassium (tot)	mg/L	-	-	-	-	0.05, 0.2, 0.5, 0.58, 1.15	15.5	21	15	18	1.09	0.93	0.6	0.68	1.33	0.89	0.66	0.94	0.81	0.9	0.91
Sodium (diss)	mg/L	-	-	-	-	0.1	-	-	13	17	-	-	-	-	-	-	-	-	-	-	-
Sodium (tot)	mg/L	-	-	-	-	0.05, 0.1, 0.22, 0.45	12.6	18	13	17	1.57	1.44	0.8	0.86	1.52	1.01	0.88	1.03	1.07	1.41	1.41
Field Parameters																					
pH (Field)	pH units	-	-	-	-		-	6.1	5.94	-	-	-	-	-	-	-	-	-	-	-	-
Temperature	deg. C	-	-	-	-		-	9.2	6.4	-	-	-	-	-	-	-	-	-	-	-	-
General Chemistry																					
Alkalinity (as CaCO3)	mg/L	-	-	-	See Factsheet	1, 5	150	-	160	210	11	7	<5	5	11	9	6	6	11	8	8
Ammonia as N	mg/L	-	-	-	-	0.02, 0.03, 0.05	4.96	-	5.8	6.3	0.16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Biochemical Oxygen Demand	mg/L	-	-	-	-	2, 5	3	23	9	<2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<2	<2
Chemical Oxygen Demand	mg/L	-	-	-	-	4, 5	66	88	46	24	20	7	17	9	29	<5	<5	6	<5	24	<5
Colour	TCU	-	-	-	-	2, 2.5, 5, 20	75.4	580	6	41	-	-	-	29	51	42	7	26	29	48	50
Dissolved Organic Carbon	mg/L	-	-	-	-	0.4	-	-	11	11	-	-	-	-	-	-	-	-	-	-	-
Electrical Conductivity	uS/cm	-	-	-	-	1, 2	375	-	390	510	37	27	20	23	42	25	21	29	30	24	24
Hardness (as CaCO3)	mg/L	-	-	-	-	0.5, 1	117	190	110	160	9.9	9.1	5.6	6	11.2	7.9	6	7	7.4	8.2	8.3
pH	pH units	6 - 9	-	-	6.5 - 8.5		6.88	-	6.99	7.12	7.13	6.68	6.56	6.87	6.48	6.27	6.11	6.4	7.43	6.7	6.42
Phenols	mg/L	0.04	0.004	-	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Dissolved Solids	mg/L	-	-	-	-	10, 20	216	-	250	280	38	36	32	<20	46	<20	40	32	28	42	32
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	0.1, 0.5, 1	6.28	8	6.4	7.3	0.62	0.36	1.11	0.24	0.68	0.34	<0.1	0.25	0.24	0.36	0.34
Total Nitrogen (Calculated)	mg/L	-	-	-	-	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Phosphorus	mg/L	-	-	-	0.02	0.01, 0.02	0.05	0.19	0.089	0.039	0.06	0.02	<0.01	0.01	0.1	0.05	<0.02	<0.02	<0.02	<0.02	<0.02
Total Suspended Solids	mg/L	-	-	-	-	10	177	-	68	67	<10	<10	23	<10	14	<10	<10	<10	<10	<10	<10
Turbidity	NTU	-	-	-	-	0.1, 0.5	82.2	96	89	160	-	-	-	<0.05	1.1	1.1	2.1	10.5	0.9	1.2	<0.5
Unionized Ammonia (Calc)	mg/L	-	-	-	-	0.000002, 0.00061	0.000083	0.002	0.00085	0.0018	0.0000176	0.0003141	0.0000031	0.000011	0.0000517	0.0000046	0.000015	0.0000013	0.0000013	0.0000123	0.0000123
Metals																					
Aluminum (diss, 0.2 µm)	mg/L	-	-	Calculated	-	0.004, 0.005	0.006	0.005	<0.005	0.007	-	-	-	-	-	-	-	-	-	-	-
Aluminum (diss, 0.45 µm)	mg/L	-	-	Calculated	-	0.004	-	-	-	-	-	-	-	-	-	-	0.131	0.145	**0.153**	**0.174**	0.173
Aluminum (tot)	mg/L	-	-	-	-	0.004, 0.01	-	-	-	-	0.185	0.139	0.127	0.149	0.171	0.121	-	0.158	0.168	0.23	0.235
Arsenic (tot)	mg/L	-	-	0.005	-	0.001, 0.003	**0.025**	**0.061**	**0.0081**	**0.012**	-	-	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Barium (diss)	mg/L	2.3	-	-	-	0.002	-	-	0.29	0.4	-	-	-	-	-	-	-	-	-	-	-
Barium (tot)	mg/L	2.3	-	-	-	0.002	0.325	0.5	0.31	0.37	0.015	0.012	0.009	0.012	0.023	0.01	0.012	0.009	0.008	0.011	0.012
Beryllium (tot)	mg/L	-	-	-	Calculated	0.0004, 0.0005, 0.001	<0.001	<0.0004	<0.0004	<0.0004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron (diss)	mg/L	3.55	1.5	0.2	-	0.01	-	-	**0.29**	**0.36**	-	-	-	-	-	-	-	-	-	-	-
Boron (tot)	mg/L	3.55	1.5	0.2	-	0.01	**0.262**	**0.45**	**0.29**	**0.37**	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium (tot)	mg/L	0.00021	0.000017	Calculated	-	0.00009, 0.0001	0.0009	0.00043	<0.00009	<0.00009	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (tot)	mg/L	0.064	-	-	-	0.003, 0.005	0.028	0.094	0.026	0.046	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.003	<0.003	<0.003	<0.003	<0.003
Cobalt (tot)	mg/L	-	-	0.0009	-	0.0005	**0.0968**	**0.34**	**0.03**	**0.023**	0.0007	<0.0005	<0.0005	<0.0005	**0.0014**	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Copper (tot)	mg/L	0.0069	-	Calculated	-	0.0009, 0.001, 0.002	**0.081**	**0.12**	**0.019**	**0.02**	<0.002	<0.002	<0.002	<0.002	<0.002	0.001	<0.002	**0.003**	<0.002	**0.002**	**0.002**
Iron (diss)	mg/L	1	-	-	0.3	0.1	-	-	26	27	-	-	-	-	-	-	-	-	-	-	-
Iron (tot)	mg/L	1	-	-	0.3	0.01, 0.1, 0.5	41	160	37	66	0.24	0.04	<0.01	<0.01	1.29	0.03	0.02	0.037	0.034	0.167	0.17
Lead (tot)	mg/L	0.002	-	Calculated	-	0.0005, 0.001	**0.068**	**0.035**	0.0022	0.00076	<0.001	<0.001	<0.001	<0.001	**0.002**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese (diss)	mg/L	-	-	-	-	0.002	-	-	7.2	9.7	-	-	-	-	-	-	-	-	-	-	-
Manganese (tot)	mg/L	-	-	-	-	0.002, 0.01	6.84	11	7.4	11	0.069	0.01	<0.002	-	-	0.009	0.005	0.003	0.004	0.031	0.032
Mercury (diss)	mg/L	-	-	-	0.0002	0.0001	<0.0001	-	<0.0001	<0.0001	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Mercury (tot)	mg/L	-	-	-	0.0002	0.0001	-	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (tot)	mg/L	-	-	0.04	-	0.0005, 0.002	0.011	0.029	0.0026	0.0028	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Nickel (tot)	mg/L	-	-	-	0.025	0.001, 0.003	0.125	0.27	0.029	0.03	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Selenium (tot)	mg/L	-	-	-	0.1	0.002, 0.004	<0.002	<0.002	<0.002	<0.002	-	-	-	<0.004	<0.004	<0.004	0.006	0.004	<0.004	<0.004	<0.004
Silicon (tot)	mg/L	-	-	-	-	0.05, 0.1, 0.18	10.5	8.1	6.3	6.6	5.5	5.07	2.78	3.81	5.54	3.69	3.76	4.05	3.73	5.63	5.64
Silver (tot)	mg/L	-	-	-	0.0001	0.00009, 0.0001	<0.0001	0.00018	<0.00009	<0.00009	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Strontium (tot)	mg/L	-	-	-	-	0.001, 0.005	0.239	0.34	0.21	0.27	0.021	0.017	0.011	0.012	0.022	0.015	0.013	0.014	0.012	0.015	0.015
Thallium (tot)	mg/L	-	-	0.0003	-	0.00005, 0.0003	<0.0003	0.000069	<0.00005	<0.00005	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Titanium (tot)	mg/L	-	-	-	-	0.002, 0.005, 0.01	0.246	0.086	0.028	0.0062	0.003	<0.002	<0.002	<0.002	0.01	<0.002	<0.002	0.008	<0.002	0.003	0.003
Vanadium (tot)	mg/L	-	-	0.006	-	0.0005, 0.002	**0.019**	**0.01**	0.0055	0.0045	<0.002	<0.002	<0.002	0.003	0.002	<0.002	**0.009**	<0.002	<0.002	<0.002	<0.002
Zinc (tot)	mg/L	0.089	0.03	0.02	-	0.005, 0.02	4.18	4.7	0.2	0.37	<0.005	<0.005	<0.005	<0.005	0.006	0.016	<0.005	<0.005	<0.005	<0.005	**0.021**

Notes:

Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds MECP-GD-TA	MECP Guidance Document Table A
Concentration exceeds MECP-GD-TB	MECP Guidance Document Table B
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General

Table E-3: Municipality of Hastings Highlands Historical Analytical Results Anions, Cations, General Chemistry and Dissolved Metals in Surface Water						Site Name	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS
						Location	LSP-SW1	LSP-SW1	LSP-SW1	LSP-SW1	LSP-SW1	LSP-SW1	LSP-SW1	LSP-SW1	LSP-SW1	LSP-SW2	LSP-SW2	LSP-SW2	LSP-SW2	LSP-SW2	LSP-SW2
Parameter	Units	MECP-GD-TA	MECP-GD-TB	PWQO-INTERIM	PWQO-GENERAL	Sample ID	LSP-SW1	LSP-SW1	LSP-QAQC-SW-F21 (LSP-SW1)	LSP-SW1	LSP-SW1	LSP-QAQC-SW-F22 (LSP-SW1)	LSP-SW1	LSP-SW1	LSP-QAQC-SW1 (LSP-SW1)	LSP-SW2	LSP-SW2	LSP-SW2	LSP-SW2-QAQC (LSP-SW2)	LSP-SW2	LSP-SW2-QAQC (LSP-SW2)
						Sample Date	2021-Apr-21	2021-Oct-19	2021-Oct-19	2022-May-02	2022-Oct-17	2022-Oct-17	2023-May-04	2024-Apr-30	2024-Apr-30	2014-Oct-15	2015-May-05	2016-Apr-27	2016-Apr-27	2017-May-12	2017-May-12
Anions						Detection Limit															
Chloride	mg/L	180	128	-	-	0.1, 1	0.33	0.55	0.63	0.35	0.74	0.75	0.29	<1	<1	0.86	0.98	1.31	1.38	1.72	1.83
Nitrate + Nitrite	mg/L	-	-	-	-	0.1	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-
Nitrate as N	mg/L	-	-	-	-	0.05, 0.1	0.07	<0.05	<0.05	0.08	<0.05	<0.05	<0.05	<0.1	<0.1	<0.05	0.07	0.17	0.17	0.34	0.35
Nitrite as N	mg/L	-	-	-	-	0.01, 0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	100	-	-	-	0.1, 1	2.97	0.59	0.61	2.83	3.34	3.32	2.52	4	3.9	3.72	-	11.3	11.6	12.1	13.2
Cations																					
Calcium (diss)	mg/L	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (tot)	mg/L	-	-	-	-	0.05, 0.16, 0.2, 0.32	2.38	3.07	3.22	2.35	2.98	3.02	2.05	2.2	2.5	3.6	3.38	4.36	4.44	5.11	5.47
Magnesium (diss)	mg/L	-	-	-	-	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium (tot)	mg/L	-	-	-	-	0.05, 0.1, 0.17, 0.34	0.63	0.88	0.81	0.62	0.83	0.8	0.54	0.56	0.58	0.87	0.9	0.95	0.96	1.11	1.15
Potassium (tot)	mg/L	-	-	-	-	0.05, 0.2, 0.5, 0.58, 1.15	1.12	1.19	1.18	<1.15	1.35	1.26	0.86	0.83	0.88	1.12	1.1	1.39	1.41	1.8	1.93
Sodium (diss)	mg/L	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium (tot)	mg/L	-	-	-	-	0.05, 0.1, 0.22, 0.45	1.36	1.43	1.51	1.27	1.79	1.79	1.03	1.2	1.3	1.97	2.39	2.78	2.83	3.08	3.41
Field Parameters																					
pH (Field)	pH units	-	-	-	-		-	-	-	-	-	-	-	5.94	6.25	-	-	-	-	-	-
Temperature	deg. C	-	-	-	-		-	-	-	-	-	-	-	6.4	4.7	-	-	-	-	-	-
General Chemistry																					
Alkalinity (as CaCO3)	mg/L	-	-	-	See Factsheet	1, 5	6	14	14	10	11	9	7	10	7.3	9	7	9	9	11	12
Ammonia as N	mg/L	-	-	-	-	0.02, 0.03, 0.05	<0.02	<0.02	0.11	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.15	<0.02	<0.02	<0.02	<0.02	<0.02
Biochemical Oxygen Demand	mg/L	-	-	-	-	2, 5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<5	<5	<5	<5	<5	<5
Chemical Oxygen Demand	mg/L	-	-	-	-	4, 5	<5	12	17	<5	12	21	21	11	16	23	6	18	18	16	13
Colour	TCU	-	-	-	-	2, 2.5, 5, 20	27	34	35	24.9	44	45.8	30	32	29	-	-	-	-	40	40
Dissolved Organic Carbon	mg/L	-	-	-	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrical Conductivity	uS/cm	-	-	-	-	1, 2	25	30	30	30	35	34	24	24	24	40	41	53	54	71	77
Hardness (as CaCO3)	mg/L	-	-	-	-	0.5, 1	8.5	11.3	11.4	8.4	10.9	10.8	7.3	8.2	8	12.6	12.1	14.8	15	17.3	18.4
pH	pH units	6 - 9	-	-	6.5 - 8.5		6.61	6.5	6.48	6.79	6.74	6.5	6.86	6.93	6.79	7.1	6.8	6.95	6.99	7.28	7.28
Phenols	mg/L	0.04	0.004	-	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Dissolved Solids	mg/L	-	-	-	-	10, 20	28	32	40	24	18	20	12	60	60	44	42	52	50	42	48
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	0.1, 0.5, 1	0.35	0.16	0.12	0.14	0.22	0.29	0.17	0.22	0.25	0.58	0.31	0.35	0.38	0.34	0.28
Total Nitrogen (Calculated)	mg/L	-	-	-	-	0.05	-	-	-	-	0.22	0.29	-	-	-	-	-	-	-	-	-
Total Phosphorus	mg/L	-	-	-	0.02	0.01, 0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	0.03	0.01	0.03	<0.01	0.01	0.01
Total Suspended Solids	mg/L	-	-	-	-	10	<10	30	22	<10	<10	<10	<10	<10	<10	<10	<10	14	17	<10	<10
Turbidity	NTU	-	-	-	-	0.1, 0.5	0.7	1.2	1.1	<0.5	<0.5	<0.5	0.8	0.3	0.4	-	-	-	-	<0.05	<0.05
Unionized Ammonia (Calc)	mg/L	-	-	-	-	0.000002, 0.00061	-	-	-	-	<0.000002	<0.000002	<0.000002	<0.00061	<0.00061	0.0000208	0.0002728	0.0000051	0.0000051	0.000018	0.000018
Metals																					
Aluminum (diss, 0.2 µm)	mg/L	-	-	Calculated	-	0.004, 0.005	-	-	-	**0.107**	-	-	**0.15**	**0.15**	**0.15**	-	-	-	-	-	-
Aluminum (diss, 0.45 µm)	mg/L	-	-	Calculated	-	0.004	**0.119**	0.173	0.169	-	**0.15**	0.129	-	-	-	-	-	-	-	-	-
Aluminum (tot)	mg/L	-	-	-	-	0.004, 0.01	0.123	0.388	0.317	-	0.206	0.199	-	-	-	0.157	0.103	0.103	0.104	0.126	0.124
Arsenic (tot)	mg/L	-	-	0.005	-	0.001, 0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.001	<0.001	-	-	-	-	<0.003	<0.003
Barium (diss)	mg/L	2.3	-	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium (tot)	mg/L	2.3	-	-	-	0.002	0.01	0.015	0.015	0.01	0.012	0.011	0.012	0.0096	0.0096	0.015	0.01	0.014	0.016	0.02	0.02
Beryllium (tot)	mg/L	-	-	-	Calculated	0.0004, 0.0005, 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0004	<0.0004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron (diss)	mg/L	3.55	1.5	0.2	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (tot)	mg/L	3.55	1.5	0.2	-	0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	0.013	0.011	0.025	0.028	0.042	0.039
Cadmium (tot)	mg/L	0.00021	0.000017	Calculated	-	0.00009, 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00009	<0.00009	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (tot)	mg/L	0.064	-	-	-	0.003, 0.005	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.005	<0.005	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Cobalt (tot)	mg/L	-	-	0.0009	-	0.0005	<0.0005	**0.0017**	**0.0014**	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Copper (tot)	mg/L	0.0069	-	Calculated	-	0.0009, 0.001, 0.002	**0.005**	<0.002	<0.002	<0.002	**0.002**	**0.002**	0.001	**0.0011**	**0.0012**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Iron (diss)	mg/L	1	-	-	0.3	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron (tot)	mg/L	1	-	-	0.3	0.01, 0.1, 0.5	0.053	0.595	0.417	0.075	0.124	0.11	0.07	<0.1	<0.1	0.34	0.13	0.38	0.6	<0.01	<0.01
Lead (tot)	mg/L	0.002	-	Calculated	-	0.0005, 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese (diss)	mg/L	-	-	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (tot)	mg/L	-	-	-	-	0.002, 0.01	0.006	0.244	0.172	0.006	0.012	0.014	0.004	0.0033	0.0033	0.025	0.017	0.026	0.037	-	-
Mercury (diss)	mg/L	-	-	-	0.0002	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	<0.0001	<0.0001
Mercury (tot)	mg/L	-	-	-	0.0002	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (tot)	mg/L	-	-	0.04	-	0.0005, 0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0005	<0.0005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Nickel (tot)	mg/L	-	-	-	0.025	0.001, 0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.003	0.003	<0.001	<0.001	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Selenium (tot)	mg/L	-	-	-	0.1	0.002, 0.004	<0.004	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	-	-	-	<0.004	<0.004
Silicon (tot)	mg/L	-	-	-	-	0.05, 0.1, 0.18	4.67	5.64	5.67	5.03	5.61	6.28	3.39	4.1	4.3	5.47	4.47	3.69	4.08	4.48	4.36
Silver (tot)	mg/L	-	-	-	0.0001	0.00009, 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00009	<0.00009	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Strontium (tot)	mg/L	-	-	-	-	0.001, 0.005	0.016	0.021	0.021	0.019	0.02	0.022	0.016	0.014	0.014	0.024	0.019	0.026	0.029	0.033	0.033
Thallium (tot)	mg/L	-	-	0.0003	-	0.00005, 0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00005	<0.00005	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Titanium (tot)	mg/L	-	-	-	-	0.002, 0.005, 0.01	<0.002	0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	0.002	<0.002	0.002	0.004	<0.002	<0.002
Vanadium (tot)	mg/L	-	-	0.006	-	0.0005, 0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0005	0.00056	<0.002	<0.002	<0.002	<0.002	0.002	0.002
Zinc (tot)	mg/L	0.089	0.03	0.02	-	0.005, 0.02	<0.005	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.005	<0.005	<0.005	<0.005	0.005	0.006	0.008	0.008

Notes:

Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds MECP-GD-TA	MECP Guidance Document Table A
Concentration exceeds MECP-GD-TB	MECP Guidance Document Table B
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General

Table E-3: Municipality of Hastings Highlands Historical Analytical Results Anions, Cations, General Chemistry and Dissolved Metals in Surface Water						Site Name	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS	Lake St. Peter WDS
						Location	LSP-SW2	LSP-SW2	LSP-SW2	LSP-SW2	LSP-SW2	LSP-SW2	LSP-SW2	LSP-SW2	LSP-SW2	LSP-SW2	LSP-SW2	LSP-SW2	LSP-SW2	LSP-SW2
Parameter	Units	MECP-GD-TA	MECP-GD-TB	PWQO-INTERIM	PWQO-GENERAL	Sample ID	LSP-SW2	LSP-SW2-QAQC (LSP-SW2)	LSP-SW2	LSP-SW2	LSP-SW2-QAQC (LSP-SW2)	LSP-SW2	LSP-SW2	LSP-SW2	LSP-SW2	LSP-QAQC SW-S21 (LSP-SW2)	LSP-SW2	LSP-SW2	LSP-QAQC SW-S22 (LSP-SW2)	LSP-SW2	LSP-SW2
						Sample Date	2017-Oct-24	2017-Oct-24	2018-May-08	2019-May-08	2019-May-08	2019-Oct-23	2020-May-07	2020-Oct-07	2021-Apr-21	2021-Apr-21	2021-Oct-19	2022-May-02	2022-May-02	2022-Oct-17	2023-May-04
Anions						Detection Limit														
Chloride	mg/L	180	128	-	-	0.1, 1	1.05	1.01	0.64	1.79	0.36	2.66	1.25	0.73	0.8	0.75	0.93	0.84	0.82	0.91	0.58
Nitrate + Nitrite	mg/L	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate as N	mg/L	-	-	-	-	0.05, 0.1	0.06	<0.05	0.18	0.36	<0.05	0.26	0.14	<0.05	0.17	0.16	<0.05	0.15	0.16	<0.05	0.1
Nitrite as N	mg/L	-	-	-	-	0.01, 0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	100	-	-	-	0.1, 1	2.46	2.35	4.87	11.9	2.77	33.4	7.8	1.81	5.85	5.57	1.93	5.76	5.74	5.78	4.86
Cations																					
Calcium (diss)	mg/L	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (tot)	mg/L	-	-	-	-	0.05, 0.16, 0.2, 0.32	4.14	4.25	3.04	5.63	1.64	9.39	4.27	3.4	4.21	4.06	5.44	4.56	4.27	4.43	3.66
Magnesium (diss)	mg/L	-	-	-	-	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium (tot)	mg/L	-	-	-	-	0.05, 0.1, 0.17, 0.34	1.15	1.17	0.77	1.28	0.42	2.4	1.09	0.77	1.12	1.01	1.26	1.06	1.14	1.12	0.84
Potassium (tot)	mg/L	-	-	-	-	0.05, 0.2, 0.5, 0.58, 1.15	1.38	1.49	1.16	2.04	0.61	1.7	1.43	0.97	1.34	1.37	1.72	1.82	1.34	1.12	1.22
Sodium (diss)	mg/L	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium (tot)	mg/L	-	-	-	-	0.05, 0.1, 0.22, 0.45	2.4	2.34	1.64	3.19	0.85	3.72	2.35	1.82	2.41	2.41	2.49	2.52	2.24	2.16	1.78
Field Parameters																					
pH (Field)	pH units	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Temperature	deg. C	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
General Chemistry																					
Alkalinity (as CaCO3)	mg/L	-	-	-	See Factsheet	1, 5	18	16	9	15	5	7	8	11	9	9	20	10	11	9	9
Ammonia as N	mg/L	-	-	-	-	0.02, 0.03, 0.05	0.03	0.02	0.06	0.03	<0.02	0.11	0.03	<0.02	0.04	0.04	0.08	<0.02	<0.02	0.05	<0.02
Biochemical Oxygen Demand	mg/L	-	-	-	-	2, 5	<5	<5	<5	<5	<5	<5	<5	<2	<2	<2	<2	<2	<2	3	<2
Chemical Oxygen Demand	mg/L	-	-	-	-	4, 5	56	59	<5	7	<5	26	13	33	<5	<5	18	<5	14	26	16
Colour	TCU	-	-	-	-	2, 2.5, 5, 20	70	73	38	10	7	39	33	68	32	32	45	26.4	26.6	60.2	34.9
Dissolved Organic Carbon	mg/L	-	-	-	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrical Conductivity	uS/cm	-	-	-	-	1, 2	43	41	36	71	20	106	59	31	42	40	48	49	49	41	40
Hardness (as CaCO3)	mg/L	-	-	-	-	0.5, 1	15.1	15.4	10.8	19.3	5.8	33.3	15.2	11.7	15.1	14.3	18.8	15.8	15.4	15.7	12.6
pH	pH units	6 - 9	-	-	6.5 - 8.5		6.67	6.56	6.2	6.37	6.06	6.43	6.4	6.72	6.65	6.67	6.65	6.43	6.42	6.56	6.69
Phenols	mg/L	0.04	0.004	-	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Dissolved Solids	mg/L	-	-	-	-	10, 20	52	52	<20	64	46	104	44	48	24	42	58	10	58	56	38
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	0.1, 0.5, 1	1.62	1.69	0.43	<0.1	<0.1	0.52	0.29	0.37	0.34	0.36	0.21	0.29	0.3	0.6	0.26
Total Nitrogen (Calculated)	mg/L	-	-	-	-	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6	-
Total Phosphorus	mg/L	-	-	-	0.02	0.01, 0.02	0.17	0.17	0.05	<0.02	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	<0.02
Total Suspended Solids	mg/L	-	-	-	-	10	<10	18	<10	<10	<10	<10	41	<10	<10	<10	<10	<10	<10	11	<10
Turbidity	NTU	-	-	-	-	0.1, 0.5	4.6	9.9	1.2	2.8	<0.5	26.2	1	1.4	2	1	2.2	1.5	0.8	11.9	9.6
Unionized Ammonia (Calc)	mg/L	-	-	-	-	0.000002, 0.00061	0.0000529	0.0000529	0.0000092	0.0000219	-	0.0000217	0.000011	0.0000124	-	-	-	-	-	0.000008	<0.000002
Metals																					
Aluminum (diss, 0.2 µm)	mg/L	-	-	Calculated	-	0.004, 0.005	-	-	-	-	-	-	-	-	-	-	-	0.089	0.072	-	**0.117**
Aluminum (diss, 0.45 µm)	mg/L	-	-	Calculated	-	0.004	-	-	-	0.11	0.133	0.112	0.117	**0.158**	**0.091**	**0.101**	**0.102**	-	-	**0.125**	-
Aluminum (tot)	mg/L	-	-	-	-	0.004, 0.01	0.131	0.15	0.093	-	-	-	0.171	0.203	0.138	0.099	0.15	-	-	0.609	-
Arsenic (tot)	mg/L	-	-	0.005	-	0.001, 0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Barium (diss)	mg/L	2.3	-	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium (tot)	mg/L	2.3	-	-	-	0.002	0.031	0.02	0.01	0.021	0.012	0.036	0.013	0.012	0.011	0.011	0.015	0.015	0.014	0.018	0.013
Beryllium (tot)	mg/L	-	-	-	Calculated	0.0004, 0.0005, 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron (diss)	mg/L	3.55	1.5	0.2	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (tot)	mg/L	3.55	1.5	0.2	-	0.01	0.013	0.013	0.015	0.06	<0.01	0.046	0.021	<0.01	0.023	0.023	0.015	0.028	0.029	0.018	0.023
Cadmium (tot)	mg/L	0.00021	0.000017	Calculated	-	0.00009, 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (tot)	mg/L	0.064	-	-	-	0.003, 0.005	<0.003	<0.003	<0.003	0.003	<0.003	<0.003	<0.003	0.005	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Cobalt (tot)	mg/L	-	-	0.0009	-	0.0005	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Copper (tot)	mg/L	0.0069	-	Calculated	-	0.0009, 0.001, 0.002	<0.002	<0.002	0.001	<0.002	<0.002	0.002	**0.002**	**0.002**	<0.002	**0.003**	<0.002	<0.002	<0.002	**0.002**	0.001
Iron (diss)	mg/L	1	-	-	0.3	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron (tot)	mg/L	1	-	-	0.3	0.01, 0.1, 0.5	1.3	1.28	0.1	0.18	0.02	0.821	0.187	0.248	0.21	0.138	0.798	0.484	0.514	0.96	0.266
Lead (tot)	mg/L	0.002	-	Calculated	-	0.0005, 0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese (diss)	mg/L	-	-	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (tot)	mg/L	-	-	-	-	0.002, 0.01	-	-	0.031	0.04	0.004	0.103	0.029	0.016	0.04	0.035	0.116	0.061	0.072	0.05	0.028
Mercury (diss)	mg/L	-	-	-	0.0002	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Mercury (tot)	mg/L	-	-	-	0.0002	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (tot)	mg/L	-	-	0.04	-	0.0005, 0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Nickel (tot)	mg/L	-	-	-	0.025	0.001, 0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Selenium (tot)	mg/L	-	-	-	0.1	0.002, 0.004	<0.004	<0.004	<0.004	0.005	0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.002	<0.002	<0.002	<0.002	<0.002
Silicon (tot)	mg/L	-	-	-	-	0.05, 0.1, 0.18	5.92	5.78	3.77	4.49	3.78	5.62	3.76	6.18	5.33	4.96	6.77	4.7	4.59	7.32	3.73
Silver (tot)	mg/L	-	-	-	0.0001	0.00009, 0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Strontium (tot)	mg/L	-	-	-	-	0.001, 0.005	0.03	0.029	0.022	0.039	0.014	0.066	0.022	0.021	0.027	0.027	0.038	0.028	0.025	0.028	0.021
Thallium (tot)	mg/L	-	-	0.0003	-	0.00005, 0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Titanium (tot)	mg/L	-	-	-	-	0.002, 0.005, 0.01	0.005	0.005	<0.002	<0.002	<0.002	<0.002	0.008	0.003	0.002	<0.002	<0.01	<0.01	<0.01	0.018	<0.01
Vanadium (tot)	mg/L	-	-	0.006	-	0.0005, 0.002	<0.002	<0.002	<0.002	**0.008**	**0.007**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Zinc (tot)	mg/L	0.089	0.03	0.02	-	0.005, 0.02	0.011	0.006	0.005	0.007	<0.005	0.006	<0.005	0.006	<0.005	<0.005	<0.02	<0.02	<0.02	<0.02	<0.02

Notes:

Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds MECP-GD-TA	MECP Guidance Document Table A
Concentration exceeds MECP-GD-TB	MECP Guidance Document Table B
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General

Table E-3: Municipality of Hastings Highlands Historical Analytical Results Anions, Cations, General Chemistry and Dissolved Metals in Surface Water						Site Name	Lake St. Peter WDS	Lake St. Peter WDS
						Location	LSP-SW2	LSP-SW2
Parameter	Units	MECP-GD-TA	MECP-GD-TB	PWQO-INTERIM	PWQO-GENERAL	Sample ID	LSP-QAQC-SW1 (LSP-SW2)	LSP-SW2
						Sample Date	2023-May-04	2024-Apr-30
Anions						**Detection Limit**		
Chloride	mg/L	180	128	-	-	0.1, 1	0.6	<1
Nitrate + Nitrite	mg/L	-	-	-	-	0.1	-	<0.1
Nitrate as N	mg/L	-	-	-	-	0.05, 0.1	0.1	<0.1
Nitrite as N	mg/L	-	-	-	-	0.01, 0.05	<0.05	<0.01
Sulphate	mg/L	100	-	-	-	0.1, 1	4.98	4.4
Cations								
Calcium (diss)	mg/L	-	-	-	-	0.2	-	-
Calcium (tot)	mg/L	-	-	-	-	0.05, 0.16, 0.2, 0.32	4.24	2.8
Magnesium (diss)	mg/L	-	-	-	-	0.05	-	-
Magnesium (tot)	mg/L	-	-	-	-	0.05, 0.1, 0.17, 0.34	0.83	0.66
Potassium (tot)	mg/L	-	-	-	-	0.05, 0.2, 0.5, 0.58, 1.15	1.36	1
Sodium (diss)	mg/L	-	-	-	-	0.1	-	-
Sodium (tot)	mg/L	-	-	-	-	0.05, 0.1, 0.22, 0.45	1.83	1.6
Field Parameters								
pH (Field)	pH units	-	-	-	-		-	6.1
Temperature	deg. C	-	-	-	-		-	6.9
General Chemistry								
Alkalinity (as CaCO3)	mg/L	-	-	-	See Factshee	1, 5	10	17
Ammonia as N	mg/L	-	-	-	-	0.02, 0.03, 0.05	<0.02	<0.05
Biochemical Oxygen Demand	mg/L	-	-	-	-	2, 5	<2	<2
Chemical Oxygen Demand	mg/L	-	-	-	-	4, 5	16	15
Colour	TCU	-	-	-	-	2, 2.5, 5, 20	34.7	34
Dissolved Organic Carbon	mg/L	-	-	-	-	0.4	-	-
Electrical Conductivity	uS/cm	-	-	-	-	1, 2	41	47
Hardness (as CaCO3)	mg/L	-	-	-	-	0.5, 1	14	10
pH	pH units	6 - 9	-	-	6.5 - 8.5		6.71	8.63
Phenols	mg/L	0.04	0.004	-	0.001	0.001	<0.001	<0.001
Total Dissolved Solids	mg/L	-	-	-	-	10, 20	34	35
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	0.1, 0.5, 1	0.22	0.23
Total Nitrogen (Calculated)	mg/L	-	-	-	-	0.05	-	-
Total Phosphorus	mg/L	-	-	-	0.02	0.01, 0.02	<0.02	<0.02
Total Suspended Solids	mg/L	-	-	-	-	10	<10	<10
Turbidity	NTU	-	-	-	-	0.1, 0.5	7.7	0.3
Unionized Ammonia (Calc)	mg/L	-	-	-	-	0.000002, 0.00061	<0.000002	<0.00061
Metals								
Aluminum (diss, 0.2 µm)	mg/L	-	-	Calculated	-	0.004, 0.005	**0.124**	**0.11**
Aluminum (diss, 0.45 µm)	mg/L	-	-	Calculated	-	0.004	-	-
Aluminum (tot)	mg/L	-	-	-	-	0.004, 0.01	-	-
Arsenic (tot)	mg/L	-	-	0.005	-	0.001, 0.003	<0.003	<0.001
Barium (diss)	mg/L	2.3	-	-	-	0.002	-	-
Barium (tot)	mg/L	2.3	-	-	-	0.002	0.014	0.0098
Beryllium (tot)	mg/L	-	-	-	Calculated	0.0004, 0.0005, 0.001	<0.001	<0.0004
Boron (diss)	mg/L	3.55	1.5	0.2	-	0.01	-	-
Boron (tot)	mg/L	3.55	1.5	0.2	-	0.01	0.026	<0.01
Cadmium (tot)	mg/L	0.00021	0.000017	Calculated	-	0.00009, 0.0001	<0.0001	<0.00009
Chromium (tot)	mg/L	0.064	-	-	-	0.003, 0.005	<0.003	<0.005
Cobalt (tot)	mg/L	-	-	0.0009	-	0.0005	<0.0005	<0.0005
Copper (tot)	mg/L	0.0069	-	Calculated	-	0.0009, 0.001, 0.002	0.001	**0.0012**
Iron (diss)	mg/L	1	-	-	0.3	0.1	-	-
Iron (tot)	mg/L	1	-	-	0.3	0.01, 0.1, 0.5	0.262	0.12
Lead (tot)	mg/L	0.002	-	Calculated	-	0.0005, 0.001	**0.002**	<0.0005
Manganese (diss)	mg/L	-	-	-	-	0.002	-	-
Manganese (tot)	mg/L	-	-	-	-	0.002, 0.01	0.025	0.011
Mercury (diss)	mg/L	-	-	-	0.0002	0.0001	<0.0001	<0.0001
Mercury (tot)	mg/L	-	-	-	0.0002	0.0001	-	-
Molybdenum (tot)	mg/L	-	-	0.04	-	0.0005, 0.002	<0.002	<0.0005
Nickel (tot)	mg/L	-	-	-	0.025	0.001, 0.003	<0.003	<0.001
Selenium (tot)	mg/L	-	-	-	0.1	0.002, 0.004	<0.002	<0.002
Silicon (tot)	mg/L	-	-	-	-	0.05, 0.1, 0.18	3.9	4.4
Silver (tot)	mg/L	-	-	-	0.0001	0.00009, 0.0001	<0.0001	<0.00009
Strontium (tot)	mg/L	-	-	-	-	0.001, 0.005	0.023	0.017
Thallium (tot)	mg/L	-	-	0.0003	-	0.00005, 0.0003	<0.0003	<0.00005
Titanium (tot)	mg/L	-	-	-	-	0.002, 0.005, 0.01	<0.01	<0.005
Vanadium (tot)	mg/L	-	-	0.006	-	0.0005, 0.002	<0.002	0.00061
Zinc (tot)	mg/L	0.089	0.03	0.02	-	0.005, 0.02	<0.02	<0.005

Notes:

Detection Limit	DL: May vary between sample locations and events
DL exceeds criteria	
Concentration exceeds MECP-GD-TA	MECP Guidance Document Table A
Concentration exceeds MECP-GD-TB	MECP Guidance Document Table B
Concentration exceeds PWQO-INTERIM	Provincial Water Quality Objectives Interim
Concentration exceeds PWQO-GENERAL	Provincial Water Quality Objectives General

Appendix F

Trigger Mechanisms and Contingency Plan

LAKE ST. PETER WASTE DISPOSAL SITE
SURFACE WATER TRIGGER MECHANISM AND CONTINGENCY PLAN
(FINAL 2021-06-07)

OBJECTIVE AND BACKGROUND

The objective of the surface water trigger mechanisms and contingency plan for the Lake St. Peter Waste Disposal Site (WDS) is to identify leachate impacted surface water and/or the migration of leachate impacted groundwater with the potential to discharge to surface water and cause exceedances of the Provincial Water Quality Objectives (PWQO)/Canadian Water Quality Objectives (CWQO), and ensure timely action to prevent and mitigate adverse impacts to the environment.

East at Creek

Assessment Points- SW2, DP1-21 (to be installed in the summer of 2021)
Trigger Parameters-Listed in Table Below
Frequency-Sampling twice per year (Spring and Fall)
Contingency Plan is activated if two or more trigger location parameter concentrations exceed the PWQO/CCME concentrations at one assessment point for two consecutive sampling events for alkalinity, boron, chloride, iron, manganese, nitrate, or un-ionized ammonia. Other leachate indicator parameters consisting of ammonia, barium, calcium, COD, conductivity, magnesium, TDS, sodium, and sulphate have not been included at this time.

The trigger parameter concentrations are as follows:

Trigger Parameter	PWQO Concentration mg/L	Trigger
Alkalinity	<3.1	When two leachate indicator parameters PWQO/CCME concentrations are exceeded at trigger location for two (2) consecutive sampling periods.
Boron	0.20	
Un-ionized Ammonia	0.20	
Trigger Parameter	**CCME (CWQG) Concentrations mg/L**	
Chloride	120	
Iron	0.3	
Manganese	0.26	
Nitrate	13	

CONTINGENCY PLAN – SURFACE WATER

Tier 1: If two or more of the trigger parameter concentrations exceed PWQO/CCME (CWQG) at one assessment point during two consecutive sampling events.

1. Toxicity test (Single Concentration – Acute Lethality) samples will be collected from the creek downstream of SW2 and DP1-21 prior to the wetland discharging under Highway 127. If the toxicity test passes then no additional mitigation measures will be required. If the toxicity test fails then Tier 2 actions will be implemented:

Tier 2: If the Tier 1 toxicity sampling results fail then the following measures will be implemented:

1. Collect a repeat toxicity sample to confirm the results within two weeks of receiving the failed laboratory report.
2. Carry out surface water sampling at sampling location SW2 and groundwater sampling at potential additional future drive-point piezometer DP1-21 within one month of receiving the failed toxicity test. The analyses is to include the full suite of surface water parameters (Schedule 5, Column 3 O.Reg.232/98) and assess data (compared to PWQO/CWQG) to determine if results are in keeping with historic data and/or if there appears to be significant potential leachate impacts occurring.

Tier 3: If the Tier 2 re-sampling shows significant potential leachate impacts are occurring to surface water, then the following measures will be implemented depending on the nature of the trigger activation:

1. Install additional drive-point piezometers along/in the creek bed to determine if, or where groundwater is discharging to the creek.

Tier 4: If additional actions indicate a continuing issue resulting in impacts or potential significant impacts to the environment, then a mitigation/remediation measures plan will be developed in consultation with MECP and implemented to minimize further impact. These measures could be aimed at intercepting or diverting the impacted groundwater before it reaches a receptor or isolating downgradient receptors from impacted surface water. The specifics of the plan will be dependent on the nature of the impact.

LAKE ST. PETER WASTE DISPOSAL SITE
GROUNDWATER TRIGGER MECHANISMS AND CONTINGENCY PLAN
(FINAL 2021-02-21)

OBJECTIVE AND BACKGROUND

The objective of the groundwater trigger mechanism and contingency plan for the Lake St. Peter Waste Disposal Site (WDS) is to identify migration of leachate impacted groundwater to adjacent groundwater receptors and ensure timely action to prevent and mitigate any adverse impacts to the environment.

East of the Site

Assessment Points- Future monitoring well near East CAZ
Trigger Parameters-Barium, Chloride, DOC, TDS
Frequency-Sampling twice per year (Spring and Fall)
Contingency Plan is activated if two trigger parameter concentration is exceeded at one assessment point for two consecutive sampling events. The trigger parameter concentrations are as follows:

Trigger Parameter	RUV/RUG Concentration mg/L	Trigger
Barium	0.26	When two leachate indicator parameter concentration at an individual trigger location well is exceeded for two consecutive sampling periods.
DOC	5.1	
TDS	266.3	
Trigger Parameter	**75% of RUV/RUG Concentration mg/L**	
Chloride	125.8	

Note: RUV/RUGs are calculated based on LSP2-03 as background (cross-gradient well).

CONTINGENCY PLAN – GROUNDWATER

Tier 1: If one or more triggers are exceeded at one assessment point during two consecutive sampling events, repeat sampling will be conducted within one (1) month to confirm or refute the results at that location.

Tier 2: If Tier 1 re-sampling results confirm exceedances then the following measures will be implemented depending on the nature of the trigger activation:

1. Discuss the Tier 1 sample results with the MECP. Agree on additional sampling and analyses requirements which may include the following:
    a. Increase monitoring frequency to twice monthly, for six months, if exceedances continue. Revert back to typical annual monitoring sampling frequency if there are two consecutive sampling results that do not show exceedances.

Tier 3: If the increased sampling and/or studies in Tier 2 indicate a continuing issue resulting in impacts or potential significant impacts to the environment, then a mitigation/remediation measures plan will be developed and implemented to minimize further impact. These measures would be aimed at intercepting or diverting the impacted groundwater before it reaches a receptor. The specifics of the plan will be dependent on the nature of the impact.

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