Prepared for
Muncipality of Calvin
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NB102-192/15-1

MUNICIPALITY OF CALVIN LANDFILL SITE
2022/2023 LANDFILL MONITORING REPORT

Rev	Description	Date
0	Issued in Final	January 17, 2024

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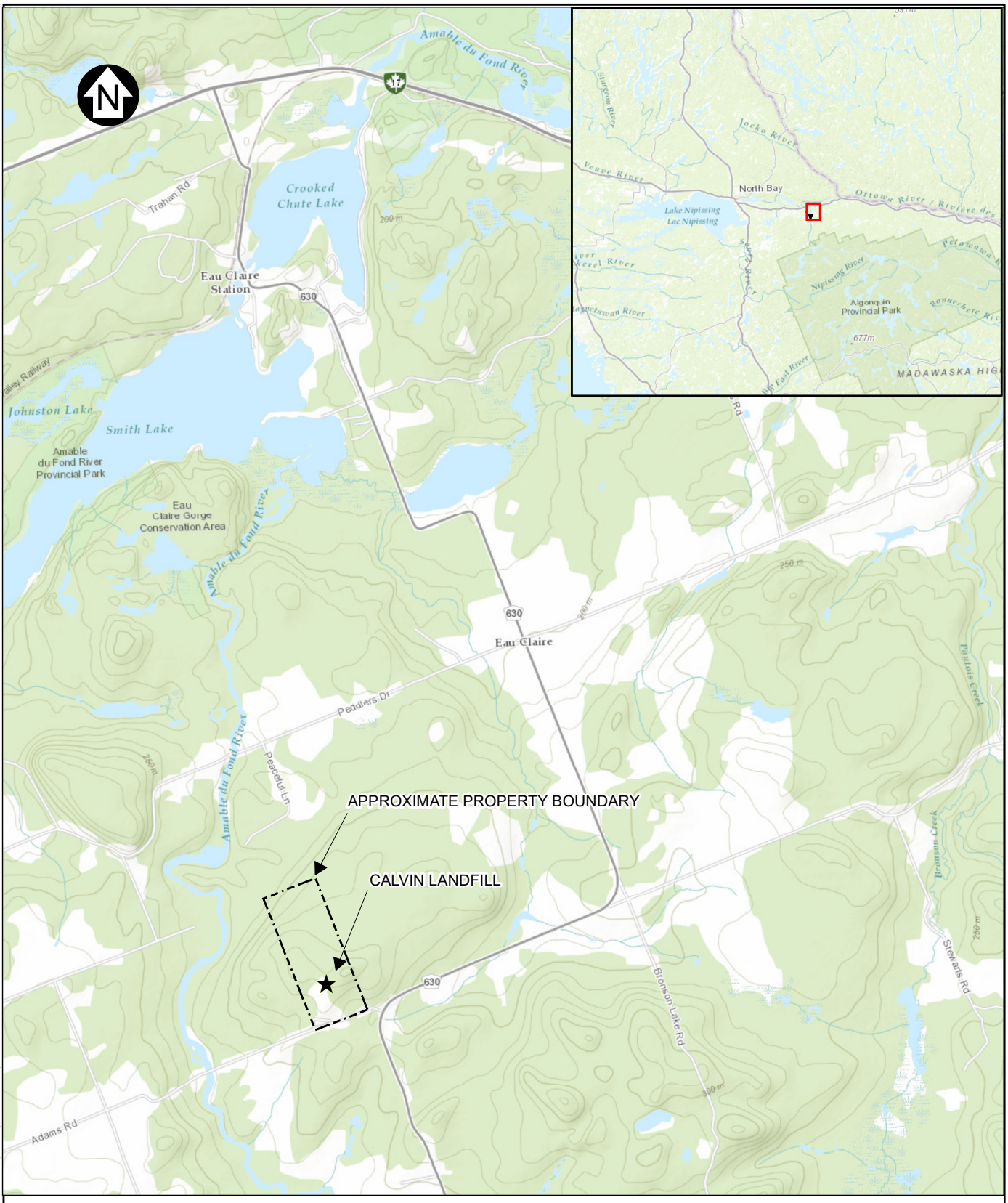
Abbreviations

AO ..... Aesthetic Objective
BOD ..... Biochemical Oxygen Demand
C of A ..... Certificate of Approval
COC ..... Chain of Custody
DO ..... Dissolved Oxygen
DOC ..... Dissolved Organic Carbon
Ha ..... Hectare
IMAC ..... Interim Maximum Acceptable Concentration
KP ..... Knight Piésold Ltd.
LEL ..... Lower Explosive Limit
MAC ..... Maximum Acceptable Concentration
MECP ..... Ministry of Environment, Conservation and Parks
MOE ..... Ministry of the Environment
MOECC ..... Ministry of the Environment and Climate Change
MOEE ..... Ministry of Environment Energy
MW ..... Monitoring Well
ODWS. ..... Ontario Drinking Water Standards
OG ..... Operational Guideline
ORP ..... Oxidation-Reduction Potential
PWQO ..... Provincial Water Quality Objectives
QA/QC ..... Quality Assurance/Quality Control
RPD ..... Relative Percent Difference
RUG ..... Reasonable Use Guideline
SGS ..... SGS Canada Inc.
TDS ..... Total Dissolved Solids
the Municipality ..... Municipality of Calvin
the Site ..... Calvin Landfill Site
TKN ..... Total Kjeldahl Nitrogen
TSS ..... Total Suspended Solids

1.0 INTRODUCTION

Knight Piésold Ltd. (KP) was retained by the Municipality of Calvin (the Muncipality) to complete groundwater and surface water semi-annual water quality monitoring at the Calvin Landfill Site for 2022 and 2023. The results of the monitoring are summarized in this bi-annual report.

The Municipality's Landfill Site (the Site) is located at 111 Adams Road, near the community of Eau Clair, Ontario. Figure 1.1 shows the location of the Calvin Landfill. The Landfill operates under the Provisional Certificate of Approval (C of A) No. A350901 issued by the Ministry of the Environment (MOE) on March 25, 1980 (provided in Appendix A). The Landfill is approved for the landfilling of municipal waste (generated in the Municipality of Calvin) and is confined to a 2.025 hectare (ha) waste disposal area.



SCALE 0 0.25 0.5 1 1.5 2 km

NOTES:

1. BASE MAP: © ESRI DATA AND MAPS (ONLINE) (2017). REDLANDS, CA: ENVIRONMENTAL SYSTEMS RESEARCH INSTITUTE. ALL RIGHTS RESERVED.
2. COORDINATE GRID IS IN METRES. COORDINATE SYSTEM: WGS 1984 UTM ZONE 17N.

MUNICIPALITY OF CALVIN

MUNICIPALITY OF CALVIN LANDFILL SITE

PROJECT LOCATION MAP

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FIGURE 1.1

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2.0 BACKGROUND INFORMATION

2.1 SITE DESCRIPTION

2.1.1 SITE FEATURES

The Calvin Landfill has been in operation since 1972. The Landfill is open to receiving waste from the public on Tuesday's and Saturday's throughout the year. The Landfill accepts solid, non-hazardous commercial and residential waste generated in the Municipality.

The Landfill is accessed from Adams Road through an entrance gate. When the landfill is closed, the gate is locked. There are a few small buildings on site for use in sorting recycling. Waste compaction is completed using a mobile compactor.

The Landfill is surrounded by a moderately forested area on all sides. The photo log in Appendix B provides a view of the monitoring wells in relation to the surrounding environment.

2.1.2 SITE TOPOGRAPHY AND DRAINAGE

The topographic relief of the Landfill area is moderate with a topographic high located near the northeast property boundary. The topography near the landfilling area slopes generally from north to southeast and north to south-west. The relief becomes relatively flat on the south side of the Site, at Adams Road.

The southeastern portion of the Site drains towards the southeast, converging at a small creek located across Highway 630.

There are no permanent surface water features on the Site. The nearest surface water body is the Amable du Fond River located approximately 300 m southwest of the Landfill.

2.1.3 SURFICIAL GEOLOGY

Based on a review of drillhole logs, overburden throughout the Landfill area generally contains a near surface silt/clay and silty sand unit, which transitions to a fine to coarse grained sand with depth. The depth to bedrock varies from approximately 2 to 9 m below ground surface (m bgs) across site, becoming shallowest to the north.

2.2 WATER QUALITY MONITORING PROGRAM

2.2.1 GROUNDWATER MONITORING PROGRAM

Thirteen groundwater monitoring wells and a domestic residential well (when available) are sampled to assess the groundwater quality for the Landfill. The locations of the wells are shown on Figure 2.1. A summary of the monitoring well locations and the intended sampling purpose (upgradient, downgradient, leachate) for each well is presented in Table 2.1.

As indicated on Table 2.1, groundwater monitoring well MW7 is considered representative of background water quality as the well is located away from, and upgradient, of the waste fill area. Monitoring well MW14 is also upgradient of the Landfill, however, it is located near the waste fill area. Monitoring wells MW4 and MW8 are considered representative of leachate impacted groundwater as the wells are located within the

waste fill area. Downgradient groundwater quality is determined by monitoring wells MW3, MW5S, MW5D, MW6, MW9, MW10 and MW11. Monitoring wells MW12 and MW13, located on the east side of the property, are considered cross-gradient. Drinking water quality near the Landfill is monitored, when available, at residential domestic water well (RES188) located west of the Landfill (188 Adams Road).

Historically groundwater flow was interpreted to be south to southeast, generally following topography.

2.2.2 ASSESSMENT PROGRAM

Municipal solid wastes are defined as those wastes generated and discharged from single and multifamily dwellings. Waste commonly consists of food waste, textiles, wood and soil, garden waste, paper and plastics. This waste contains decomposable and non-decomposable materials. The decomposable materials undergo decomposition by a combination of chemical, physical, and biological processes. The by-products of this decomposition, when mixed with saturated water conditions, produces a leachate substance which can negatively impact the quality of ground and surface water. The resulting leachate can often contain characteristic elevated parameters such as chloride, conductivity, biological oxygen demand, chemical oxygen demand which are collectively referred to as leachate indicator parameters. Leachate indicator parameters can also include altered concentrations of redox sensitive elements such as dissolved oxygen (DO), oxidation-reduction potential (ORP), iron, manganese, and nitrates which occur based on an elevated concentration of organics.

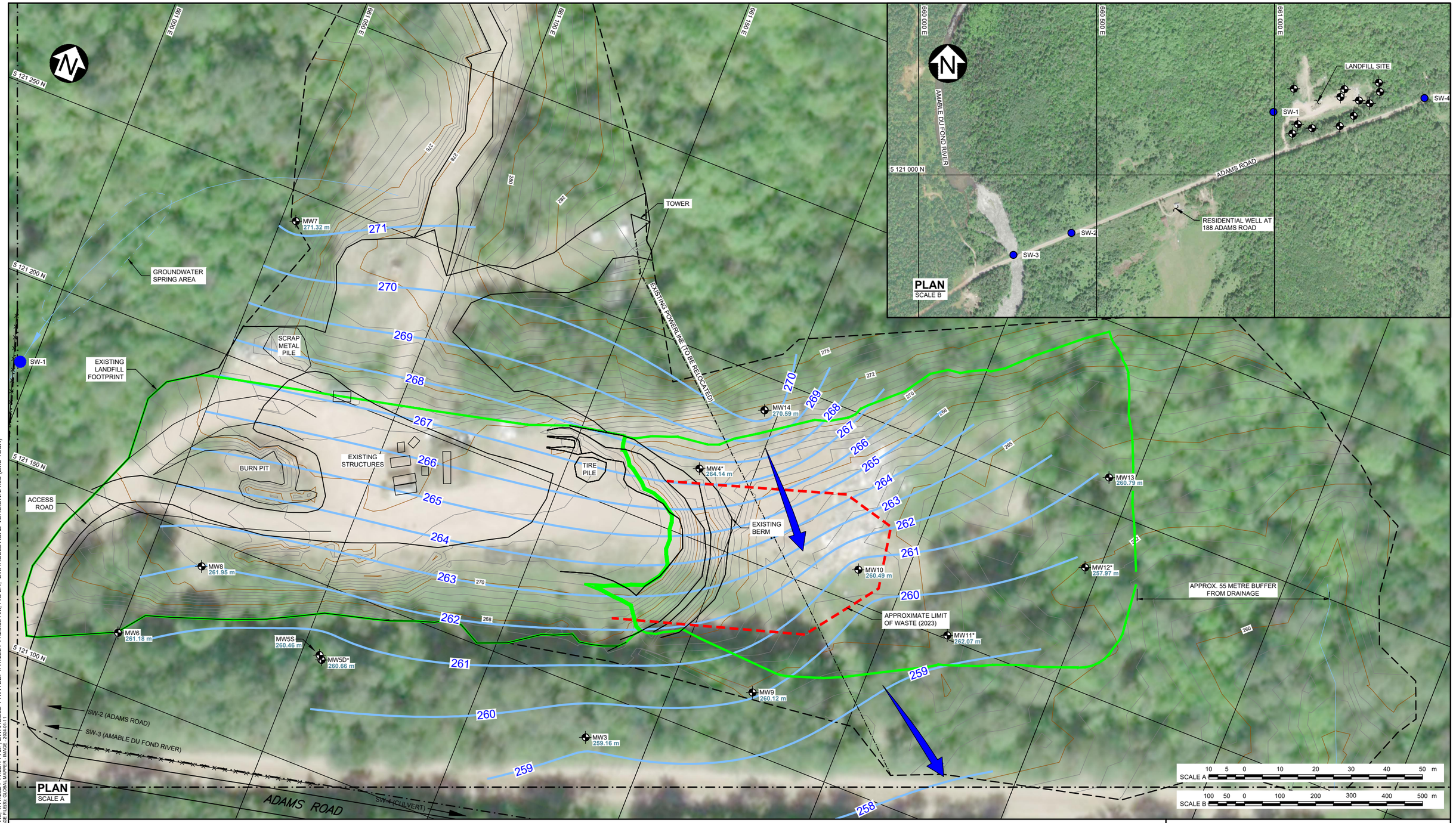
The general assessment process to determine impacts to groundwater, consists of an evaluation of the background water quality, the characteristics of the leachate, and an evaluation of whether the monitoring wells downgradient of the Landfill are indicating impacts. The severity of the impacts is determined based on the compliance to provincial standards or guidelines. Landfill groundwater impacts are typically offset through a mechanism known as natural attenuation.

Similar to groundwater, impacts to surface water are also measured by comparing upstream and downstream water quality as a means of detecting landfill impacts.

2.2.3 SURFACE WATER MONITORING PROGRAM

Impacts to surface water quality are monitored through a surface water monitoring program. This program consists of the collection of four surface water samples at the same frequency as the groundwater program (sampling in spring and fall). As mentioned in Section 2.1.2 there are no permanent surface water features within the Landfill footprint, and therefore sampling occurs at surface water features adjacent to the Landfill. The following is a description of the surface water sampling locations:

- SW-1 is collected from a small creek located to the north and upstream of the Landfill. This creek represents runoff and upwelling groundwater from a catchment area located upstream of the landfilling area. The volume of water within this creek is seasonally variable and is often too low to sample. No sample was collected from this location throughout 2022 and 2023.
- SW-2 is collected from a drainage ditch located approximately 450 m west of the Landfill entrance off of the north side of Adams Road. This location is considered downstream of the Landfill. This location is often dry.
- SW-3 is collected from the Amable du Fond River south of Adams Road and it is considered a background site.
- SW-4 is collected from a culvert outlet approximately 200 m east of the Landfill entrance, towards Highway 630. This location is considered downstream of the Landfill. This location is often dry.



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NOTES:

1. COORDINATE GRID IS UTM NAD83 ZONE 17.
2. CONTOUR INTERVAL IS 0.5 METRES.
3. TOPOGRAPHICAL SURVEYS PROVIDED BY TALBOT SURVEYS INC. (2005, 2006, 2008).
4. ASTERISK INDICATES GROUNDWATER ELEVATION WAS NOT USED FOR CONTOURING.
5. IMAGERY OBTAINED FROM GLOBAL MAPPER, (JANUARY 11, 2024).

LEGEND:

- LANDFILLING EXTENTS
- PROPERTY LINE
- FENCE
- APPROXIMATE LIMITS OF WASTE (2023)
- POWERLINE
- GROUNDWATER ELEVATION CONTOUR
- SW1 SURFACE WATER SAMPLE LOCATION
- MONITORING WELL LOCATION
- 260 m GROUNDWATER ELEVATION (SPRING 2023)
- DIRECTION OF GROUNDWATER FLOW (APPROXIMATE)

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MUNICIPALITY OF CALVIN

MUNICIPALITY OF CALVIN LANDFILL SITE

SITE PLAN
WITH MONITORING WELL LOCATIONS

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FIGURE 2.1 REV 0

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TABLE 2.1

MUNICIPALITY OF CALVIN
MUNICIPALITY OF CALVIN LANDFILL SITE

2022/2023 LANDFILL MONITORING REPORT
SUMMARY OF 2022/2023 SAMPLING LOCATIONS

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ID	Location	Stratigraphic Unit	Easting[1]	Northing[1]	Elevation of Riser (m amsl)	PVC Stick-up (m)	Groundwater Elevation (m amsl)		Groundwater Elevation (m amsl)	
							Spring 2022	Fall 2022	Spring 2023	Fall 2023
MW3	Downgradient	Sand	661,183	5,121,137	266.0	1.02	260.7	260.2	259.2	260.1
MW4	Leachate	Sand	661,185	5,121,219	272.6	0.53	264.0	263.3	264.1	263.6
MW5D	Downgradient	Bedrock	661,106	5,121,130	265.3	0.69	260.6	260.2	260.7	260.6
MW5S	Downgradient	Sand	661,105	5,121,131	265.3	0.50	261.0	260.5	260.5	260.2
MW6	Downgradient	Sand	661,050	5,121,116	265.7	0.58	261.1	260.5	261.2	260.5
MW7	Background	Silt	661,054	5,121,242	273.5	0.77	271.2	270.6	271.3	270.3
MW8	Downgradient/Leachate	Sand	661,065	5,121,142	271.3	0.63	261.7	260.7	262.0	261.3
MW9	Downgradient	Sand	661,222	5,121,166	265.5	0.94	260.7	260.0	260.1	259.9
MW10	Downgradient	Sand	661,237	5,121,209	266.8	1.10	260.9	260.0	260.5	-
MW11	Downgradient	Sand	661,267	5,121,201	265.2	0.92	260.6	259.7	262.1	259.5
MW12	Cross-gradient	Sand	661,296	5,121,233	263.1	0.97	260.6	259.6	258.0	259.4
MW13	Cross-gradient	Sand	661,293	5,121,259	265.0	1.00	261.2	260.0	260.8	260.0
MW14	Upgradient	Bedrock	661,196	5,121,241	272.5	0.64	270.6	267.8	270.6	268.6
RES-188	Residential Well	Bedrock	660,732	5,120,909	-	-	-	-	-	-
SW-1	Upstream	-	660,995	5,121,750	-	-	-	-	-	-
SW-2	Downstream	-	660,429	5,120,837	-	-	-	-	-	-
SW-3	Background	-	660,266	5,120,775	-	-	-	-	-	-
SW-4	Downstream	-	661,421	5,121,216	-	-	-	-	-	-

\\nb4\project$\1\02\00192\15\A\Report\Report 1 Rev 0\Tables\[2022-2023 Report Tables_MSA.xlsx]Table 2.1

NOTES:

1. COORDINATES ARE REFERENCED IN UTM, NAD83 ZONE 17T.

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2.3 SAMPLING PROCEDURES

The following procedures were followed during the collection of groundwater samples throughout 2022 and 2023:

- Methane concentrations were measured at each well, following removal of the well cap. Methane was measured using either a Landtec GEM2000 Gas Analyzer or an RKI Eagle Meter calibrated for methane. Methane results were recorded on field data sheets.
- Groundwater levels were measured in each well using a clean Solinst Water Level Meter - Model 101. Measurements were recorded on field data sheets.
- Prior to sampling, three well volumes of water were purged from each monitoring well using dedicated Waterra® tubing and inertial footvalve. If the monitoring well went dry during purging but prior to three well volumes, the sample was collected after the well returned to static water level.
- In situ groundwater quality data were measured at each well using a Horiba U-52 multiparameter probe. The instrument was calibrated following manufacturer's specifications and methods by Maxim Environmental prior to use and verified each day following the manufacturer's specifications and methods prior to sampling in-situ parameters. All results were recorded on field data sheets.
- The same dedicated Waterra® tubing and footvalve that was used to purge each well was used to collect the groundwater samples. Samples were collected in labelled, clean bottles provided by the laboratory.
- New nitrile gloves were used during sampling at each well.
- Samples were stored in coolers with ice.
- Pertinent sampling information was recorded on a Chain of Custody (COC) form and a copy was delivered with the samples to the laboratory (SGS Canada Inc. (SGS)) located in Lakefield Ontario.

The following procedures were followed for the collection of surface water samples throughout 2022 and 2023:

- Samples were collected in labelled, clean bottles provided by the laboratory. When a direct transfer from the surface water feature into laboratory-supplied container was not possible, a clean unpreserved laboratory or PET bottle was used to transfer the sample into the appropriate sample containers.
- In situ quality data were measured at each surface water sampling location using a Horiba U-52 multiparameter probe. All results were recorded on field data sheets.
    - The Horiba U-52 multiparameter probe was used to measure the in situ parameters including the oxygen content present within the surface water feature.
- New nitrile gloves were used during sampling at each surface water site.
- Samples were stored in coolers with ice.
- Pertinent sampling information was recorded on a COC form, and a copy was delivered with the samples to SGS.

2.4 MONITORING SAMPLING PARAMETERS

A summary of the analytical and field measured parameters analyzed at each groundwater and surface water monitoring location during the 2022/2023 period is provided in Tables 2.2 and 2.3, respectively.

Table 2.2 Groundwater Parameters

Analytical Parameters
pH, Conductivity, Alkalinity
Dissolved Organic Carbon (DOC)
NH_3+NH_4
TKN (Total Kjeldahl Nitrogen)
Anions
Sulphate, Chloride, Nitrite, Nitrate
Total Dissolved Solids (TDS)
Total Suspended Solids (TSS)
COD
Total Phenols
Mercury (Dissolved)
Dissolved Metals by ICP
Hardness, Arsenic (As), Antimony (Sb), Aluminum (Al), Barium (Ba), Beryllium (Be), Bismuth (Bi), Boron (B), Cadmium (Cd), Calcium (Ca), Chromium (Cr), Cobalt (Co), Copper (Cu), Iron (Fe), Lead (Pb), Magnesium (Mg), Manganese (Mn), Molybdenum (Mo), Nickel (Ni), Phosphorus (P), Potassium (K), Selenium (Se), Silver (Ag), Sodium, (Na), Strontium (Sr), Thallium (Tl), Tin (Sn), Titanium (Ti), Uranium (U), Vanadium (V), Zinc (Zn), Zirconium (Zr)
VOC's (MW4 ONLY)
Benzene, 1,4-Dichlorobenzene, Dichloromethane, Toluene, Vinyl chloride, MEK, Acetone
Field Measured Parameters
Depth to water, Depth to bottom of well
Methane and CO_2 Vapour Concentrations
Temperature, pH, EC
Dissolved Oxygen (DO)

Note(s):

1. As per SGS Canada Inc. Quote 2021 1601.

Table 2.3 Surface Water Parameters

Analytical Parameters
pH, Conductivity, Alkalinity
Dissolved Organic Carbon (DOC)
NH_3+NH_4
Total Dissolved Solids (TDS)
Total Suspended Solids (TSS)
Biochemical Oxygen Demand (BOD)
Total Phenols
TKN (Total Kjeldahl Nitrogen)
Anions
Sulphate, Chloride, Nitrite, Nitrate
Mercury (Total)
Total Metals by ICP-OES/MS
Hardness, Arsenic (As), Antimony (Sb), Aluminum (Al), Barium (Ba), Beryllium (Be), Bismuth (Bi), Boron (B), Cadmium (Cd), Calcium (Ca), Chromium (Cr), Cobalt (Co), Copper (Cu), Iron (Fe), Lead (Pb), Lithium (Li), Magnesium (Mg), Manganese (Mn), Molybdenum (Mo), Nickel (Ni), Phosphorus (P), Potassium (K), Selenium (Se), Silicon (as SiO2), Silver (Ag), Sodium (Na), Strontium (Sr), Thallium (Tl), Tin (Sn), Titanium (Ti), Uranium (U), Vanadium (V), Zinc (Zn), Zirconium (Zr)
Field Measured Parameters
Temperature, pH, EC
Dissolved Oxygen (DO)

Note(s):

1. As per SGS Canada Inc. Quote 2021 1601.

3.0 MONITORING PROGRAM RESULTS

3.1 APPLICABLE STANDARDS

3.1.1 PROVINCIAL WATER QUALITY STANDARDS

Groundwater quality sampling results are compared to the Ontario Drinking Water Standards, Objectives and Guidelines (ODWS; MECP, 2018) to provide information for the protection of public health through the provision of safe drinking water. Standards, objectives and guidelines are considered to be the minimum level of drinking-water quality. Their intent is not to imply that allowing the degradation of high-quality water supply to the specified level or range is acceptable.

The ODWS Technical supporting Document (MECP, 2018), identifies the following types of standards:

- Maximum Acceptable Concentration (MAC) and Interim Maximum Acceptable Concentration (IMAC) - These criteria are related to human health and include parameters such as nitrates, nitrites, and metals barium, boron, cadmium, chromium, lead, mercury, selenium and uranium.
- Aesthetic Objectives (AO) - These criteria are not related to human health, but relate to taste, odour, or appearance of water. Parameters include DOC, TDS, turbidity, chloride, sulphate and include the metals copper, iron, manganese, sodium and zinc.
- Operational Guidelines (OG) - These guidelines are not related to human health but are intended to ensure the efficient operation of water treatment and distribution systems. Parameters of interest include pH, hardness and aluminum.

Surface water results are compared to the Provincial Water Quality Objectives (PWQO; MOEE; 1999) to provide information to protect aquatic life and recreation uses.

3.1.2 DEFINING REASONABLE USE GUIDELINES (RUG)

Guideline B-7 (MOECC, 2016a) and Procedure B-7-1 (MOECC, 2016b) provided by the Ministry of Environment, Conservation and Parks (MECP), establishes the basis for determining the levels of contaminant discharges considered acceptable.

Monitoring well MW7 has been used to establish background concentrations as per the Guideline. The Guideline utilizes the type of standard (MAC, IMAC, AO or OG) and background concentrations to determine the maximal acceptable concentrations of parameters in adjacent properties.

3.2 LEACHATE CHARACTERIZATION

As previously mentioned, leachate indicator parameters are assessed through the review of water quality results of leachate well MW4, in comparison to background/upgradient water quality results (MW7). When compared to upgradient monitoring well results, the following parameters are generally elevated.

- Conductivity and total dissolved solids
- Chloride
- Select metals (boron, calcium, manganese, potassium)
- Dissolved organic carbon (DOC)
- Ammonia and total Kjeldahl nitrogen (TKN)

A comparison of the average background groundwater quality concentrations (MW7) to the average leachate concentrations (MW4) for the parameters indicated above is presented in Table 3.1.

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TABLE 3.1

MUNICIPALITY OF CALVIN
MUNICIPALITY OF CALVIN LANDFILL SITE

2022/2023 LANDFILL MONITORING REPORT
SELECT LEACHATE PARAMETERS COMPARED TO BACKGROUND WATER QUALITY

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Parameter	MW7				MW4			
	11-May-22	6-Oct-22	16-May-23	14-Nov-23	11-May-22	6-Oct-22	16-May-23	14-Nov-23
Location	Background				Leachate			
Physical Tests								
Alkalinity (Total as CaCO3)	36	73	30	74	523	439	474	358
Chemical Oxygen Demand	21	13	18	19	152	96	142	124
Conductivity µS/cm	122	203	122	228	992	883	966	742
Total Dissolved Solids	69	211	107	183	577	520	537	397
Anions								
Chloride	7	9	6	6	36	26	26	11
Nutrients								
Ammonia (Total)	<0.1	<0.1	<0.1	<0.1	26.2	17.7	21.2	12.9
Nitrogen Kjeldahl (Total)	<0.5	<0.5	<0.5	0.6	26.8	20.9	23.9	15.2
Dissolved Metals								
Boron (Dissolved)	0.028	0.033	0.008	0.018	1.86	0.908	1.73	0.748
Calcium (Dissolved)	6.1	19.2	6.11	17.9	101	91.8	103	82.3
Manganese (Dissolved)	0.021	0.134	0.00648	0.124	4.49	5.17	3.86	3.63
Potassium (Dissolved)	0.926	1.36	0.677	1.3	29.6	25.9	28.7	20.5
Organics								
Carbon Organic (Dissolved)	6	8	7	6	24	16	19	12

\\nb4\project$\1\02\00192\15\A\Report\Report 1 Rev 0\Tables\[2022-2023 Report Tables_MSA.xlsx]Table 3.1

NOTES:

1. SAMPLES ANALYZED BY SGS CANADA INC. IN LAKEFIELD, ON.
2. VALUES IN mg/L UNLESS OTHERWISE INDICATED.

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3.3 GROUNDWATER FLOW DIRECTION

Groundwater elevations measured during the sampling of the groundwater wells were utilized to determine groundwater flow direction and gradient. A summary of the groundwater elevation data collected for the 2022/2023 period is presented in Table 2.1. The spring 2023 dataset was utilized to contour groundwater elevations. A visual representation of the groundwater elevation contours and the general flow direction is presented on Figure 2.1.

3.4 GROUNDWATER MONITORING RESULTS

The groundwater analytical results for the 2022 and 2023 period are summarized in Table 3.2. Results above ODWS and RUG are highlighted within the table. Laboratory Certificates of Analysis can be found in Appendix C.

Background water quality results from monitoring well MW7 suggest that groundwater is naturally elevated in DOC, dissolved aluminum, and dissolved manganese as concentrations are typically above ODWS.

As indicated in Table 3.2, there were no instances of health-related groundwater quality exceedances in monitoring wells downgradient of the Landfill in 2022 and 2023. There were several exceedances of aesthetic (taste/odour), or operational exceedances (hard water indicators), which do not have adverse health effects, and are found to be naturally elevated in the area (above ODWS). The aesthetic exceedances consisted of: pH, alkalinity, hardness, dissolved manganese, dissolved iron, dissolved aluminum and DOC, most of which are also present in elevated concentrations in groundwater upgradient of the Landfill.

There were several instances where water quality concentrations exceeded Reasonable Use Guidelines (RUGs) in monitoring wells downgradient of the landfilling area. The exceedances occurred for nitrate and total dissolved solids (TDS), in several of the downgradient monitoring wells, however at concentrations below ODWS limits. RUG concentrations are considerate to be the acceptable concentration limit for water quality entering adjacent properties.

Downgradient water quality results (when compared with leachate indicator parameters) indicate minor leachate impacts. The following are notable results:

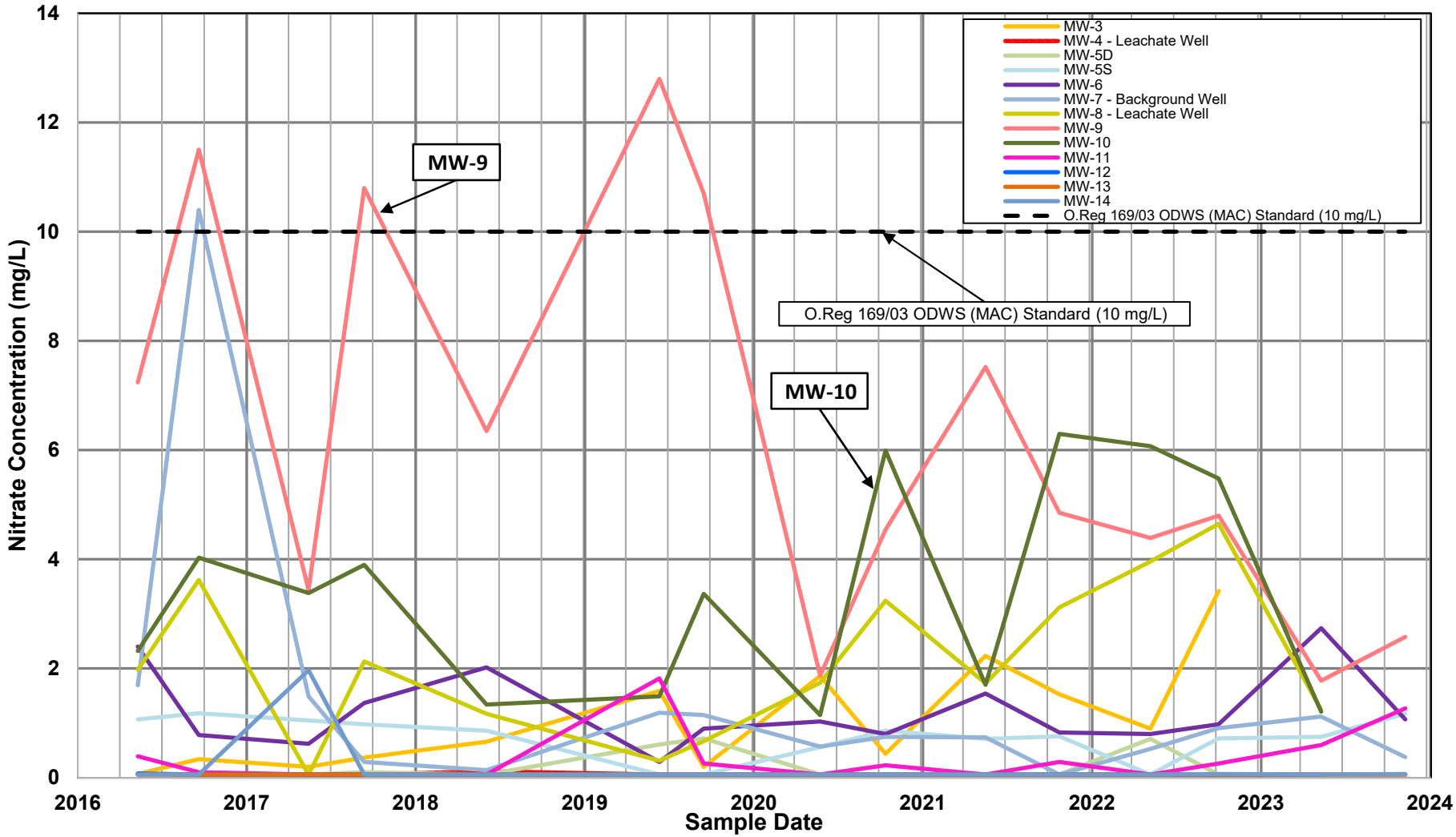
- MW10 (downgradient) had elevated concentrations of chloride, sulphate, TDS, dissolved manganese, and nitrate relative to background concentrations in 2022 and 2023.
- MW9 (downgradient) had elevated concentrations for parameters such as electrical conductivity hardness, TDS, chloride, sulphate, and dissolved manganese, relative to background concentrations in 2022 and 2023.
- MW5S and MW5D (downgradient) had elevated concentrations for parameters such as electrical conductivity, hardness, TDS, chloride, sulphate, and dissolved manganese, relative to background concentrations in 2022 and 2023.
- MW3 (downgradient) had elevated concentrations of hardness, TDS, chloride, ammonia (total), dissolved manganese and DOC when compared to background concentrations in 2022 and 2023.

Nitrate concentrations are closely monitored downgradient of the landfill as concentrations have been measured to be historically elevated in monitoring wells MW9 and MW10. A summary of the nitrate concentrations measured within the Calvin Landfill groundwater monitoring wells for the past eight (8) years is provided on Figure 3.1. As presented, nitrate concentrations exceeded ODWS at MW9 in 2016, 2017

and 2019. Since 2019, there has been a general decreasing trend in nitrates within groundwater, with concentrations meeting ODWS.

Nitrate concentrations in groundwater near MW10 are observed to be attenuating, as concentrations measured in MW11, located downgradient of MW10, are largely non-detect. An additional well is recommended to be installed downgradient of MW9, near the southern property line, if nitrate concentrations increase in the future.

In general, groundwater quality results are within drinking water guidelines, with the exception of aesthetic objective parameters within leachate well MW4 and downgradient monitoring wells MW3, MW9 and MW10. Results suggest natural attenuation is occurring sufficiently to deter offsite migration.



NOTES:

1. NITRATE VALUES THAT ARE LESS THAN THE REPORTING LIMIT (NON-DETECT) ARE PRESENTED AT THE REPORTING LIMIT (0.06 mgL).

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MUNICIPALITY OF CALVIN

CALVIN LANDFILL SITE

NITRATE TEMPORAL WATER QUALITY RESULTS IN GROUNDWATER

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FIGURE 3.1

REV 0

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TABLE 3.2

MUNICIPALITY OF CALVIN
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2022/2023 LANDFILL MONITORING REPORT
SUMMARY OF 2022/2023 GROUNDWATER QUALITY RESULTS

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Parameter	RL	ODWS (Cr)	Standard or Objective (x = 0.5 for AO/OG parameters, and 0.25 for MAC)	MW7				Spring 2022	Fall 2022	Spring 2023	Fall 2023	MW3				MW4				MW5D				MWSS			
				11-May-22	6-Oct-22	16-May-23	14-Nov-23	Reasonable Use Guideline (Cm)				11-May-22	6-Oct-22	16-May-23	14-Nov-23	11-May-22	6-Oct-22	16-May-23	14-Nov-23	11-May-22	6-Oct-22	16-May-23	14-Nov-23	11-May-22	6-Oct-22	16-May-23	14-Nov-23
Location		-	-	Background (Cb)				Cm = Cb + x(Cr-Cb)				Downgradient				Leachate				Downgradient				Downgradient			
In Situ Parameters																											
Conductivity (mS/cm)	-	-	-	0.108	0.213	0.054	0.253	-	-	-	-	0.983	0.299	0.414	0.626	1.31	1.17	0.385	0.804	0.594	0.409	0.183	0.496	0.445	0.55	0.228	0.703
Depth to Water (below top of PVC) m	-	-	-	2.32	2.86	2.185	2.615	-	-	-	-	5.28	5.73	6.81	5.825	8.56	9.25	8.455	8.95	4.72	4.75	4.66	4.717	4.23	5.13	4.815	5.11
Oxygen Dissolved (mg/L)	-	-	-	14.98	6.44	6.46	10.61	-	-	-	-	14.39	4.5	3.13	6.26	11.33	10.93	4.44	12.76	6.01	4.93	8.55	5.7	11.77	6.73	3.6	5.05
pH	-	6.5 to 8.5	OG	**6.19**	**5.65**	7.58	**6.41**	6.3 - 7.3	6.1 - 7.1	7.0 - 8.0	6.5 - 7.5	6.65	6.34	7.14	6.54	**6.17**	**5.91**	7.05	6.35	6.61	**7.62**	7.86	7.32	7.27	6.57	7.24	**6.39**
Temperature °C	-	15	AO	8.83	11.06	4.39	8	11.915	13.03	9.695	11.5	**12.76**	10.05	5.09	7	11.19	9.72	6.26	7.55	**11.92**	9.27	6.93	7.47	10.74	9.67	5.4	7.28
Physical Tests																											
Alkalinity (Total as CaCO3)	2	30 to 500	OG	36	73	30	**74**	33.0 - 268.0	51.5 - 286.5	30.0 - 265.0	187.0 - 287.0	**468**		**476**	267	523	439	474	358	177	223	198	216	221	172	175	177
Chemical Oxygen Demand	8	-	-	21	13	18	19	-	-	-	-	41		38	18	152	96	142	124	<8	<8	<8	12	13	<8	<8	8
Conductivity µS/cm	2	-	-	-	203	122	228	-	-	-	-	988		1020	587	1080	883	966	742	612	629	580	674	423	351	457	453
Hardness as CaCO3	0.05	80 to 100	OG	**38.6**	86.7	**41.2**	85.2	59.3 - 69.3	83.4 - 93.4	60.6 - 70.6	82.6 - 92.6	338	Dry	**381**	**200**	333	**291**	**326**	**260**	185	**220**	**244**	**274**	230	**193**	**228**	**213**
pH	0.05	6.5 to 8.5	OG	6.69	**6.43**	**6.28**	6.64	6.6 - 7.6	6.5 - 7.5	6.4 - 7.4	6.6 - 7.6	7.39		6.87	7.31	7.22	6.79	6.76	7.06	**8.2**	6.83	6.79	7.16	7.29	**8.09**	**7.89**	**8**
Total Dissolved Solids	3	500	AO	69	211	107	183	284.5	355.5	303.5	341.5	**540**		**577**	**331**	**577**	**520**	**537**	**397**	220	**371**	**360**	**389**	**323**	246	243	246
Total Suspended Solids	2	-	-	821	3630	1220	2900	-	-	-	-	1510		1970	1260	906	1110	1130	624	43	70	35	486	713	65	20	46
Anions																											
Chloride	1	250	AO	7	9	6	6	128.5	129.5	128	128	46	Dry	40	15	36	26	26	11	23	36	32	39	38	24	25	22
Sulphate	1 to 2	500	AO	17	31	15	37	258.5	265.5	257.5	268.5	20		14	16	67	31	46	30	28	64	53	69	64	27	26	28
Nutrients																											
Ammonia (Total)	0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	-	-	4.4		6.6	3.1	26.2	17.7	21.2	12.9	<0.1	0.3	0.3	0.3	0.3	<0.1	<0.1	<0.1
Nitrate (as N)	0.06	10	MAC	0.53	0.91	1.12	0.38	5.265	5.455	5.56	5.19	1.53	Dry	0.9	3.42	<0.06	<0.06	<0.06	<0.06	<0.06	0.72	0.75	1.17	0.71	<0.06	<0.06	<0.06
Nitrite (as N)	0.03	1	MAC	<0.03	<0.03	<0.03	<0.03	0.515	0.515	0.515	0.515	0.28		0.06	0.09	<0.03	<0.03	0.04	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Nitrogen Kjeldahl (Total)	0.5	-	-	<0.5	<0.5	<0.5	0.6	-	-	-	-	5.2		7	3	26.8	20.9	23.9	15.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dissolved Metals																											
Aluminum (Dissolved)	0.001	0.1	OG	**0.174**	**0.202**	0.044	0.008	0.137	0.151	0.072	0.054	0.008		0.009	0.005	0.016	0.035	0.014	0.013	0.006	0.010	0.003	**0.412**	0.010	0.009	0.002	**0.395**
Antimony (Dissolved)	0.0002 to 0.0009	0.006	IMAC	<0.0009	<0.0009	<0.0009	<0.0009	0.003	0.003	0.003	0.003	<0.0009		<0.0009	<0.0009	<0.0009	0.0013	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009
Arsenic (Dissolved)	0.0002	0.01	IMAC	<0.0002	0.0003	<0.0002	<0.0002	0.005	0.00515	0.005	0.005	0.0013		0.0017	0.0008	0.0007	0.0005	0.0006	0.0004	<0.0002	0.0003	0.0003	0.0006	0.0003	<0.0002	<0.0002	<0.0002
Barium (Dissolved)	2E-005 to 8E-005	1	MAC	0.0139	0.0529	0.0103	0.0512	0.507	0.526	0.505	0.526	0.3850		0.5220	0.2500	0.1980	0.1940	0.1760	0.1320	0.0455	0.0673	0.0741	0.0990	0.0657	0.0483	0.0520	0.0642
Beryllium (Dissolved)	7E-006	-	-	0.000027	0.00017	0.000017	0.000044	-	-	-	-	<0.000007		0.000021	0.000022	0.000011	0.00011	0.000008	0.000014	<0.000007	0.00013	0.000016	0.000058	0.000016	0.0001	<0.000007	0.000096
Bismuth (Dissolved)	7E-006 to 1E-005	-	-	<0.00001	0.00004	<0.00001	<0.00001	-	-	-	-	<0.00001		<0.00001	<0.00001	<0.00001	0.00004	<0.00001	<0.00001	<0.00001	0.00002	<0.00001	<0.00001	<0.00001	0.00002	<0.00001	<0.00001
Boron (Dissolved)	0.002	5	IMAC	0.028	0.033	0.008	0.018	2.51	2.52	2.50	2.51	0.714		0.685	0.376	1.86	0.908	1.73	0.748	0.118	0.213	0.227	0.242	0.384	0.078	0.061	0.069
Cadmium (Dissolved)	3E-006	0.005	MAC	<0.000003	0.0001	0.000011	0.000034	0.0025	0.00255	0.0025055	0.002517	0.000079		0.000089	0.000052	<0.000003	<0.000003	<0.000003	0.000005	0.000023	0.00009	0.000072	0.000101	0.000061	0.00005	0.000028	0.000025
Calcium (Dissolved)	0.01	-	-	6.1	19.2	6.11	17.9	-	-	-	-	77.6		92.7	48.6	101	91.8	103	82.3	41.7	62.6	70.7	78.8	62.7	45.8	55.1	51.3
Chromium (Dissolved)	3E-005 to 8E-005	0.05	MAC	0.00066	<0.00008	0.0003	0.0001	0.02533	0.025	0.02515	0.02505	0.00061		0.00064	0.00028	0.00189	0.00133	0.002	0.00163	<0.00008	<0.00008	0.00009	0.00095	0.00013	<0.00008	<0.00008	0.00056
Cobalt (Dissolved)	4E-006	-	-	0.000166	0.00311	0.000107	0.000894	-	-	-	-	0.00593		0.00963	0.00451	0.00839	0.0119	0.00686	0.00887	0.000028	0.0021	0.00126	0.00483	0.000629	0.0005	0.000043	0.000339
Copper (Dissolved)	2E-005 to 0.0002	1	AO	0.0013	0.0177	0.0013	0.0014	0.50065	0.50885	0.50065	0.5007	0.0268		0.0344	0.0146	0.0005	0.0018	0.0004	0.0004	0.0002	0.0041	0.0031	0.007	0.0028	0.001	0.0003	0.0018
Iron (Dissolved)	0.007	0.3	AO	0.139	**2.73**	0.023	0.007	0.2195	1.515	0.1615	0.1535	0.007		0.010	<0.007	0.169	**10.70**	**0.593**	0.077	<0.007	0.060	<0.007	0.568	0.010	0.050	<0.007	0.650
Lead (Dissolved)	1E-005 to 9E-005	0.01	MAC	0.0001	0.00137	<0.00009	<0.00009	0.00505	0.005685	0.005	0.005	<0.00009		0.00011	<0.00009	0.00015	0.00036	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	0.00034	<0.00009	<0.00009	<0.00009	0.00039
Lithium (Dissolved)	0.0001	-	-	0.0084	0.0154	0.0081	0.0107	-	-	-	-	0.0009		0.0008	0.0008	0.0002	0.0036	0.0001	0.0001	0.0014	0.0046	0.0022	0.0032	0.0022	0.0034	0.0015	0.0026
Magnesium (Dissolved)	0.00100	-	-	5.69	9.4	6.29	9.86	-	-	-	-	34.9		36.4	19.1	19.4	15.1	16.9	13.2	19.6	15.6	16.4	18.9	17.7	19	22.1	20.7
Manganese (Dissolved)	1E-005	0.05	AO	0.02	**0.13**	0.01	**0.12**	0.04	0.09	0.03	0.09	**4.27**	Dry	**5.88**	**2.72**	**4.49**	**5.17**	**3.86**	**3.63**	**0.11**	**1.67**	**1.55**	**2.28**	**1.47**	**0.15**	**0.21**	**0.26**
Mercury (Dissolved)	1E-005	0.001	MAC	-	<0.00001	0.00002	0.00003	-	0.0005	0.00051	0.000515			0.00002	<0.00001	-	<0.00001	0.00002	<0.00001	-	<0.00001	0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001
Molybdenum (Dissolved)	1E-005 to 4E-005	-	-	0.00008	0.00037	0.00006	0.00008	-	-	-	-	0.00111		0.00135	0.00085	0.00042	0.00036	0.00036	0.00027	0.00462	0.00137	0.00116	0.00146	0.00143	0.00451	0.00442	0.00371
Nickel (Dissolved)	0.0001	-	-	0.0019	0.03	0.0014	0.0074	-	-	-	-	0.0104		0.0128	0.0064	0.0035	0.0202	0.0033	0.0028	0.0002	0.0197	0.0017	0.0027	0.0019	0.0164	0.0001	0.0006
Phosphorus (Metal) Dissolved	0.003	-	-	0.034	<0.003	0.006	<0.003	-	-	-	-	0.043		0.01	<0.003	0.027	0.02	0.019	<0.003	0.018	<0.003	0.004	0.176	0.016	<0.003	<0.003	0.048
Potassium (Dissolved)	0.003 to 0.009	-	-	0.926	1.36	0.677	1.3	-	-	-	-	11.2		17.9	10.5	29.6	25.9	28.7	20.5	3.97	17.9	19.4	19.5	19.8	4.33	4.95	4.98
Selenium (Dissolved)	4E-005	0.05	MAC	0.00005	0.00027	0.00005	0.00016	0.025025	0.025135	0.025025	0.02508	0.00024		0.0004	0.0003	0.0003	0.00024	0.00021	0.00022	<0.00004	0.00009	0.00007	0.00009	<0.00004	<0.00004	<0.00004	<0.00004
Silicon (Dissolved)	0.02	-	-	10.9	14.8	8.84	13.2	-	-	-	-	5.06		5.4	5.18	4.68	4.68	5.09	5.05	4.67	5.5	6.62	6.82	6.3	4.17	4.9	5.3
Silver (Dissolved)	2E-006 to 5E-005	-	-	<0.00005	<0.00005	<0.00005	<0.00005	-	-	-	-	<0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Sodium (Dissolved)	0.01000	200	AO	7.32	8.12	7.55	8.16	103.66	104.06	103.775	104.08	61.2		61.9	30.1	44.6	31.8	41.5	23.6	9.03	15.2	15.8	17	15.2	9.46	9.64	9.19
Strontium (Dissolved)	2E-005 to 8E-005	-	-	0.0561	0.200	0.0492	0.180	-	-	-	-	0.973		1.02	0.570	0.592	0.560	0.542	0.490	0.369	0.355	0.382	0.475	0.358	0.406	0.448	0.484
Thallium (Dissolved)	5E-006	-	-	0.000008	0.00005	0.00001	0.000013	-	-	-	-	0.000005		<0.000005	0.00001	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.00003	0.00001	0.00001	0.000009	0.00001	0.000005	<0.000005
Tin (Dissolved)	1E-005 to 6E-005	-	-	<0.00006	0.00026	0.00014	<0.00006	-	-	-	-	0.00041		0.00016	0.00006	0.00023	0.00022	0.00023	0.00009	<0.00006	0.00009	0.0001	0.00008	0.00011	0.00006	0.00007	0.0001
Titanium (Dissolved)	5E-005 to 7E-005	-	-	0.0076	0.00042	0.001	<0.00007	-	-	-	-	0.00049		0.0004	<0.00007	0.00064	0.00053	0.00043	<0.00007	0.00022	0.00035	<0.00005	0.0227	0.00022	0.00026	<0.00005	0.0353
Uranium (Dissolved)	2E-006	0.02	-	0.00006	0.00089	0.00005	0.00015	0.01003	0.01045	0.01002	0.01008	0.00410		0.00440	0.00212	0.00035	0.00060	0.00023	0.00007	0.00479	0.00245	0.00199	0.00325	0.00224	0.00545	0.00519	0.00594
Vanadium (Dissolved)	1E-005	-	-	0.00104	0.00053	0.00094	0.00045	-	-	-	-	0.00077		0.00085	0.00052	0.00067	0.00050	0.00091	0.00065	0.00090	0.00008	0.00025	0.00157	0.00024	0.00101	0.00092	0.00196
Zinc (Dissolved)	0.00200	5	-	<0.002	0.008	<0.002	0.003	2.501	2.504	2.501	2.5015	0.002		0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	0.003	<0.002	<0.002	<0.002	0.003
Zirconium (Dissolved)	0.002	-	AO	<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	<0.002	<0.002	<0.002
Organics																											
Carbon Organic (Dissolved)	1	5	AO	**6**	**8**	**7**	**6**	5.5	6.5	6	5.5	**18**	Dry	**16**	**7**	**24**	**16**	**19**	**12**	<1	3	2	3	3	1	1	1
Phenols	0.002	-	-	<0.002	<0.002	<0.002	<0.002	-	-	-	-	0.003		<0.002	<0.002	0.007	0.004	0.004	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Volatile Organics																											
1/4-Dichlorobenzene	0.005	0.005		-	-	-	-	-	-	-	-	-		-	-	0.0021	<0.0005	0.0043	0.001	-	-	-	-	-	-	-	-
Acetone	0.03	-	-	-	-	-	-	-	-	-	-	-		-	-	<0.03	<0.03	<0.03	<0.03	-	-	-	-	-	-	-	-
Dichloromethane	0.0005	0.05	MAC	-	-	-	-	-	-	-	-	-	Dry	-	-	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-
Methyl ethyl ketone	0.02	-	-	-	-	-	-	-	-	-	-	-		-	-	<0.02	<0.02	<0.02	<0.02	-	-	-	-	-	-	-	-
Vinyl Chloride	0.0002	0.002	MAC	-	-	-	-	-	-	-	-	-		-	-	0.0019	0.002	0.0022	0.0043	-	-	-	-	-	-	-	-
Semi Volatile Organics																											
1/4-Dichlorobenzene (SVO)	0.0005	-	-	-	-	-	-	-	-	-	-	-	Dry	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BTEX																											
Benzene	0.0005	0.001	MAC	-	-	-	-	-	-	-	-	-	Dry	-	-	<0.0005	<0.0005	0.0023	0.0007	-	-	-	-	-	-	-	-
Toluene	0.0005	0.06	AO	-	-	-	-	-	-	-	-	-		-	-	<0.0005	<0.0005	0.0017	<0.0005	-	-	-	-	-	-	-	-

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NOTES:

1. SAMPLES ANALYZED BY SGS CANADA INC. IN LAKEFIELD, ON.
2. ODWS REFERS TO THE ONTARIO DRINKING WATER STANDARDS, OBJECTIVES AND GUIDELINES, MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS (MECP, 2018).
3. HIGHLIGHTED CONCENTRATIONS INDICATE VALUES EXCEEDING THE ODWS.
4. REASONABLE USE GUIDELINES (RUG) REFER TO GUIDELINE B-7 (MOEE, 2016a) AND PROCEDURE B-7-1 (MOEE, 2016b). WHERE BACKGROUND RESULTS ARE LESS THAN THE RL, HALF OF THE RL WAS USED IN THE RUG CALCULATION AND THE "<" WAS REMOVED.
5. REASONABLE USE GUIDELINES (RUG) CALCULATED BASED ON GUIDELINE B-7 (MOECC, 2016a) AND PROCEDURE B-7-1 (MOECC, 2016b). WHERE BACKGROUND RESULTS ARE LESS THAN THE MDL, HALF OF THE RL WAS USED IN THE REASONABLE USE GUIDELINE CALCULATION.
6. **BOLDED** VALUES WITH RED OUTLINE INDICATE CONCENTRATIONS EXCEEDING THE RESPECTIVE RUGs.
7. WHERE THE BACKGROUND CONCENTRATION OF A PARAMETER IS ABOVE THE RESPECTIVE ODWS GUIDELINE, THE BACKGROUND CONCENTRATION IS USED IN REPLACEMENT OF THE RUG CALCULATION.
8. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
9. "-" INDICATES THAT DATA ARE NOT AVAILABLE.
10. WHERE A VALUE IS LESS THAN THE RESPECTIVE RL BUT THE RL IS ELEVATED ABOVE THE GUIDELINES, THE EXCEEDANCE IS NOT HIGHLIGHTED, AS THE ACTUAL VALUE IS UNKNOWN.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	17-JAN-24	ISSUED WITH REPORT NB192-192/15-1	MSA	SBF

Knight Piésold CONSULTING

TABLE 3.2

MUNICIPALITY OF CALVIN
MUNICIPALITY OF CALVIN LANDFILL SITE

2022/2023 LANDFILL MONITORING REPORT
SUMMARY OF 2022/2023 GROUNDWATER QUALITY RESULTS

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Parameter	RL	ODWS (Cr)	Standard or Objective (x = 0.5 for AO/OG parameters, and 0.25 for MAC)	MW7				MW6								MW8				MW9			
				11-May-22	6-Oct-22	16-May-23	14-Nov-23	Spring 2022	Fall 2022	Spring 2023	Fall 2023	11-May-22	6-Oct-22	16-May-23	14-Nov-23	11-May-22	6-Oct-22	16-May-23	14-Nov-23	11-May-22	6-Oct-22	16-May-23	14-Nov-23
								Reasonable Use Guideline (Cm)															
Location		-	-	Background (Cb)				Cm = Cb + x(Cr-Cb)				Downgradient				Downgradient				Downgradient			
In Situ Parameters																							
Conductivity (mS/cm)	-	-	-	0.108	0.213	0.054	0.253	-	-	-	-	0.217	0.222	0.107	0.241	0.711	-	0.253	0.51	0.546	0.718	0.103	0.609
Depth to Water (below top of PVC) m	-	-	-	2.32	2.86	2.185	2.615	-	-	-	-	4.62	5.17	4.525	5.17	9.58	10.6	9.32	9.995	4.79	5.49	5.405	5.635
Oxygen Dissolved (mg/L)	-	-	-	14.98	6.44	6.46	10.61	-	-	-	-	10.5	16.75	8.09	12.01	5.73	-	4.12	9.19	11.02	1.39	7.45	4.46
pH	-	6.5 to 8.5	OG	**6.19**	**5.65**	7.58	**6.41**	6.3 - 7.3	6.1 - 7.1	7.0 - 8.0	6.5 - 7.5	6.91	**9.82**	7.61	**6.59**	6.36	-	**6.94**	6.8	7.06	6.59	7.73	6.53
Temperature °C	-	15	AO	8.83	11.06	4.39	8	11.915	13.03	9.695	11.5	10.43	9.82	4.6	7.3	11.48	-	7.35	7.38	10.65	8.63	4.72	7.25
Physical Tests																							
Alkalinity (Total as CaCO3)	2	30 to 500	OG	36	73	30	**74**	33.0 - 268.0	51.5 - 286.5	30.0 - 265.0	187.0 - 287.0	93	100	81	**100**	228		199	**159**	292	362	284	247
Chemical Oxygen Demand	8	-	-	21	13	18	19	-	-	-	-	11	<8	<8	<8	<8		10	<8	23	21	18	17
Conductivity µS/cm	2	-	-	-	203	122	228	-	-	-	-	203	207	223	247	688		668	473	680	845	671	578
Hardness as CaCO3	0.05	80 to 100	OG	**38.6**	86.7	**41.2**	85.2	59.3 - 69.3	83.4 - 93.4	60.6 - 70.6	82.6 - 92.6	77.8	91	82.7	**117**	284	Dry	**285**	**172**	259	**318**	**240**	**220**
pH	0.05	6.5 to 8.5	OG	6.69	**6.43**	**6.28**	6.64	6.6 - 7.6	6.5 - 7.5	6.4 - 7.4	6.6 - 7.6	7.05	7.04	6.66	7.21	7.1		6.6	7.21	7.23	7.08	6.79	7.3
Total Dissolved Solids	3	500	AO	69	211	107	183	284.5	355.5	303.5	341.5	74	151	137	151	**394**		**409**	283	369	534	366	360
Total Suspended Solids	2	-	-	821	3630	1220	2900	-	-	-	-	3440	2330	1710	2080	86		229	7	5410	4860	5710	7110
Anions																							
Chloride	1	250	AO	7	9	6	6	128.5	129.5	128	128	6	5	10	4	35	Dry	37	32	15	19	23	6
Sulphate	1 to 2	500	AO	17	31	15	37	258.5	265.5	257.5	268.5	14	17	15	17	120		84	42	52	47	31	36
Nutrients																							
Ammonia (Total)	0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1	0.2	1.6	0.2	0.2
Nitrate (as N)	0.06	10	MAC	0.53	0.91	1.12	0.38	5.265	5.455	5.56	5.19	0.8	0.98	2.74	1.07	3.96	Dry	4.65	1.24	4.39	4.8	1.78	2.58
Nitrite (as N)	0.03	1	MAC	<0.03	<0.03	<0.03	<0.03	0.515	0.515	0.515	0.515	<0.03	<0.03	<0.03	<0.03	<0.03		<0.03	<0.03	<0.03	0.06	<0.03	<0.03
Nitrogen Kjeldahl (Total)	0.5	-	-	<0.5	<0.5	<0.5	0.6	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	0.5	2	0.6	0.9
Dissolved Metals																							
Aluminum (Dissolved)	0.001	0.1	OG	**0.174**	**0.202**	0.044	0.008	0.137	0.151	0.072	0.054	0.044	0.011	0.005	5.660	0.005		0.002	0.002	0.030	0.009	0.004	0.004
Antimony (Dissolved)	0.0002 to 0.0009	0.006	IMAC	<0.0009	<0.0009	<0.0009	<0.0009	0.003	0.003	0.003	0.003	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009		<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009
Arsenic (Dissolved)	0.0002	0.01	IMAC	<0.0002	0.0003	<0.0002	<0.0002	0.005	0.00515	0.005	0.005	<0.0002	<0.0002	<0.0002	0.0015	<0.0002		0.0003	<0.0002	0.001	0.0013	0.0011	0.0008
Barium (Dissolved)	2E-005 to 8E-005	1	MAC	0.0139	0.0529	0.0103	0.0512	0.507	0.526	0.505	0.526	0.0510	0.0597	0.0598	0.3100	0.1200		0.1640	0.0828	0.2650	0.3550	0.2220	0.2160
Beryllium (Dissolved)	7E-006	-	-	0.000027	0.00017	0.000017	0.000044	-	-	-	-	0.000008	0.00011	0.000009	0.000729	0.000009		0.000015	0.00002	0.000008	0.00009	0.000013	0.000012
Bismuth (Dissolved)	7E-006 to 1E-005	-	-	<0.00001	0.00004	<0.00001	<0.00001	-	-	-	-	<0.00001	0.00002	<0.00001	<0.00001	<0.00001		<0.00001	<0.00001	<0.00001	0.00001	<0.00001	<0.00001
Boron (Dissolved)	0.002	5	IMAC	0.028	0.033	0.008	0.018	2.51	2.52	2.50	2.51	0.061	0.092	0.04	0.032	0.402		0.277	0.154	0.917	0.895	0.717	0.681
Cadmium (Dissolved)	3E-006	0.005	MAC	<0.000003	0.0001	0.000011	0.000034	0.0025	0.00255	0.0025055	0.002517	0.000034	0.00004	0.000013	0.000109	0.000013		0.000013	0.000017	0.000028	0.00006	0.000043	0.000022
Calcium (Dissolved)	0.01	-	-	6.1	19.2	6.11	17.9	-	-	-	-	16.4	19.8	19.6	27.4	82.5		85.4	52.6	67.6	85.3	64.8	61.6
Chromium (Dissolved)	3E-005 to 8E-005	0.05	MAC	0.00066	<0.00008	0.0003	0.0001	0.02533	0.025	0.02515	0.02505	0.00036	<0.00008	0.00035	0.0066	0.00416		0.00066	0.00014	0.00044	<0.00008	0.00032	0.00029
Cobalt (Dissolved)	4E-006	-	-	0.000166	0.00311	0.000107	0.000894	-	-	-	-	0.000069	0.00054	0.000079	0.00821	0.000178		0.000147	0.000085	0.00115	0.00175	0.00096	0.000722
Copper (Dissolved)	2E-005 to 0.0002	1	AO	0.0013	0.0177	0.0013	0.0014	0.50065	0.50885	0.50065	0.5007	0.0005	0.0014	0.0005	0.0185	0.0013		0.0015	0.0015	0.0098	0.0167	0.0119	0.0092
Iron (Dissolved)	0.007	0.3	AO	0.139	**2.73**	0.023	0.007	0.2195	1.515	0.1615	0.1535	0.037	0.080	<0.007	4.970	<0.007		0.012	<0.007	0.015	0.040	<0.007	0.007
Lead (Dissolved)	1E-005 to 9E-005	0.01	MAC	0.0001	0.00137	<0.00009	<0.00009	0.00505	0.005685	0.005	0.005	<0.00009	<0.00009	<0.00009	0.00436	<0.00009		<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009
Lithium (Dissolved)	0.0001	-	-	0.0084	0.0154	0.0081	0.0107	-	-	-	-	0.002	0.0054	0.0016	0.0092	0.0048		0.0047	0.0036	0.0001	0.0026	0.0002	<0.0001
Magnesium (Dissolved)	0.00100	-	-	5.69	9.4	6.29	9.86	-	-	-	-	8.96	10.1	8.23	11.8	19		17.5	9.83	21.9	25.5	18.9	16
Manganese (Dissolved)	1E-005	0.05	AO	0.02	**0.13**	0.01	**0.12**	0.04	0.09	0.03	0.09	0.00	0.01	0.00	0.30	0.01		0.02	0.06	**0.40**	**0.82**	**0.79**	**0.62**
Mercury (Dissolved)	1E-005	0.001	MAC	-	<0.00001	0.00002	0.00003	-	0.0005	0.00051	0.000515	-	<0.00001	0.00006	<0.00001	-	Dry	0.00002	<0.00001	-	<0.00001	0.00002	<0.00001
Molybdenum (Dissolved)	1E-005 to 4E-005	-	-	0.00008	0.00037	0.00006	0.00008	-	-	-	-	0.00054	0.00066	0.00032	0.00037	0.00006		0.00015	0.00014	0.00068	0.00114	0.0007	0.00077
Nickel (Dissolved)	0.0001	-	-	0.0019	0.03	0.0014	0.0074	-	-	-	-	0.0005	0.016	0.0003	0.0084	0.0006		0.0011	0.0006	0.0015	0.0166	0.0018	0.0011
Phosphorus (Metal) Dissolved	0.003	-	-	0.034	<0.003	0.006	<0.003	-	-	-	-	0.013	<0.003	0.005	3.36	0.016		0.006	<0.003	0.021	<0.003	0.004	0.016
Potassium (Dissolved)	0.003 to 0.009	-	-	0.926	1.36	0.677	1.3	-	-	-	-	2	2.32	2.81	3.45	17.7		20.6	11.6	35.1	42.5	28.8	29
Selenium (Dissolved)	4E-005	0.05	MAC	0.00005	0.00027	0.00005	0.00016	0.025025	0.025135	0.025025	0.02508	<0.00004	0.00013	<0.00004	0.00011	0.00014		0.00011	0.0002	<0.00004	0.00019	0.00021	0.00011
Silicon (Dissolved)	0.02	-	-	10.9	14.8	8.84	13.2	-	-	-	-	8.4	8.15	6.59	13.3	6.87		8.35	6.75	3.14	2.98	3.35	3.14
Silver (Dissolved)	2E-006 to 5E-005	-	-	<0.00005	<0.00005	<0.00005	<0.00005	-	-	-	-	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Sodium (Dissolved)	0.01000	200	AO	7.32	8.12	7.55	8.16	103.66	104.06	103.775	104.08	9.89	10.1	11.1	9.27	28.5		19.9	18.1	20.7	31.6	37.5	16.9
Strontium (Dissolved)	2E-005 to 8E-005	-	-	0.0561	0.200	0.0492	0.180	-	-	-	-	0.143	0.174	0.161	0.203	0.565		0.59	0.419	0.787	0.908	0.76	0.642
Thallium (Dissolved)	5E-006	-	-	0.000008	0.00005	0.00001	0.000013	-	-	-	-	<0.000005	0.00001	0.000005	0.000041	<0.000005		<0.000005	0.000007	0.000022	0.00006	0.000032	0.000036
Tin (Dissolved)	1E-005 to 6E-005	-	-	<0.00006	0.00026	0.00014	<0.00006	-	-	-	-	0.00009	0.00021	0.0001	0.0001	0.00006		0.00007	<0.00006	0.00012	0.00017	0.00017	<0.00006
Titanium (Dissolved)	5E-005 to 7E-005	-	-	0.0076	0.00042	0.001	<0.00007	-	-	-	-	0.00248	0.00021	<0.00005	0.0593	0.00017		<0.00005	<0.00007	0.00084	0.00048	<0.00005	0.00014
Uranium (Dissolved)	2E-006	0.02	-	0.00006	0.00089	0.00005	0.00015	0.01003	0.01045	0.01002	0.01008	0.00025	0.00027	0.00023	0.00146	0.00198		0.00189	0.00095	0.00258	0.00377	0.00191	0.00207
Vanadium (Dissolved)	1E-005	-	-	0.00104	0.00053	0.00094	0.00045	-	-	-	-	0.00034	0.00032	0.00033	0.01220	0.00009		0.00015	0.00012	0.00026	0.00005	0.00025	0.00024
Zinc (Dissolved)	0.00200	5	-	<0.002	0.008	<0.002	0.003	2.501	2.504	2.501	2.5015	<0.002	<0.002	<0.002	0.029	0.002		0.003	0.004	<0.002	<0.002	0.002	<0.002
Zirconium (Dissolved)	0.002	-	AO	<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
Organics																							
Carbon Organic (Dissolved)	1	5	AO	**6**	**8**	**7**	**6**	5.5	6.5	6	5.5	1	1	1	1	3	Dry	2	2	**8**	**10**	**9**	**6**
Phenols	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
Volatile Organics																							
1/4-Dichlorobenzene	0.005	0.005		-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
Acetone	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
Dichloromethane	0.0005	0.05	MAC	-	-	-	-	-	-	-	-	-	-	-	-	-	Dry	-	-	-	-	-	-
Methyl ethyl ketone	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
Vinyl Chloride	0.0002	0.002	MAC	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
Semi Volatile Organics																							
1/4-Dichlorobenzene (SVO)	0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Dry	-	-	-	-	-	-
BTEX																							
Benzene	0.0005	0.001	MAC	-	-	-	-	-	-	-	-	-	-	-	-	-	Dry	-	-	-	-	-	-
Toluene	0.0005	0.06	AO	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-

\\nb4\project$\1102\00192\15\A\Report\Report 1 Rev 0\Tables\[2022-2023 Report Tables_MSA.xlsx]Table 3.2-GW

NOTES:

1. SAMPLES ANALYZED BY SGS CANADA INC. IN LAKEFIELD, ON.
2. ODWS REFERS TO THE ONTARIO DRINKING WATER STANDARDS, OBJECTIVES AND GUIDELINES, MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS (MECP, 2018).
3. HIGHLIGHTED CONCENTRATIONS INDICATE VALUES EXCEEDING THE ODWS.
4. REASONABLE USE GUIDELINES (RUG) REFER TO GUIDELINE B-7 (MOEE, 2016a) AND PROCEDURE B-7-1 (MOEE, 2016b). WHERE BACKGROUND RESULTS ARE LESS THAN THE RL, HALF OF THE RL WAS USED IN THE RUG CALCULATION AND THE "<" WAS REMOVED.
5. REASONABLE USE GUIDELINES (RUG) CALCULATED BASED ON GUIDELINE B-7 (MOECC, 2016a) AND PROCEDURE B-7-1 (MOECC, 2016b). WHERE BACKGROUND RESULTS ARE LESS THAN THE MDL, HALF OF THE RL WAS USED IN THE REASONABLE USE GUIDELINE CALCULATION.
6. **BOLDED** VALUES WITH RED OUTLINE INDICATE CONCENTRATIONS EXCEEDING THE RESPECTIVE RUGs.
7. WHERE THE BACKGROUND CONCENTRATION OF A PARAMETER IS ABOVE THE RESPECTIVE ODWS GUIDELINE, THE BACKGROUND CONCENTRATION IS USED IN REPLACEMENT OF THE RUG CALCULATION.
8. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
9. "-" INDICATES THAT DATA ARE NOT AVAILABLE.
10. WHERE A VALUE IS LESS THAN THE RESPECTIVE RL BUT THE RL IS ELEVATED ABOVE THE GUIDELINES, THE EXCEEDANCE IS NOT HIGHLIGHTED, AS THE ACTUAL VALUE IS UNKNOWN.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	17-JAN-24	ISSUED WITH REPORT NB102-192/16-1	MSA	SBF

Knight Piésold CONSULTING

TABLE 3.2

MUNICIPALITY OF CALVIN
MUNICIPALITY OF CALVIN LANDFILL SITE

2022/2023 LANDFILL MONITORING REPORT
SUMMARY OF 2022/2023 GROUNDWATER QUALITY RESULTS

Print Jan-16-24 14:53:47

Parameter	RL	ODWS (Cr)	Standard or Objective (x = 0.5 for AO/OG parameters, and 0.25 for MAC)	MW7				Reasonable Use Guideline (Cm)				MW10				MW11				MW12			
				11-May-22	6-Oct-22	16-May-23	14-Nov-23	Spring 2022	Fall 2022	Spring 2023	Fall 2023	11-May-22	6-Oct-22	16-May-23	14-Nov-23	11-May-22	6-Oct-22	16-May-23	14-Nov-23	11-May-22	6-Oct-22	16-May-23	14-Nov-23
Location		-	-	Background (Cb)				Cm = Cb + x(Cr-Cb)				Downgradient				Downgradient				Cross-gradient			
In Situ Parameters																							
Conductivity (mS/cm)	-	-	-	0.108	0.213	0.054	0.253	-	-	-	-	0.643	0.562	0	-	0.071	0.058	0.035	0.166	0.043	0.026	0.019	0.042
Depth to Water (below top of PVC) m	-	-	-	2.32	2.86	2.185	2.615	-	-	-	-	5.87	6.75	6.28	-	4.64	5.54	5.315	5.7	2.55	3.55	3.17	3.715
Oxygen Dissolved (mg/L)	-	-	-	14.98	6.44	6.46	10.61	-	-	-	-	6.83	4.15	6.86	-	14.13	9.23	8.44	9.29	17.13	8.09	8.97	9.72
pH	-	6.5 to 8.5	OG	**6.19**	**5.65**	7.58	**6.41**	6.3 - 7.3	6.1 - 7.1	7.0 - 8.0	6.5 - 7.5	6.38	**5.75**	**6.27**	-	7.16	6.44	**8.02**	6.6	7.03	**5.87**	7.93	**6.47**
Temperature °C	-	15	AO	8.83	11.06	4.39	8	11.915	13.03	9.695	11.5	**15.15**	**13.55**	4.17	-	**12.23**	9.62	5.16	7.72	**13.13**	10.49	3.43	8.47
Physical Tests																							
Alkalinity (Total as CaCO3)	2	30 to 500	OG	36	73	30	**74**	33.0 - 268.0	51.5 - 286.5	30.0 - 265.0	187.0 - 287.0	77	53	104		**25**	**22**	**27**	**23**	**12**	**9**	**10**	**15**
Chemical Oxygen Demand	8	-	-	21	13	18	19	-	-	-	-	38	30	24		<8	<8	<8	8	<8	15	15	10
Conductivity µS/cm	2	-	-	-	203	122	228	-	-	-	-	934	681	591		66	64	130	158	43	29	40	46
Hardness as CaCO3	0.05	80 to 100	OG	**38.6**	86.7	**41.2**	85.2	59.3 - 69.3	83.4 - 93.4	60.6 - 70.6	82.6 - 92.6	194	**157**	**146**	Dry	20.9	**19.3**	**45.5**	**37.8**	11.2	**10.5**	**13.6**	**10.2**
pH	0.05	6.5 to 8.5	OG	6.69	**6.43**	**6.28**	6.64	6.6 - 7.6	6.5 - 7.5	6.4 - 7.4	6.6 - 7.6	6.53	6.11	6.19		6.79	6.65	**6.39**	6.6	**6.31**	**6.33**	**6.06**	6.61
Total Dissolved Solids	3	500	AO	69	211	107	183	284.5	355.5	303.5	341.5	546	491	329		57	71	97	120	<30	37	31	49
Total Suspended Solids	2	-	-	821	3630	1220	2900	-	-	-	-	1160	355	463		1150	10300	1200	870	6780	5660	2570	1760
Anions																							
Chloride	1	250	AO	7	9	6	6	128.5	129.5	128	128	**130**	56	42	Dry	<1	4	9	15	2	1	<1	<1
Sulphate	1 to 2	500	AO	17	31	15	37	258.5	265.5	257.5	268.5	240	180	110		8	7	17	20	7	5	5	4
Nutrients																							
Ammonia (Total)	0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	-	-	0.8	0.5	1.3		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrate (as N)	0.06	10	MAC	0.53	0.91	1.12	0.38	5.265	5.455	5.56	5.19	6.07	5.48	1.21	Dry	<0.06	0.26	0.6	1.27	<0.06	<0.06	<0.06	0.06
Nitrite (as N)	0.03	1	MAC	<0.03	<0.03	<0.03	<0.03	0.515	0.515	0.515	0.515	<0.03	<0.03	<0.03		<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Nitrogen Kjeldahl (Total)	0.5	-	-	<0.5	<0.5	<0.5	0.6	-	-	-	-	1.3	0.8	1.3		<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5
Dissolved Metals																							
Aluminum (Dissolved)	0.001	0.1	OG	**0.174**	**0.202**	0.044	0.008	0.137	0.151	0.072	0.054	0.070	0.031	0.017		**0.162**	0.015	0.011	0.007	0.067	0.034	0.020	0.015
Antimony (Dissolved)	0.0002 to 0.0009	0.006	IMAC	<0.0009	<0.0009	<0.0009	<0.0009	0.003	0.003	0.003	0.003	<0.0009	<0.0009	<0.0009		<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009
Arsenic (Dissolved)	0.0002	0.01	IMAC	<0.0002	0.0003	<0.0002	<0.0002	0.005	0.00515	0.005	0.005	0.0017	0.001	0.0011		0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Barium (Dissolved)	2E-005 to 8E-005	1	MAC	0.0139	0.0529	0.0103	0.0512	0.507	0.526	0.505	0.526	0.1730	0.1360	0.1250		0.0067	0.0069	0.0130	0.0157	0.0046	0.0037	0.0041	0.0043
Beryllium (Dissolved)	7E-006	-	-	0.000027	0.00017	0.000017	0.000044	-	-	-	-	0.000133	0.0002	0.000075		0.000011	0.00008	0.000035	0.000039	0.000019	0.00007	0.000014	0.000023
Bismuth (Dissolved)	7E-006 to 1E-005	-	-	<0.00001	0.00004	<0.00001	<0.00001	-	-	-	-	<0.00001	0.00002	<0.00001		<0.00001	0.00002	<0.00001	<0.00001	<0.00001	0.00001	<0.00001	<0.00001
Boron (Dissolved)	0.002	5	IMAC	0.028	0.033	0.008	0.018	2.51	2.52	2.50	2.51	1.29	0.836	0.883		0.145	0.037	0.106	0.078	0.01	0.07	0.033	0.003
Cadmium (Dissolved)	3E-006	0.005	MAC	<0.000003	0.0001	0.000011	0.000034	0.0025	0.00255	0.0025055	0.002517	0.000213	0.00019	0.00018		0.000003	0.00003	0.000014	0.000015	0.000006	<0.000003	0.00001	0.000006
Calcium (Dissolved)	0.01	-	-	6.1	19.2	6.11	17.9	-	-	-	-	54.4	46.3	42.5		5.6	5.2	12.6	10.3	3.02	2.76	3.84	2.82
Chromium (Dissolved)	3E-005 to 8E-005	0.05	MAC	0.00066	<0.00008	0.0003	0.0001	0.02533	0.025	0.02515	0.02505	0.00042	<0.00008	0.00034		0.00042	<0.00008	0.00013	0.00012	0.00018	0.00011	0.00023	0.00015
Cobalt (Dissolved)	4E-006	-	-	0.000166	0.00311	0.000107	0.000894	-	-	-	-	0.0019	0.00162	0.00148		0.000081	0.00042	0.000041	0.000039	0.00005	0.00036	0.000049	0.000036
Copper (Dissolved)	2E-005 to 0.0002	1	AO	0.0013	0.0177	0.0013	0.0014	0.50065	0.50885	0.50065	0.5007	0.0077	0.0056	0.0082		0.0017	0.0011	0.0005	0.0006	0.0005	0.001	0.0003	0.0003
Iron (Dissolved)	0.007	0.3	AO	0.139	**2.73**	0.023	0.007	0.2195	1.515	0.1615	0.1535	0.028	0.040	0.010		0.080	0.030	0.011	0.011	0.039	0.050	0.011	0.011
Lead (Dissolved)	1E-005 to 9E-005	0.01	MAC	0.0001	0.00137	<0.00009	<0.00009	0.00505	0.005685	0.005	0.005	<0.00009	<0.00009	<0.00009		0.00011	<0.00009	<0.00009	<0.00009	<0.00009	0.00016	<0.00009	<0.00009
Lithium (Dissolved)	0.0001	-	-	0.0084	0.0154	0.0081	0.0107	-	-	-	-	0.0004	0.0024	0.0003		0.0011	0.003	0.0015	0.0015	0.0002	0.0022	0.0001	0.0001
Magnesium (Dissolved)	0.00100	-	-	5.69	9.4	6.29	9.86	-	-	-	-	14.2	10.1	9.6		1.68	1.53	3.42	2.91	0.895	0.88	0.978	0.756
Manganese (Dissolved)	1E-005	0.05	AO	0.02	**0.13**	0.01	**0.12**	0.04	0.09	0.03	0.09	**1.83**	**1.68**	**2.29**	Dry	0.003	0.004	0.001	0.003	0.002	0.007	0.002	0.002
Mercury (Dissolved)	1E-005	0.001	MAC	-	<0.00001	0.00002	0.00003	-	0.0005	0.00051	0.000515	-	0.00002	0.00002		-	<0.00001	<0.00001	<0.00001	-	<0.00001	0.00001	<0.00001
Molybdenum (Dissolved)	1E-005 to 4E-005	-	-	0.00008	0.00037	0.00006	0.00008	-	-	-	-	0.00019	0.00018	0.00033		0.00022	0.00082	0.00016	0.00013	0.00008	0.00011	0.00008	0.00005
Nickel (Dissolved)	0.0001	-	-	0.0019	0.03	0.0014	0.0074	-	-	-	-	0.0037	0.0103	0.0026		0.0012	0.0117	0.0004	0.0005	0.0003	0.012	<0.0001	<0.0001
Phosphorus (Metal) Dissolved	0.003	-	-	0.034	<0.003	0.006	<0.003	-	-	-	-	0.02	0.01	0.008		0.052	<0.003	0.004	0.018	0.022	<0.003	<0.003	0.018
Potassium (Dissolved)	0.003 to 0.009	-	-	0.926	1.36	0.677	1.3	-	-	-	-	17.6	6.74	6.32		0.618	0.7	0.938	0.92	0.363	0.47	0.42	0.383
Selenium (Dissolved)	4E-005	0.05	MAC	0.00005	0.00027	0.00005	0.00016	0.025025	0.025135	0.025025	0.02508	0.00017	0.00008	0.00023		0.00005	0.00011	0.00004	0.00006	0.00004	0.0001	0.00005	<0.00004
Silicon (Dissolved)	0.02	-	-	10.9	14.8	8.84	13.2	-	-	-	-	6.82	6.67	6.38		7	7.12	8.39	7.71	6.01	5.71	6.14	5.88
Silver (Dissolved)	2E-006 to 5E-005	-	-	<0.00005	<0.00005	<0.00005	<0.00005	-	-	-	-	<0.00005	<0.00005	<0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Sodium (Dissolved)	0.01000	200	AO	7.32	8.12	7.55	8.16	103.66	104.06	103.775	104.08	98.9	58	55.8		3.19	4.66	4.61	7.08	1.63	1.83	1.82	1.74
Strontium (Dissolved)	2E-005 to 8E-005	-	-	0.0561	0.200	0.0492	0.180	-	-	-	-	0.692	0.746	0.623		0.046	0.049	0.110	0.106	0.032	0.030	0.037	0.033
Thallium (Dissolved)	5E-006	-	-	0.000008	0.00005	0.00001	0.000013	-	-	-	-	0.000072	0.00007	0.000055		<0.000005	0.00001	<0.000005	<0.000005	<0.000005	<0.000005	0.000006	<0.000005
Tin (Dissolved)	1E-005 to 6E-005	-	-	<0.00006	0.00026	0.00014	<0.00006	-	-	-	-	0.00015	0.00015	0.00015		0.00008	0.00008	0.00012	<0.00006	<0.00006	0.0001	0.00024	<0.00006
Titanium (Dissolved)	5E-005 to 7E-005	-	-	0.0076	0.00042	0.001	<0.00007	-	-	-	-	0.00132	0.0003	0.00012		0.00506	0.00062	0.00011	0.0001	0.00254	0.00129	0.00049	0.00011
Uranium (Dissolved)	2E-006	0.02	-	0.00006	0.00089	0.00005	0.00015	0.01003	0.01045	0.01002	0.01008	0.00035	0.00033	0.00040		0.00009	0.00014	0.00018	0.00015	0.00002	0.00004	0.00002	0.00002
Vanadium (Dissolved)	1E-005	-	-	0.00104	0.00053	0.00094	0.00045	-	-	-	-	0.00019	0.00005	0.00019		0.00033	<0.00001	0.00016	0.00017	0.00027	0.00010	0.00023	0.00015
Zinc (Dissolved)	0.00200	5	-	<0.002	0.008	<0.002	0.003	2.501	2.504	2.501	2.5015	0.003	0.003	0.004		<0.002	<0.002	<0.002	<0.002	<0.002	0.005	<0.002	<0.002
Zirconium (Dissolved)	0.002	-	AO	<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
Organics																							
Carbon Organic (Dissolved)	1	5	AO	**6**	**8**	**7**	**6**	5.5	6.5	6	5.5	**13**	**8**	**9**	Dry	1	1	1	1	2	1	1	1
Phenols	0.002	-	-	<0.002	<0.002	<0.002	<0.002	-	-	-	-	0.004	<0.002	<0.002		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Volatile Organics																							
1/4-Dichlorobenzene	0.005	0.005		-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
Acetone	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
Dichloromethane	0.0005	0.05	MAC	-	-	-	-	-	-	-	-	-	-	-	Dry	-	-	-	-	-	-	-	-
Methyl ethyl ketone	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
Vinyl Chloride	0.0002	0.002	MAC	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
Semi Volatile Organics																							
1/4-Dichlorobenzene (SVO)	0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	Dry	-	-	-	-	-	-	-	-
BTEX																							
Benzene	0.0005	0.001	MAC	-	-	-	-	-	-	-	-	-	-	-	Dry	-	-	-	-	-	-	-	-
Toluene	0.0005	0.06	AO	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-

\\nb4\project$\1\02\00192\15\A\Report\Report 1 Rev 0\Tables\[2022-2023 Report Tables_MSA.xlsx]Table 3.2-GW

NOTES:

1. SAMPLES ANALYZED BY SGS CANADA INC. IN LAKEFIELD, ON.
2. ODWS REFERS TO THE ONTARIO DRINKING WATER STANDARDS, OBJECTIVES AND GUIDELINES, MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS (MECP, 2018).
3. HIGHLIGHTED CONCENTRATIONS INDICATE VALUES EXCEEDING THE ODWS.
4. REASONABLE USE GUIDELINES (RUG) REFER TO GUIDELINE B-7 (MOEE, 2016a) AND PROCEDURE B-7-1 (MOEE, 2016b). WHERE BACKGROUND RESULTS ARE LESS THAN THE RL, HALF OF THE RL WAS USED IN THE RUG CALCULATION AND THE "<" WAS REMOVED.
5. REASONABLE USE GUIDELINES (RUG) CALCULATED BASED ON GUIDELINE B-7 (MOECC, 2016a) AND PROCEDURE B-7-1 (MOECC, 2016b). WHERE BACKGROUND RESULTS ARE LESS THAN THE MDL, HALF OF THE RL WAS USED IN THE REASONABLE USE GUIDELINE CALCULATION.
6. **BOLDED** VALUES WITH RED OUTLINE INDICATE CONCENTRATIONS EXCEEDING THE RESPECTIVE RUGs.
7. WHERE THE BACKGROUND CONCENTRATION OF A PARAMETER IS ABOVE THE RESPECTIVE ODWS GUIDELINE, THE BACKGROUND CONCENTRATION IS USED IN REPLACEMENT OF THE RUG CALCULATION.
8. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
9. "-" INDICATES THAT DATA ARE NOT AVAILABLE.
10. WHERE A VALUE IS LESS THAN THE RESPECTIVE RL BUT THE RL IS ELEVATED ABOVE THE GUIDELINES, THE EXCEEDANCE IS NOT HIGHLIGHTED, AS THE ACTUAL VALUE IS UNKNOWN.

REV	DATE	DESCRIPTION	PREPD	RVWD
0	17-JAN-24	ISSUED WITH REPORT NB192-192/15-1	MSA	SBF

Knight Piésold CONSULTING

TABLE 3.2

MUNICIPALITY OF CALVIN
MUNICIPALITY OF CALVIN LANDFILL SITE

2022/2023 LANDFILL MONITORING REPORT
SUMMARY OF 2022/2023 GROUNDWATER QUALITY RESULTS

Print Jan-16-24 14:53:47

Parameter	RL	ODWS (Cr)	Standard or Objective (x = 0.5 for AO/OG parameters, and 0.25 for MAC)	MW7				Spring 2022	Fall 2022	Spring 2023	Fall 2023	MW13				MW14				RES-188			
				11-May-22	6-Oct-22	16-May-23	14-Nov-23	Reasonable Use Guideline (Cm)				11-May-22	6-Oct-22	16-May-23	14-Nov-23	11-May-22	6-Oct-22	16-May-23	14-Nov-23	-	-	-	-
Location	-	-		Background (Cb)				Cm = Cb + x(Cr-Cb)				Cross-gradient				Upgradient				Residential Well			
In Situ Parameters																							
Conductivity (mS/cm)	-	-	-	0.108	0.213	0.054	0.253	-	-	-	-	0.042	0.045	0.018	0.064	0.047	0.073	0.015	0.076				
Depth to Water (below top of PVC) m	-	-	-	2.32	2.86	2.185	2.615	-	-	-	-	3.84	4.95	4.165	4.975	1.93	4.78	1.94	3.965				
Oxygen Dissolved (mg/L)	-	-	-	14.98	6.44	6.46	10.61	-	-	-	-	14.65	9.48	9.48	8.79	14.55	11.81	8.11	13.71	No Sample Collected			
pH	-	6.5 to 8.5	OG	**6.19**	**5.65**	7.58	**6.41**	6.3 - 7.3	6.1 - 7.1	7.0 - 8.0	6.5 - 7.5	6.49	6.18	7.54	**6.43**	**6.14**	6.57	7.63	6.73				
Temperature °C	-	15	AO	8.83	11.06	4.39	8	11.915	13.03	9.695	11.5	11.66	9.81	3.61	7.7	8.39	10.38	5.74	8.73				
Physical Tests																							
Alkalinity (Total as CaCO3)	2	30 to 500	OG	36	73	30	**74**	33.0 - 268.0	51.5 - 286.5	30.0 - 265.0	187.0 - 287.0	**20**	**20**	**13**	**23**	**12**	**24**	**8**	**26**				
Chemical Oxygen Demand	8	-	-	21	13	18	19	-	-	-	-	<8	<8	<8	<8	<8	<8	<8	<8				
Conductivity µS/cm	2	-	-	-	203	122	228	-	-	-	-	44	50	38	59	43	61	36	72				
Hardness as CaCO3	0.05	80 to 100	OG	**38.6**	86.7	**41.2**	85.2	59.3 - 69.3	83.4 - 93.4	60.6 - 70.6	82.6 - 92.6	15.6	**19.8**	**16**	**21.1**	13.1	**25.4**	**12.2**	**23.8**	No Sample Collected			
pH	0.05	6.5 to 8.5	OG	6.69	**6.43**	**6.28**	6.64	6.6 - 7.6	6.5 - 7.5	6.4 - 7.4	6.6 - 7.6	6.91	6.57	6.45	6.69	6.62	6.91	**6.22**	6.79				
Total Dissolved Solids	3	500	AO	69	211	107	183	284.5	355.5	303.5	341.5	<30	43	<30	57	<30	51	31	66				
Total Suspended Solids	2	-	-	821	3630	1220	2900	-	-	-	-	1490	329	1730	1020	384	613	553	134				
Anions																							
Chloride	1	250	AO	7	9	6	6	128.5	129.5	128	128	<1	<1	<1	<1	<1	<1	<1	<1	No Sample Collected			
Sulphate	1 to 2	500	AO	17	31	15	37	258.5	265.5	257.5	268.5	4	5	4	14	6	8	5	35				
Nutrients																							
Ammonia (Total)	0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				
Nitrate (as N)	0.06	10	MAC	0.53	0.91	1.12	0.38	5.265	5.455	5.56	5.19	<0.06	<0.06	<0.06	<0.06	<0.06	0.07	<0.06	0.07	No Sample Collected			
Nitrite (as N)	0.03	1	MAC	<0.03	<0.03	<0.03	<0.03	0.515	0.515	0.515	0.515	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03				
Nitrogen Kjeldahl (Total)	0.5	-	-	<0.5	<0.5	<0.5	0.6	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6				
Dissolved Metals																							
Aluminum (Dissolved)	0.001	0.1	OG	**0.174**	**0.202**	0.044	0.008	0.137	0.151	0.072	0.054	0.073	0.021	0.056	0.011	0.020	0.027	0.020	0.005				
Antimony (Dissolved)	0.0002 to 0.0009	0.006	IMAC	<0.0009	<0.0009	<0.0009	<0.0009	0.003	0.003	0.003	0.003	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009				
Arsenic (Dissolved)	0.0002	0.01	IMAC	<0.0002	0.0003	<0.0002	<0.0002	0.005	0.00515	0.005	0.005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002				
Barium (Dissolved)	2E-005 to 8E-005	1	MAC	0.0139	0.0529	0.0103	0.0512	0.507	0.526	0.505	0.526	0.0053	0.0056	0.0044	0.0059	0.0118	0.0208	0.0111	0.0197				
Beryllium (Dissolved)	7E-006	-	-	0.000027	0.00017	0.000017	0.000044	-	-	-	-	0.000015	0.00004	0.00001	0.000021	0.000034	0.00015	0.000034	0.000024				
Bismuth (Dissolved)	7E-006 to 1E-005	-	-	<0.00001	0.00004	<0.00001	<0.00001	-	-	-	-	<0.00001	0.00001	<0.00001	<0.00001	<0.00001	0.00002	<0.00001	<0.00001				
Boron (Dissolved)	0.002	5	IMAC	0.028	0.033	0.008	0.018	2.51	2.52	2.50	2.51	0.009	0.07	0.013	0.005	0.008	0.019	0.008	0.004				
Cadmium (Dissolved)	3E-006	0.005	MAC	<0.000003	0.0001	0.000011	0.000034	0.0025	0.00255	0.0025055	0.002517	0.000005	0.00004	0.000008	0.000016	0.000047	0.00007	0.000041	0.000103				
Calcium (Dissolved)	0.01	-	-	6.1	19.2	6.11	17.9	-	-	-	-	4.42	5.56	4.59	5.92	3.92	6.75	3.63	6.51				
Chromium (Dissolved)	3E-005 to 8E-005	0.05	MAC	0.00066	<0.00008	0.0003	0.0001	0.02533	0.025	0.02515	0.02505	0.00024	<0.00008	0.00019	0.00015	0.0002	<0.00008	0.00017	0.00021				
Cobalt (Dissolved)	4E-006	-	-	0.000166	0.00311	0.000107	0.000894	-	-	-	-	0.000075	0.00035	0.000055	0.000027	0.000076	0.00082	0.000055	0.000063				
Copper (Dissolved)	2E-005 to 0.0002	1	AO	0.0013	0.0177	0.0013	0.0014	0.50065	0.50885	0.50065	0.5007	0.0005	0.0008	0.0004	0.0003	0.0007	0.0031	0.0007	0.001				
Iron (Dissolved)	0.007	0.3	AO	0.139	**2.73**	0.023	0.007	0.2195	1.515	0.1615	0.1535	0.039	0.030	0.033	0.012	0.012	0.240	0.020	<0.007				
Lead (Dissolved)	1E-005 to 9E-005	0.01	MAC	0.0001	0.00137	<0.00009	<0.00009	0.00505	0.005685	0.005	0.005	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	0.00012	<0.00009	<0.00009				
Lithium (Dissolved)	0.0001	-	-	0.0084	0.0154	0.0081	0.0107	-	-	-	-	0.0004	0.0022	0.0004	0.0005	0.0006	0.0051	0.0005	0.0014				
Magnesium (Dissolved)	0.00100	-	-	5.69	9.4	6.29	9.86	-	-	-	-	1.11	1.44	1.09	1.53	0.808	2.07	0.759	1.84				
Manganese (Dissolved)	1E-005	0.05	AO	0.02	**0.13**	0.01	**0.12**	0.04	0.09	0.03	0.09	0.001	0.005	0.002	0.001	0.003	0.017	0.003	0.005	No Sample Collected			
Mercury (Dissolved)	1E-005	0.001	MAC	-	<0.00001	0.00002	0.00003	-	0.0005	0.00051	0.000515	-	<0.00001	0.00001	<0.00001	-	<0.00001	0.00002	<0.00001				
Molybdenum (Dissolved)	1E-005 to 4E-005	-	-	0.00008	0.00037	0.00006	0.00008	-	-	-	-	0.00032	0.00035	0.00051	0.00032	0.00023	0.00027	0.00014	0.0003				
Nickel (Dissolved)	0.0001	-	-	0.0019	0.03	0.0014	0.0074	-	-	-	-	0.0003	0.0078	0.0001	<0.0001	0.0004	0.0199	0.0001	0.0003				
Phosphorus (Metal) Dissolved	0.003	-	-	0.034	<0.003	0.006	<0.003	-	-	-	-	0.022	<0.003	0.005	0.018	0.022	<0.003	0.004	<0.003				
Potassium (Dissolved)	0.003 to 0.009	-	-	0.926	1.36	0.677	1.3	-	-	-	-	0.45	0.54	0.507	0.572	0.363	0.72	0.36	0.769				
Selenium (Dissolved)	4E-005	0.05	MAC	0.00005	0.00027	0.00005	0.00016	0.025025	0.025135	0.025025	0.02508	<0.00004	0.0001	<0.00004	0.00006	<0.00004	0.0002	<0.00004	0.00013				
Silicon (Dissolved)	0.02	-	-	10.9	14.8	8.84	13.2	-	-	-	-	4.7	5.96	4.63	6.58	5.25	6.31	4.97	6.85				
Silver (Dissolved)	2E-006 to 5E-005	-	-	<0.00005	<0.00005	<0.00005	<0.00005	-	-	-	-	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005				
Sodium (Dissolved)	0.01000	200	AO	7.32	8.12	7.55	8.16	103.66	104.06	103.775	104.08	1.53	1.84	1.67	2	1.78	2.6	1.76	2.17				
Strontium (Dissolved)	2E-005 to 8E-005	-	-	0.0561	0.200	0.0492	0.180	-	-	-	-	0.038	0.048	0.033	0.051	0.033	0.046	0.028	0.046				
Thallium (Dissolved)	5E-006	-	-	0.000008	0.00005	0.00001	0.000013	-	-	-	-	<0.000005	<0.000005	<0.000005	0.000005	0.000005	0.00001	0.000006	0.000013				
Tin (Dissolved)	1E-005 to 6E-005	-	-	<0.00006	0.00026	0.00014	<0.00006	-	-	-	-	0.00024	0.00009	0.00009	<0.00006	<0.00006	0.00012	<0.00006	<0.00006				
Titanium (Dissolved)	5E-005 to 7E-005	-	-	0.0076	0.00042	0.001	<0.00007	-	-	-	-	0.00154	0.00051	0.00122	0.00012	0.00036	0.00045	0.00084	<0.00007				
Uranium (Dissolved)	2E-006	0.02	-	0.00006	0.00089	0.00005	0.00015	0.01003	0.01045	0.01002	0.01008	0.00013	0.00016	0.00010	0.00015	0.00005	0.00009	0.00005	0.00005				
Vanadium (Dissolved)	1E-005	-	-	0.00104	0.00053	0.00094	0.00045	-	-	-	-	0.00017	<0.00001	0.00026	0.00014	0.00008	<0.00001	0.00009	0.00008				
Zinc (Dissolved)	0.00200	5	-	<0.002	0.008	<0.002	0.003	2.501	2.504	2.501	2.5015	<0.002	<0.002	<0.002	<0.002	0.003	0.009	0.002	0.007				
Zirconium (Dissolved)	0.002	-	AO	<0.002	<0.002	<0.002	<0.002	-	-	-	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002				
Organics																							
Carbon Organic (Dissolved)	1	5	AO	**6**	**8**	**7**	**6**	5.5	6.5	6	5.5	1	1	1	1	2	1	2	1	No Sample Collected			
Phenols	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				
Volatile Organics																							
1/4-Dichlorobenzene	0.005	0.005		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Acetone	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Dichloromethane	0.0005	0.05	MAC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No Sample Collected			
Methyl ethyl ketone	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Vinyl Chloride	0.0002	0.002	MAC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Semi Volatile Organics																							
1/4-Dichlorobenzene (SVO)	0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No Sample Collected			
BTEX																							
Benzene	0.0005	0.001	MAC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No Sample Collected			
Toluene	0.0005	0.06	AO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				

\\nb4\project$\1\02\00192\15\A\Report\Report 1 Rev 0\Tables\[2022-2023 Report Tables_MSA.xlsx]Table 3.2-GW

NOTES:

1. SAMPLES ANALYZED BY SGS CANADA INC. IN LAKEFIELD, ON.
2. ODWS REFERS TO THE ONTARIO DRINKING WATER STANDARDS, OBJECTIVES AND GUIDELINES, MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS (MECP, 2018).
3. HIGHLIGHTED CONCENTRATIONS INDICATE VALUES EXCEEDING THE ODWS.
4. REASONABLE USE GUIDELINES (RUG) REFER TO GUIDELINE B-7 (MOEE, 2016a) AND PROCEDURE B-7-1 (MOEE, 2016b). WHERE BACKGROUND RESULTS ARE LESS THAN THE RL, HALF OF THE RL WAS USED IN THE RUG CALCULATION AND THE "<" WAS REMOVED.
5. REASONABLE USE GUIDELINES (RUG) CALCULATED BASED ON GUIDELINE B-7 (MOECC, 2016a) AND PROCEDURE B-7-1 (MOECC, 2016b). WHERE BACKGROUND RESULTS ARE LESS THAN THE MDL, HALF OF THE RL WAS USED IN THE REASONABLE USE GUIDELINE CALCULATION.
6. **BOLDED** VALUES WITH RED OUTLINE INDICATE CONCENTRATIONS EXCEEDING THE RESPECTIVE RUGs.
7. WHERE THE BACKGROUND CONCENTRATION OF A PARAMETER IS ABOVE THE RESPECTIVE ODWS GUIDELINE, THE BACKGROUND CONCENTRATION IS USED IN REPLACEMENT OF THE RUG CALCULATION.
8. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
9. "-" INDICATES THAT DATA ARE NOT AVAILABLE.
10. WHERE A VALUE IS LESS THAN THE RESPECTIVE RL BUT THE RL IS ELEVATED ABOVE THE GUIDELINES, THE EXCEEDANCE IS NOT HIGHLIGHTED, AS THE ACTUAL VALUE IS UNKNOWN.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
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3.5 SURFACE WATER MONITORING RESULTS

Four surface water sampling locations (SW-1 to SW-4) were included in the sampling program and are presented on Figure 2.1. Surface water sampling results are summarized in Table 3.3. Laboratory Certificates of Analysis can be found in Appendix C.

Surface water sampling locations SW-2 and SW-4 were sampled for 3 of the 4 sampling events throughout the two-year reporting period (when water was available). Sampling location SW-3, in the Amable du Fond River, consistently has appreciable flow, and is sampled yearly each spring and fall. Surface water sampling location SW-1 was not sampled during the monitoring period as the location was often dry.

Surface water sampling location SW-3, collected within the Amable Du Fond River is considered a background water quality location. Sampling results from SW-3 indicated several parameters above PWQO guidelines, notably pH, alkalinity, hardness, dissolved aluminum, and DOC suggesting that surface water in this area is naturally elevated in those parameters. The downgradient surface water sampling locations (SW-2 and SW-4) are also elevated for these same parameters, suggesting that the Landfill is not impacting surface water.

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TABLE 3.3

MUNICIPALITY OF CALVIN
MUNICIPALITY OF CALVIN LANDFILL SITE

2022/2023 LANDFILL MONITORING REPORT
SUMMARY OF 2022/2023 SURFACE WATER QUALITY RESULTS

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Parameter	RL	PWQO	SW-1				SW-2				SW-3				SW-4			
			11-May-22	6-Oct-22	16-May-23	14-Nov-23	11-May-22	6-Oct-22	16-May-23	14-Nov-23	11-May-22	6-Oct-22	16-May-23	14-Nov-23	11-May-22	6-Oct-22	16-May-23	14-Nov-23
Location	-	-	Upstream				Downstream				Background				Downstream			
			On-site near western property line downstream of "groundwater spring area"				Ditch located west of the Landfill (Culvert)				Amable du Fond River				Culvert on Adams Road southeast of site			
In Situ Parameters																		
Conductivity (In Situ) mS/cm	-	-	Dry				0.04	Dry	0.02	0.09	0.02	0.02	0.01	0.03	0.05	Dry	0.03	0.28
Oxygen Dissolved (mg/L) (In Situ)	-	-					7.23		8.64	15.54	11.96	8.65	9.41	13.71	11.57		8.41	10.92
pH (In Situ) pH	-	6.5 to 8.5					6.91		**8.67**	6.95	7.22	7.21	8.15	7.56	7.32		**8.91**	8.00
Temperature (In Situ) °C	-	-					18.71		8.53	3.22	13.69	13.90	8.66	5.22	18.52		9.13	3.71
Physical Tests																		
Alkalinity (Total as CaCO3)	2	25% of Background Value	Dry				**14**	Dry	**17**	**21**	7	8	7	10	**12**	Dry	**11**	9
Conductivity µS/cm	2	-					40		49	59	24	28	26	30	45		62	112
Hardness as CaCO3	0.05	80 to 100					15.1		**19.1**	**21.8**	9	**11.6**	**8.8**	**10.2**	8.6		**9.8**	**18.6**
pH	0.05	6.5 to 8.5					7.12		7.23	7.03	6.88	7	6.96	6.59	7.01		6.99	6.78
Total Dissolved Solids	30	-					34		40	60	<30	<30	<30	37	<30		37	89
Total Suspended Solids	2	-					3		3	2	4	3	4	5	<2		4	<2
Dissolved Anions																		
Chloride (Dissolved)	1	-	Dry				<1	Dry	<1	3	<1	<1	<1	1	2	Dry	3	12
Sulphate (Total)	1	-					4		4	5	3	3	3	8	7		10	23
Nutrients																		
Ammonia (Total)	0.04 to 0.1		Dry				<0.1	Dry	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Dry	<0.1	<0.1
Nitrate (as N)	0.06	10					<0.06		<0.06	0.12000	<0.06	<0.06	<0.06	0.0700	<0.06		<0.06	<0.06
Nitrite (as N)	0.03	1					<0.03		<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		<0.03	<0.03
Nitrogen Kjeldahl (Total)	0.05 to 0.5						<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.5		<0.5	<0.5
Total Metals																		
Aluminum	0.001	0.015 to 0.075 [d]	Dry				**0.258**	Dry	**0.187**	**0.406**	0.066	0.052	0.072	**0.120**	**0.138**	Dry	**0.148**	**0.107**
Antimony	0.0002	0.02					<0.0009		<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009		<0.0009	<0.0009
Arsenic	0.0002	0.005					<0.0002		<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		<0.0002	<0.0002
Barium	0.00002	-					0.0193		0.021	0.0199	0.0152	0.0164	0.0151	0.0176	0.0185		0.0232	0.0385
Beryllium	0.000007	0.011 to 1.1 [c]					0.000016		0.000014	0.000013	0.000008	0.000012	0.000009	<0.000007	0.000019		0.000016	0.000016
Bismuth	0.000007	-					0.00002		<0.00001	<0.00001	0.00001	<0.00001	<0.00001	<0.00001	<0.00001		<0.00001	<0.00001
Boron	0.002	0.2					0.013		0.005	0.008	0.009	0.006	0.004	0.007	0.039		0.062	0.111
Cadmium	0.000003	0.0001 to 0.0005 [c]					0.000005		0.000005	0.000003	0.000007	0.000006	0.000007	0.000008	0.000026		0.000027	0.000023
Calcium	0.01	-					3.54		4.48	5.03	2.32	3.05	2.3	2.64	2.4		2.7	5.04
Chromium	0.00003	0.0089					0.00097		0.00072	0.00143	0.00026	0.00029	0.00027	0.00043	0.00054		0.00047	0.00051
Cobalt	0.000004	0.0009					0.000124		0.00011	0.000226	0.000046	0.000044	0.000056	0.00006	0.000332		0.000259	0.000172
Copper	0.00002	0.001 to 0.005 [c]					0.0013		0.0011	0.0012	0.0006	0.0007	0.0007	0.0008	0.0009		0.001	0.0009
Iron	0.007	0.3					0.255		0.262	0.717	0.122	0.119	0.129	0.232	0.216		0.127	0.076
Lead	0.00001	0.001 to 0.005 [c]					0.00022		<0.00009	0.00019	0.00015	<0.00009	<0.00009	<0.00009	0.00023		<0.00009	<0.00009
Lithium	0.0001	-					0.0007		0.0004	0.0006	0.0004	0.0003	0.0003	0.0004	0.0002		0.0001	0.0003
Magnesium	0.001	-					1.53		1.92	2.23	0.784	0.976	0.742	0.867	0.621		0.739	1.47
Manganese	0.00001	-	Dry				0.00628	Dry	0.00577	0.0167	0.0126	0.00823	0.013	0.0133	0.0384	Dry	0.0344	0.0165
Mercury	0.00001	0.0002					<0.00001		0.00001	0.00002	<0.00001	<0.01	<0.00001	0.00002	<0.00001		0.00001	0.00001
Molybdenum	0.00001	0.04					0.00021		0.00017	0.00018	0.00006	<0.00004	0.00004	0.00005	0.0001		0.0001	0.00005
Nickel	0.0001	0.025					0.0008		0.0006	0.001	0.0003	0.0004	<0.0001	0.0005	0.0006		0.0003	0.0009
Phosphorus	0.003	0.03					0.026		0.011	0.018	0.018	0.006	0.008	0.007	0.022		0.011	0.01
Potassium	0.003	-					0.932		0.758	1.02	0.495	0.585	0.455	0.46	2.34		3.19	3.14
Selenium	0.00004	0.1					0.00009		0.00009	0.00004	0.00007	0.00011	0.00008	0.00006	0.00004		0.00009	0.00004
Silicon	0.02	-					6.08		5.08	7.29	2.68	2.2	2.6	2.86	5.03		4.59	5.42
Silver	0.00005	0.0001					<0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005		<0.00005	<0.00005
Sodium	0.01	-					2.46		1.82	2.48	1.08	1.16	0.87	1.23	4.22		5.34	10.7
Strontium	0.00002	-					0.0326		0.0417	0.0427	0.0203	0.0246	0.0209	0.0231	0.0237		0.0265	0.0471
Thallium	0.000005	0.0003					0.000005		0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.000007		0.000007	<0.000005
Tin	0.00001	-					0.00023		0.00006	<0.00006	0.0001	<0.00006	0.00007	<0.00006	0.00006		0.00015	<0.00006
Titanium	0.00005	-					0.0091		0.0064	0.0154	0.0022	0.0019	0.0022	0.0035	0.0037		0.0043	0.0019
Uranium	0.000002	0.005					0.000015		0.000014	0.000019	0.000016	0.000012	0.000019	0.000021	0.000012		0.000015	0.000007
Vanadium	0.00001	0.006					0.00093		0.00063	0.00109	0.00019	0.00020	0.00019	0.00026	0.00075		0.00060	0.00032
Zinc	0.002	0.02					0.008		0.004	0.004	<0.002	<0.002	0.006	0.002	0.003		<0.002	0.006
Organics																		
Carbon Organic (Dissolved)	1	5	Dry				**8**	Dry	**7**	**6**	**6**	**6**	**6**	4	**6**	Dry	4	4
Phenols	0.002	0.001					<0.001		<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001		<0.001	<0.001

\\nb4\project$\11\02\00192\15\A\Report\Report 1 Rev 0\Tables\[2022-2023 Report Tables_MSA.xlsx]Table 3.3-SW

NOTES:

1. SAMPLES ANALYZED BY SGS CANADA INC. IN LAKEFIELD, ON.
2. PWQO REFERS TO PROVINCIAL WATER QUALITY OBJECTIVES OF THE ONTARIO MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS, ONTARIO MINISTRY OF THE ENVIRONMENT, 2021.
3. **BOLDED** AND HIGHLIGHTED VALUES INDICATE VALUES EXCEEDING THE PWQO.
4. WHERE A VALUE IS LESS THAN THE RESPECTIVE RL BUT THE RL IS ELEVATED ABOVE THE GUIDELINE, THE EXCEEDANCE IS NOT HIGHLIGHTED, AS THE ACTUAL VALUE IS UNKNOWN.
5. UNITS IN mg/L UNLESS OTHERWISE INDICATED.
6. SUPERSCRIPTS AS FOLLOWS:
   (a) pH DEPENDENT
   (b) TEMPERATURE DEPENDENT
   (c) Hardness DEPENDENT
7. NO WATER WAS PRESENT AT SAMPLING LOCATION SW-1 FOR ANY OF THE FOUR SAMPLING EVENTS.

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3.6 METHANE CONCENTRATION ANALYSIS

Methane concentrations were measured in each well during sampling events. MOE Guideline D 4 (MOECC, 2016c) and Procedure D-4-1; (MOECC, 2016d) indicates that:

“A mixture of 5% to 15% methane in air will explode if ignited. A concentration of 5% methane in air is the Lower Explosive Limit (LEL) and concentrations equal to or greater than the LEL are considered hazardous. Hazardous conditions are not considered to be present on a landfill, or on the property near a landfill, if the concentration of methane in the waste is determined to be less than 10% LEL.”

A summary of the LEL methane concentrations collected during the reporting period are provided in Table 3.4. Methane readings were collected using a Landtec GEM2000 Gas Analyzer. The highest methane concentrations measured in 2022 and 2023 were observed at monitoring well MW11 at 0.7%. Methane concentrations of 0.5% were measured at monitoring wells MW5D, MW5S, MW6, MW7, MW8 (Leachate well), MW9, MW12, and MW13.

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TABLE 3.4

MUNICIPALITY OF CALVIN
MUNICIPALITY OF CALVIN LANDFILL SITE

2022/2023 LANDFILL MONITORING REPORT
SUMMARY OF 2022/2023 AIRSPACE MEASUREMENTS

Monitoring Well Location	Date	Methane (CH_4)	CO_2	O_2	BAL
Units		%	%	%	%
MW3	11-May-22	0.00	2.60	16.30	81.20
	6-Oct-22	0.40	0.60	19.90	79.10
	16-May-23	0.00	0.60	20.60	78.70
	14-Nov-23	0.00	0.10	19.50	80.40
MW4	11-May-22	0.00	0.20	21.30	78.50
	6-Oct-22	-	-	-	-
	16-May-23	0.10	0.40	20.70	78.80
	14-Nov-23	0.40	0.20	19.30	80.00
MW5D	11-May-22	0.00	0.10	20.80	79.10
	6-Oct-22	0.50	0.30	20.80	78.40
	16-May-23	0.00	0.20	20.70	79.00
	14-Nov-23	0.00	0.10	19.40	80.30
MW5S	11-May-22	0.00	0.10	20.60	79.30
	6-Oct-22	0.50	6.70	12.60	80.20
	16-May-23	0.00	7.40	7.30	85.20
	14-Nov-23	0.00	0.40	19.40	80.10
MW6	11-May-22	0.00	0.30	20.60	79.10
	6-Oct-22	0.50	0.30	20.80	78.40
	16-May-23	0.00	0.20	20.50	79.20
	14-Nov-23	0.00	0.10	19.30	80.40
MW7	11-May-22	0.00	0.20	21.80	78.80
	6-Oct-22	0.50	0.30	21.00	78.20
	16-May-23	0.00	0.20	20.10	79.60
	14-Nov-23	0.00	0.10	19.40	80.40
MW8	11-May-22	0.00	3.20	18.40	78.40
	6-Oct-22	0.50	0.40	21.00	78.10
	16-May-23	0.00	0.20	20.20	79.50
	14-Nov-23	0.00	0.20	19.20	80.50
MW9	11-May-22	0.00	0.70	19.80	79.50
	6-Oct-22	0.50	0.20	20.80	78.50
	16-May-23	0.10	0.70	20.00	79.20
	14-Nov-23	0.00	0.10	19.30	80.50
MW-10	11-May-22	0.00	0.20	20.50	79.30
	6-Oct-22	0.40	0.60	20.40	78.50
	16-May-23	0.00	0.40	21.00	78.60
	14-Nov-23	-	-	-	-
MW11	11-May-22	0.00	0.40	20.00	79.70
	6-Oct-22	0.70	0.30	20.50	78.50
	16-May-23	0.00	0.30	21.10	78.50
	14-Nov-23	0.00	0.10	19.40	80.50
MW12	11-May-22	0.00	0.80	16.90	82.20
	6-Oct-22	0.50	0.30	20.70	78.50
	16-May-23	0.00	0.30	21.00	78.60
	14-Nov-23	0.00	0.10	19.30	79.30
MW13	11-May-22	0.00	0.10	20.10	79.70
	6-Oct-22	0.50	0.60	20.20	78.70
	16-May-23	0.00	0.20	21.30	78.40
	14-Nov-23	0.00	0.20	19.30	80.50
MW14	11-May-22	0.00	0.20	21.20	78.60
	6-Oct-22	-	-	-	-
	16-May-23	0.10	0.30	20.90	78.70
	14-Nov-23	0.00	0.20	19.30	80.50

\\nb4\project$\1\02\00192\15\A\Report\Report 1 Rev 0\Tables\[2022-2023 Report Tables_MSA.xlsx]Table 3.4-Methane

NOTES:
1. "-" INDICATES DATA NOT AVAILABLE.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	17JAN'24	ISSUED WITH REPORT NB102-192/15-1	MSA	SBF

4.0 QUALITY ASSURANCE AND QUALITY CONTROL

Quality Assurance and Quality Control (QA/QC) are critical parts of environmental sampling programs. The data provided by QA/QC samples helps to determine the accuracy and precision of the sample data and whether cross contamination has occurred. The following QA/QC procedures were followed for the 2022/2023 monitoring program:

- All sampling activities, environmental conditions and any unusual conditions were documented on field data sheets
- All equipment was operated in accordance with the manufacturer's instructions
- Gloves and other protective equipment were worn at all times during sampling
- QA/QC samples were collected and analyzed (approximately 10% of the total number of samples collected)

Relative percent difference (RPD) calculations were used to determine how close the original and duplicate sample results were for each parameter tested. RPD values of 20% or greater are flagged (where the concentrations are greater than 5 times the MDL) and possible causes for the difference are investigated. It should be noted that in many cases, an RPD of greater than 20% can be the result of a very small difference in concentration. For example, the difference between 0.00005 mg/L and 0.00003 mg/L is 50%, but it represents a very small difference in absolute terms. These types of small changes could be the result of natural variation in the water and are not considered a quality control concern for these analyses.

There were several parameters with an RPD above 20% for each sampling event for groundwater and surface water, as shown on Tables 4.1 and 4.2, respectively. In most cases the parameter concentrations were very low and well below the respective guidelines.

The data presented within this report are determined to be accurate and can be relied upon given the above QA/QC results.

Certificates of Analysis for 2022 and 2023 are provided in Appendix C.

Knight Piésold CONSULTING

TABLE 4.1

MUNICIPALITY OF CALVIN
MUNICIPALITY OF CALVIN LANDFILL SITE

2022/2023 LANDFILL MONITORING REPORT
SUMMARY OF GROUNDWATER QA/QC RESULTS

Print Jan-16-24 14:59:19

Parameter	MDL	MW-4	Duplicate	RPD	MW-6	Duplicate	RPD	MW-9	Duplicate	RPD	MW-4	Duplicate	RPD	MW-11	Duplicate	RPD	MW-4	Duplicate	RPD	MW-12	Duplicate	RPD
		11-May-22		(%)	11-May-22		(%)	06-Oct-23		(%)	16-May-23		(%)	16-May-23		(%)	14-Nov-23		(%)	14-Nov-23		(%)
Physical Tests																						
Alkalinity (Total as CaCO3)	2	523	582	11	93	78	18	362	382	5	474	449	5	27	28	4	358	391	9	15	17	13
Chemical Oxygen Demand	8	152	192	**23**	11	<8	**32**	21	24	13	142	140	1	<8	<8	0	124	120	3	10	<8	-
Conductivity µS/cm	2	1080	1110	3	203	187	**185**	845	849	0	966	961	1	130	132	2	742	748	1	46	50	8
Hardness as CaCO3	0.05	333	338	1	77.8	72.2	7	318	291	9	326	336	3	45.5	44.9	1	260	264	2	10.2	10.3	1
pH	0.05	7.22	7.03	3	7.05	7.23	3	7.08	7.12	1	6.76	6.72	1	6.39	6.4	0	7.06	7.09	0	6.61	6.67	1
Total Dissolved Solids	3	577	594	3	74	77	4	534	523	2	537	549	2	97	123	**24**	397	403	2	49	46	6
Total Suspended Solids	2	906	729	**22**	3440	7670	**76**	4860	4770	2	1130	1420	**23**	1200	1730	**36**	624	692	10	1760	761	**79**
Anions																						
Chloride	1	36	35	3	6	6	0	19	19	0	26	26	0	9	9	0	11	10	10	<1	<1	0
Sulphate	1 to 2	67	67	0	14	16	13	47	48	2	46	46	0	17	17	0	30	30	0	4	4	0
Nutrients																						
Ammonia (Total)	0.1	26	26	2	<0.1	<0.1	0	1.6	1.6	0	21.2	21.2	0	<0.1	<0.1	0	12.9	13	1	<0.1	<0.1	0
Nitrate (as N)	0.06	<0.06	<0.06	0	0.8	0.82	2	4.8	5.04	5	<0.06	<0.06	0	0.6	0.6	0	<0.06	<0.06	0	0.06	<0.06	-
Nitrite (as N)	0.03	<0.03	<0.03	0	<0.03	<0.03	0	0.06	0.12	**67**	0.04	0.05	**22**	<0.03	<0.03	0	<0.03	<0.03	0	<0.03	<0.03	0
Nitrogen Kjeldahl (Total)	0.5	27	26	3	<0.5	<0.5	0	2	2.1	5	23.9	24.2	1	<0.5	<0.5	0	15.2	15.4	1	<0.5	<0.5	0
Dissolved Metals																						
Aluminum (Dissolved)	0.001	0.016	0.010	**46**	0.044	0.156	**112**	0.009	0.009	0	0.014	0.013	7	0.011	0.009	**20**	0.013	0.012	8	0.015	0.015	0
Antimony (Dissolved)	0.0009	<0.0009	<0.0009	0	<0.0009	<0.0009	0	<0.0009	0.0013	-	<0.0009	<0.0009	0	<0.0009	<0.0009	0	<0.0009	<0.0009	0	<0.0009	<0.0009	0
Arsenic (Dissolved)	0.0002	0.0007	0.0006	15	<0.0002	0.0003	-	0.0013	0.0011	17	0.0006	0.0006	0	<0.0002	<0.0002	0	0.0004	0.0004	0	<0.0002	<0.0002	0
Barium (Dissolved)	0.00002	0.1980	0.2020	2	0.051	0.0445	14	0.355	0.32	10	0.176	0.167	5	0.013	0.0128	2	0.132	0.143	8	0.00425	0.00451	6
Beryllium (Dissolved)	0.000007	0.0000	0.0000	20	0.000008	0.000012	**40**	0.00009	0.00011	**20**	0.000008	0.000009	12	0.000035	0.000032	9	0.000014	0.000013	7	0.000023	0.000021	9
Bismuth (Dissolved)	0.000007	<0.00001	<0.00001	0	<0.00001	<0.00001	0	0.00001	0.00005	**133**	<0.00001	<0.00001	0	<0.00001	<0.00001	0	<0.00001	<0.00001	0	<0.00001	<0.00001	0
Boron (Dissolved)	0.002	1.860	1.800	3	0.061	0.179	**98**	0.895	0.765	16	1.73	1.92	10	0.106	0.08	**28**	0.748	0.744	1	0.003	0.009	**100**
Cadmium (Dissolved)	0.000003	<0.000003	<0.000003	0	0.000034	0.000011	**102**	0.00006	0.00007	15	<0.000003	0.000003	-	0.000014	0.000007	**67**	0.000005	0.000004	**22**	0.000006	<0.000003	-
Calcium (Dissolved)	0.01	101	102	1	16.4	15.5	6	85.3	78	9	103	106	3	12.6	12.4	2	82.3	84	2	2.82	2.87	2
Chromium (Dissolved)	0.00008	0.0019	0.0024	**22**	0.00036	0.00057	**45**	<0.00008	<0.00008	0	0.002	0.00204	2	0.00013	<0.00008	-	0.00163	0.00161	1	0.00015	0.00015	0
Cobalt (Dissolved)	0.000004	0.0084	0.0087	4	0.000069	0.00013	**61**	0.00175	0.00143	**20**	0.00686	0.00683	0	0.000041	0.000041	0	0.00887	0.00782	13	0.000036	0.000035	3
Copper (Dissolved)	0.00002	0.0005	0.0004	**22**	0.0005	0.0009	**57**	0.0167	0.0152	9	0.0004	0.0003	**29**	0.0005	0.0005	0	0.0004	0.0004	0	0.0003	0.0003	0
Iron (Dissolved)	0.007	0.169	0.482	**96**	0.037	0.121	**106**	0.04	0.02	**67**	0.593	0.582	2	0.011	0.007	**44**	0.077	0.094	20	0.011	<0.007	-
Lead (Dissolved)	0.00009	0.0002	<0.00009	0	<0.00009	<0.00009	0	<0.00009	<0.00009	0	<0.00009	<0.00009	0	<0.00009	<0.00009	0	<0.00009	<0.00009	0	<0.00009	<0.00009	0
Lithium (Dissolved)	0.0001	0.0002	<0.0001	0	0.002	0.0019	5	0.0026	0.0013	**67**	0.0001	0.0001	0	0.0015	0.0014	7	0.0001	0.0001	0	0.0001	0.0001	0
Magnesium (Dissolved)	0.001	19.40	19.90	3	8.96	8.11	10	25.5	23.4	9	16.9	17.4	3	3.42	3.39	1	13.2	13.1	1	0.756	0.762	1
Manganese (Dissolved)	0.00001	4.490	4.480	0	0.00122	0.00275	**77**	0.824	0.773	6	3.86	3.73	3	0.0012	0.0008	**40**	3.63	3.5	4	0.00184	0.00168	9
Mercury (Dissolved)	0.00001	-	-	-	-	-	-	<0.00001	<0.00001	0	0.00002	0.00002	0	<0.00001	<0.00001	0	<0.00001	<0.00001	0	<0.00001	<0.00001	0
Molybdenum (Dissolved)	0.00004	0.0004	0.0005	15	0.00054	0.0005	8	0.00114	0.00096	17	0.00036	0.00046	**24**	0.00016	0.00016	0	0.00027	0.00027	0	0.00005	0.00006	18
Nickel (Dissolved)	0.0001	0.0035	0.0036	3	0.0005	0.001	**67**	0.0166	0.0027	**144**	0.0033	0.0033	0	0.0004	0.0004	0	0.0028	0.0027	4	<0.0001	0.0001	-
Phosphorus (Metal) Dissolved	0.003	0.027	0.052	**63**	0.013	0.082	**145**	<0.003	0.04	-	0.019	0.015	**24**	0.004	<0.003	-	<0.003	<0.003	0	0.018	0.009	**67**
Potassium (Dissolved)	0.003 to 0.009	29.6	31	5	2	2.07	3	42.5	38.2	11	28.7	29.4	2	0.938	0.926	1	20.5	21	2	0.383	0.394	3
Selenium (Dissolved)	0.00004	0.0003	0.00023	**26**	<0.00004	<0.00004	0	0.00019	0.00022	15	0.00021	0.00022	5	0.00004	<0.00004	-	0.00022	0.00023	4	<0.00004	<0.00004	0
Silicon (Dissolved)	0.02	4.68	4.88	4	8.4	7.12	16	2.98	2.54	16	5.09	5.21	2	8.39	8.35	0	5.05	5.19	3	5.88	6.07	3
Silver (Dissolved)	0.00005	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0
Sodium (Dissolved)	0.01	44.6	46.6	4	9.89	9.95	1	31.6	29.3	8	41.5	42.4	2	4.61	4.5	2	23.6	23.7	0	1.74	1.8	3
Strontium (Dissolved)	0.00008	0.592	0.588	1	0.143	0.137	4	0.908	0.832	9	0.542	0.557	3	0.11	0.107	3	0.49	0.511	4	0.0328	0.034	4
Thallium (Dissolved)	0.000005	<0.000005	<0.000005	0	<0.000005	<0.000005	-	0.00006	0.00008	**29**	<0.000005	<0.000005	0	<0.000005	<0.000005	0	<0.000005	0.000006	-	<0.000005	0.000007	-
Tin (Dissolved)	0.00006	0.00023	0.00024	4	0.00009	0.00008	12	0.00017	0.0002	16	0.00023	0.0002	14	0.00012	<0.00006	-	0.00009	0.00009	0	<0.00006	<0.00006	0
Titanium (Dissolved)	0.00007	0.00064	0.00061	5	0.00248	0.00864	**111**	0.00048	0.00088	**59**	0.00043	0.00039	10	0.00011	<0.00005	-	<0.00007	<0.00007	0	0.00011	0.00011	0
Uranium (Dissolved)	0.000002	0.000345	0.000317	8	0.000245	0.000206	17	0.00377	0.00341	10	0.000226	0.000256	12	0.000184	0.000167	10	0.000068	0.000067	1	0.000018	0.000018	0
Vanadium (Dissolved)	0.00001	0.00067	0.00083	**21**	0.00034	0.00059	**54**	0.00005	0.00008	**46**	0.00091	0.00093	2	0.00016	0.00017	6	0.00065	0.00065	0	0.00015	0.00015	0
Zinc (Dissolved)	0.002	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	0.004	-	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.002	0
Zirconium (Dissolved)	0.002	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.002	0
Organics																						
Carbon Organic (Dissolved)	1	24.0000	27.0000	12	1	1	0	10	10	0	19	17	11	1	2	**67**	12	12	0	1	1	0
Phenols	0.002	0.0070	0.0060	15	<0.002	<0.002	0	<0.002	<0.002	0	0.004	0.004	0	<0.002	<0.002	0	0.003	0.002	40	<0.002	<0.002	0
Volatile Organics																						
1/4-Dichlorobenzene	0.005	0.002	0.002	9	-	-	-	-	-	-	0.0043	0.0044	2	-	-	-	0.001	0.001	0	-	-	-
Acetone	0.03	<0.03	<0.03	0	-	-	-	-	-	-	<0.03	<0.03	0	-	-	-	<0.03	<0.03	0	-	-	-
Dichloromethane	0.0005	<0.0005	<0.0005	0	-	-	-	-	-	-	<0.0005	<0.0005	0	-	-	-	<0.0005	<0.0005	0	-	-	-
Methyl ethyl ketone	0.02	<0.02	<0.02	0	-	-	-	-	-	-	<0.02	<0.02	0	-	-	-	<0.02	<0.02	0	-	-	-
Vinyl Chloride	0.0002	0.0019	0.0020	5	-	-	-	-	-	-	0.0022	0.0021	0	-	-	-	0.0043	0.0045	5	-	-	-
1/4-Dichlorobenzene (SVO)	0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BTEX																						
Benzene	0.0005	<0.0005	<0.0005	0	-	-	-	-	-	-	0.0023	0.0023	0	-	-	-	0.0007	0.0008	13	-	-	-
Toluene	0.0005	<0.0005	<0.0005	0	-	-	-	-	-	-	0.0017	0.0018	6	-	-	-	<0.0005	<0.0005	0	-	-	-

\\nb4\project$\1\02\00192\15\A\Report\Report 1 Rev 0\Tables\[2022-2023 Report Tables_MSA.xlsx]Table 4.1-GW QAQC

NOTES:

1. SAMPLES ANALYSIED BY SGS CANADA INC. IN LAKEFIELD, ON.
2. RPD - RELATIVE PERCENT DIFFERENCE CALCULATED USING: 100*ABSOLUTE VALUE(RESULT-DUP RESULT)/((RESULT+DUP RESULT)/2).
3. VALUES IN RED BOLD HAVE 20% OR GREATER RELATIVE PERCENT DIFFERENCE (RPD) AND ARE 5 TIMES GREATER THAN THE RL.
4. "-" INDICATES THAT DATA ARE NOT AVAILABLE.
5. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.

REV	DATE	DESCRIPTION	PREPD	RVW'D
0	17JAN'24	ISSUED WITH REPORT NB102-192/15-1	MSA	SBF

Knight Piésold CONSULTING

TABLE 4.2

MUNICIPALITY OF CALVIN
MUNICIPALITY OF CALVIN LANDFILL SITE

2022/2023 LANDFILL MONITORING REPORT
SUMMARY OF SURFACE WATER QA/QC RESULTS

Print Jan-16-24 15:01:31

Parameter	MDL	SW-3	Duplicate	RPD	SW-3	Duplicate	RPD	SW-3	Duplicate	RPD	SW-3	Duplicate	RPD
		11-May-22		(%)	06-Oct-22		(%)	16-May-23		(%)	14-Nov-23		(%)
Physical Tests													
Alkalinity (Total as CaCO3) mg CaCO3/L	2	7	7	0	8	9	12	7	6	15	10	14	**33**
Conductivity µS/cm	2	24	24	0	28	27	4	26	23	12	30	38	**24**
Hardness as CaCO3 (Dissolved)	0.05	9.00	9.00	0	11.60	11.80	2	8.80	8.10	8	10.20	9.70	5
pH	0.05	6.88	6.86	0	7.00	7.06	1	6.96	6.88	1	6.59	7.06	7
Total Dissolved Solids	30	<30	<30	0	<30	<30	0	<30	46	**42**	37	43	15
Total Suspended Solids	2	4	4	0	3	4	**29**	4	8	**67**	5	2	**86**
Dissolved Anions													
Chloride (Dissolved)	1	<1	<1	0	<1	<1	0	<1	<1	0	1	1	0
Sulphate (Total)	2	3	3	0	3	3	0	3	3	0	8	9	12
Nutrients													
Ammonia (Total)	0.1	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
Nitrate (as N)	0.06	<0.06	<0.06	0	<0.06	<0.06	0	<0.06	<0.06	0	0.07	0.07	0
Nitrite (as N)	0.03	<0.03	<0.03	0	<0.03	<0.03	0	<0.03	<0.03	0	<0.03	<0.03	0
Nitrogen Kjeldahl (Total)	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	0.80	0.50	46
Total Metals													
Aluminum (Total)	0.001	0.066	0.069	4	0.052	0.052	0	0.072	0.064	12	0.120	0.108	11
Antimony (Total)	0.0009	<0.0009	<0.0009	0	<0.0009	<0.0009	0	<0.0009	<0.0009	0	<0.0009	<0.0009	0
Arsenic (Total)	0.0002	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0
Barium (Total)	2.000E-05	0.015	0.015	1	0.016	0.017	1	0.015	0.014	5	0.018	0.016	9
Beryllium (Total)	0.000007	0.0000	0.0000	13	0.0000	<0.000007	-	0.0000	0.0000	**25**	<0.000007	<0.000007	0
Bismuth (Total)	0.000007	0.0000	<0.00001	-	<0.00001	<0.00001	0	<0.00001	<0.00001	0	<0.00001	<0.00001	0
Boron (Total)	0.002	0.009	0.008	12	0.006	0.006	0	0.004	0.003	**29**	0.007	0.006	15
Cadmium (Total)	0.000003	0.0000	0.0000	**25**	0.0000	0.0000	0	0.0000	0.0000	13	0.0000	0.0000	12
Calcium (Total)	0.01	2.32	2.31	0	3.05	3.10	2	2.30	2.13	8	2.64	2.53	4
Chromium (Total)	0.00008	0.0003	0.0003	18	0.0003	0.0002	**23**	0.0003	0.0002	16	0.0004	0.0004	5
Cobalt (Total)	0.000004	0.0000	0.0001	8	0.0000	0.0000	12	0.0001	0.0000	**24**	0.0001	0.0001	18
Copper (Total)	0.0002	0.0006	0.0005	18	0.0007	0.0008	13	0.0007	0.0006	15	0.0008	0.0006	**29**
Iron (Total)	0.007	0.122	0.125	2	0.119	0.123	3	0.129	0.115	11	0.232	0.223	4
Lead (Total)	0.00001	0.0002	0.0002	6	<0.00009	<0.00009	0	<0.00009	<0.00009	0	<0.00009	<0.00009	0
Lithium (Total)	0.0001	0.0004	0.0005	**22**	0.0003	0.0003	0	0.0003	0.0003	0	0.0004	0.0004	0
Magnesium (Total)	0.001	0.784	0.785	0	0.976	0.981	1	0.742	0.672	10	0.867	0.822	5
Manganese (Total)	0.00001	0.0126	0.0129	2	0.0082	0.0086	4	0.0130	0.0120	8	0.0133	0.0125	6
Mercury (Total)	0.00001	<0.00001	<0.00001	0	<0.01	<0.01	0	<0.00001	<0.00001	0	0.0000	<0.00001	-
Molybdenum (Total)	0.00004	0.0001	<0.00004	-	<0.00004	<0.00004	0	0.0000	<0.00004	-	0.0001	0.0000	**22**
Nickel (Total)	0.0001	0.0003	0.0003	0	0.0004	0.0005	**22**	<0.0001	<0.0001	0	0.0005	0.0005	0
Phosphorus (Metal) Total	0.003	0.018	0.020	11	0.006	0.005	18	0.008	0.005	**46**	0.007	0.006	15
Potassium (Total)	0.009	0.495	0.490	1	0.585	0.592	1	0.455	0.418	8	0.460	0.439	5
Selenium (Total)	0.00004	0.0001	0.0001	15	0.0001	0.0001	**59**	0.0001	0.0001	**29**	0.0001	<0.00004	-
Silicon (Total)	0.02	2.68	4.76	**56**	2.20	2.20	0	2.60	2.40	8	2.86	2.78	3
Silver (Total)	0.00005	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0	<0.00005	<0.00005	0
Sodium (Total)	0.01	1.08	1.00	8	1.16	1.21	4	0.87	0.76	13	1.23	1.13	8
Strontium (Total)	0.00002	0.0203	0.0205	1	0.0246	0.0248	1	0.0209	0.0193	8	0.0231	0.0221	4
Thallium (Total)	0.000005	<0.000005	<0.000005	0	<0.000005	<0.000005	0	<0.000005	<0.000005	0	<0.000005	<0.000005	0
Tin (Total)	0.00006	0.0001	<0.00006	-	<0.00006	<0.00006	0	0.0001	<0.00006	-	<0.00006	<0.00006	0
Titanium (Total)	0.00005	0.0022	0.0023	7	0.0019	0.0020	2	0.0022	0.0018	16	0.0035	0.0031	11
Uranium (Total)	0.000002	0.0000	0.0000	0	0.0000	0.0000	9	0.0000	0.0000	5	0.0000	0.0000	5
Vanadium (Total)	0.00001	0.0002	0.0002	5	0.0002	0.0002	11	0.0002	0.0002	17	0.0003	0.0002	12
Zinc (Total)	0.002	<0.002	<0.002	0	<0.002	<0.002	0	0.0060	<0.002	-	0.0020	0.0030	**40**
Organics													
Carbon Organic (Dissolved)	1	6	6	0	6	5	18	6	6	0	4	4	0
Phenols	0.002	<0.001	<0.001	0	0.0010	0.0020	**67**	<0.001	0.0020	-	<0.001	<0.001	0

\\nb4\project$\1\02\00192\15\A\Report\Report 1 Rev 0\Tables\[2022-2023 Report Tables_MSA.xlsx]Table 4.2-SW QAQC

NOTES:

1. SAMPLES WERE ANALYZED BY SGS CANADA INC. IN LAKEFIELD ON.
2. RPD - RELATIVE PERCENT DIFFERENCE CALCULATED USING: 100*ABSOLUTE VALUE(RESULT-DUP RESULT)/((RESULT+DUP RESULT)/2).
3. VALUES IN RED BOLD HAVE 20% OR GREATER RELATIVE PERCENT DIFFERENCE (RPD) AND ARE 5 TIMES GREATER THAN THE RL.
4. "-" INDICATES THAT DATA ARE NOT AVAILABLE/DATA LESS THAN 5 TIMES THE RL.
5. RL REFERS TO THE LABORATORY REPORTING LIMIT.
6. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	17JAN'24	ISSUED WITH REPORT NB102-192/15-1	MSA	SBF

5.0 CONCLUSIONS AND RECOMMENDATIONS

Minor landfill-derived groundwater impacts were measured at downgradient monitoring wells, specifically at MW3, MW9 and MW10. The remaining downgradient wells appear to have very little impact from the Landfill, which suggests that natural attenuation is occurring to deter offsite impacts in these wells.

KP recommends closely monitoring nitrates downgradient of the landfill (notably at MW3 and MW9) to determine if the concentrations are increasing/decreasing or remaining constant. In the event that nitrate concentrations increase and remain above ODWS, KP recommends the installation of an additional monitoring well south of MW9, near the property line/Adams Road, to determine the degree of groundwater attenuation at that location.

The surface water results suggest that there are no surface water impacts in the vicinity of the Landfill.

KP recommends the following for the Calvin Landfill Monitoring Program:

- Continuing the water quality sampling with QA/QC samples on a frequency of twice per year (spring and fall) with the reporting occurring once every two years.
- New 1/2” Waterra sample tubing should be installed in 2024.
- Physical barriers (such as tractor tires or cement bollards) should be installed around monitoring well MW-4 to prevent potential damage to this well. The sand/backfill material that has been recently placed near the well should be removed from this area to avoid damage to the well.
- Monitoring well MW10 should be excavated and decommissioned.
- All monitoring wells should have a clear path/trail free of weeds, branches, and garbage for sampling and inspections

6.0 REFERENCES

Ontario Ministry of the Environment (MOE), 2018. *Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines*. PIBS 4449e01.

Ontario Ministry of the Environment and Energy (MOEE), 1999. (Reprinted from 1994). *Water Management: Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy, Province of Ontario*. ISBN 0-7778-8473-9 rev.

Ontario Ministry of the Environment and Climate Change (MOECC), 2016a. Guideline B-7: *Incorporation of the Reasonable Use Concept in MOEE Groundwater Management*. Updated July 12, 2021.

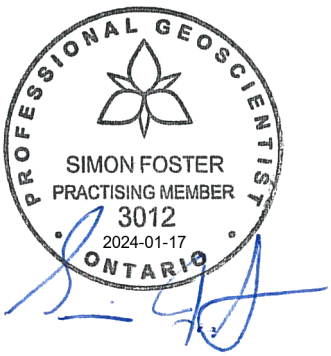
Ontario Ministry of the Environment and Climate Change (MOECC), 2016b. *B-7-1 Determination of Contaminant Limits and Attenuation Zones*. Updated July 12, 2021

7.0 CERTIFICATION

This report was prepared and reviewed by the undersigned.

Prepared:

Mackenzie Aiken, B.Sc.
Junior Scientist



Reviewed:

Simon Foster, M.Sc., P.Geo.
Senior Scientist

Approval that this document adheres to the Knight Piésold Quality System:

APPENDIX A

Certificate of Approval

(Page A-1)

Ministry of the Environment
Ontario

Provisional Certificate No. A 530901

PROVISIONAL CERTIFICATE OF APPROVAL
WASTE DISPOSAL SITE

Under The Environmental Protection Act, 1971 and the regulations and subject to the limitations thereof, this Provisional Certificate of Approval is issued to:

Township of Calvin
R.R. # 2
Mattawa, Ontario
P0H 1V0

for the use and operation of a 2.025 hectare landfill site

all in accordance with the following plans and specifications:

Located: Lot 21, Concession3
Township of Calvin
District of Nipissing

which includes the use of the site only for the receiving and disposal of the following categories of waste (NOTE: Use of the site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval) domestic and commercial wastes.

and subject to the following conditions:

1. No operation shall be carried out at the site after sixty days from this condition becoming enforceable unless this Certificate including the reasons for this condition has been registered by the applicant as an instrument in the appropriate Land Registry Office against title to the site and a duplicate registered copy thereof has been returned by the applicant to the Director.

APPENDIX B

Photo Log

(Pages B-1 to B-10)

PHOTO 1 – SW1 – Dry (Fall 2023, Facing North)

PHOTO 2 – SW2 – Upstream side of Culvert (Fall 2023, Facing East)

PHOTO 3 – SW3 – Upstream (Fall 2023, Facing Southeast)

PHOTO 4 – SW4 – Sampling location (Fall 2023, Facing Northeast)

PHOTO 5 – MW3 – (Fall 2023, Facing East)

PHOTO 6 – MW4 Covered in Sand since Spring 2023 – (Fall 2023, Facing East)

PHOTO 7 – MW5S – (Fall 2023, Facing South)

PHOTO 8 – MW5D – (Fall 2023, Facing West)

PHOTO 9 – MW6 – (Fall 2023, Facing South)

PHOTO 10 – MW7 – (Fall 2023, Facing South)

PHOTO 11 – MW8 – (Fall 2023, Facing South)

PHOTO 12 – MW9 – (Fall 2023, Facing South)

PHOTO 13 – Approximate Location of MW10 – (Fall 2023, Facing West)

PHOTO 14 – MW11 – (Fall 2023, Facing Southeast)

PHOTO 15 – MW12 – (Fall 2023, Facing South)

PHOTO 16 – MW13 – (Fall 2023, Facing East)

PHOTO 17 – MW14 – (Fall 2023, Facing Northeast)

PHOTO 18 – RES-188 – (Fall 2023, Facing South)

PHOTO 19 – Landfill Waste – (Fall 2023, Facing West)

APPENDIX C

Laboratory Certificates of Analysis

(Pages C-1 to C-41)

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

30-June-2022

Corporation of the Municipality of Calvin
Attn : Jacob Grove

1355 Peddlers Dr RR#2
Mattawa, ON
P0H 1V0, Canada

Phone: 705-744-2700
Fax:705-744-0309

Date Rec. : 13 May 2022
LR Report: **CA15222-MAY22**
Reference: NB102-192/15

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: MW3	7: MW4	8: MW5D	9: MW5S
Sample Date & Time					11-May-22 15:15	11-May-22 08:20	11-May-22 11:15	11-May-22 11:45
Temp Upon Receipt [°C]	---	---	---	---	11.0	11.0	11.0	11.0
TSS [mg/L]	17-May-22	08:09	19-May-22	09:42	1510	906	713	43
Alkalinity [mg/L as CaCO3]	15-May-22	11:49	17-May-22	12:50	468	523	221	177
Conductivity [uS/cm]	15-May-22	11:49	17-May-22	12:50	988	1080	612	423
pH [No unit]	15-May-22	11:49	17-May-22	12:50	7.39	7.22	7.29	8.20
TDS [mg/L]	16-May-22	19:17	18-May-22	07:30	540	577	323	220
Cl [mg/L]	26-May-22	08:08	26-May-22	14:21	46	36	38	23
NH3+NH4 [as N mg/L]	18-May-22	21:50	31-May-22	12:12	4.4	26.2	0.3	< 0.1
SO4 [mg/L]	26-May-22	09:33	26-May-22	14:21	20	67	64	28
NO2 [as N mg/L]	18-May-22	08:54	20-May-22	15:12	0.28	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	18-May-22	08:54	20-May-22	15:12	1.53	< 0.06	0.71	< 0.06
COD [mg/L]	16-May-22	08:19	19-May-22	14:04	41	152	13	< 8
DOC [mg/L]	16-May-22	15:45	19-May-22	10:28	18	24	3	< 1
4AAP-Phenolics [mg/L]	17-May-22	14:00	19-May-22	10:10	0.003	0.007	< 0.002	< 0.002
TKN [as N mg/L]	18-May-22	15:08	31-May-22	10:29	5.2	26.8	< 0.5	< 0.5
Hg (diss) [mg/L]	17-May-22	06:20	17-May-22	11:00	< 0.00001	< 0.00001	< 0.00001	< 0.00001

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LR Report : **CA15222-MAY22**

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: MW3	7: MW4	8: MW5D	9: MW5S
Hardness [mg/L as CaCO3]	20-May-22	20:02	25-May-22	10:55	338	333	230	185
Al (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	0.008	0.016	0.010	0.006
Sb (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	< 0.0009	< 0.0009	< 0.0009	< 0.0009
As (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	0.0013	0.0007	0.0003	< 0.0002
B (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	0.714	1.86	0.384	0.118
Ba (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	0.385	0.198	0.0657	0.0455
Be (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	< 0.000007	0.000011	0.000016	< 0.000007
Bi (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Cd (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	0.000079	< 0.000003	0.000061	0.000023
Ca (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	77.6	101	62.7	41.7
Cr (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	0.00061	0.00189	0.00013	< 0.00008
Co (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	0.00593	0.00839	0.000629	0.000028
Cu (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	0.0268	0.0005	0.0028	0.0002
Fe (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	0.007	0.169	0.010	< 0.007
Pb (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	< 0.00009	0.00015	< 0.00009	< 0.00009
Li (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	0.0009	0.0002	0.0022	0.0014
Mg (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	34.9	19.4	17.7	19.6
Mn (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	4.27	4.49	1.47	0.114
Mo (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	0.00111	0.00042	0.00143	0.00462
Ni (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	0.0104	0.0035	0.0019	0.0002
P (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	0.043	0.027	0.016	0.018
K (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	11.2	29.6	19.8	3.97
Se (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	0.00024	0.00030	< 0.00004	< 0.00004
Si (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	5.06	4.68	6.30	4.67
Si [mg/L]	20-May-22	20:02	25-May-22	10:55	10.8	10.0	13.5	9.99
Ag (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Na (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	61.2	44.6	15.2	9.03
Sr (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	0.973	0.592	0.358	0.369
Tl (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	0.000005	< 0.000005	0.000009	< 0.000005
Sn (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	0.00041	0.00023	0.00011	< 0.00006
Ti (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	0.00049	0.00064	0.00022	0.00022

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LR Report : **CA15222-MAY22**

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: MW3	7: MW4	8: MW5D	9: MW5S
V (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	0.00077	0.00067	0.00024	0.00090
U (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	0.00410	0.000345	0.00224	0.00479
Zn (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	0.002	< 0.002	< 0.002	< 0.002
Zr (diss) [mg/L]	20-May-22	20:02	25-May-22	10:55	< 0.002	< 0.002	< 0.002	< 0.002
Benzene [ug/L]	30-May-22	11:02	31-May-22	15:11	---	< 0.5	---	---
1,4-Dichlorobenzene [µg/L]	30-May-22	11:02	31-May-22	15:11	---	2.1	---	---
Dichloromethane [µg/L]	30-May-22	11:02	31-May-22	15:11	---	< 0.5	---	---
Toluene [ug/L]	30-May-22	11:02	31-May-22	15:11	---	< 0.5	---	---
Vinyl Chloride [µg/L]	30-May-22	11:02	31-May-22	15:11	---	1.9	---	---
MEK [µg/L]	30-May-22	11:02	31-May-22	15:11	---	< 20	---	---
Acetone [µg/L]	30-May-22	11:02	31-May-22	15:11	---	< 30	---	---

Analysis	10: MW6	11: MW7	12: MW8	13: MW9	14: MW10	15: MW11	16: MW12	17: MW13
Sample Date & Time	11-May-22 10:45	11-May-22 09:30	11-May-22 10:00	11-May-22 12:15	11-May-22 13:15	11-May-22 13:30	11-May-22 14:20	11-May-22 14:45
Temp Upon Receipt [°C]	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
TSS [mg/L]	3440	821	86	5410	1160	1150	6780	1490
Alkalinity [mg/L as CaCO3]	93	36	228	292	77	25	12	20
Conductivity [uS/cm]	203	122	688	680	934	66	43	44
pH [No unit]	7.05	6.69	7.10	7.23	6.53	6.79	6.31	6.91
TDS [mg/L]	74	69	394	369	546	57	< 30	< 30
Cl [mg/L]	6	7	35	15	130	< 1	2	< 1
NH3+NH4 [as N mg/L]	< 0.1	< 0.1	< 0.1	0.2	0.8	< 0.1	< 0.1	< 0.1
SO4 [mg/L]	14	17	120	52	240	8	7	4
NO2 [as N mg/L]	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	0.80	0.53	3.96	4.39	6.07	< 0.06	< 0.06	< 0.06
COD [mg/L]	11	21	< 8	23	38	< 8	< 8	< 8
DOC [mg/L]	1	6	3	8	13	1	2	1
4AAP-Phenolics [mg/L]	< 0.002	< 0.002	< 0.002	< 0.002	0.004	< 0.002	< 0.002	< 0.002

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Analysis	10: MW6	11: MW7	12: MW8	13: MW9	14: MW10	15: MW11	16: MW12	17: MW13
TKN [as N mg/L]	< 0.5	< 0.5	< 0.5	0.5	1.3	< 0.5	< 0.5	< 0.5
Hg (diss) [mg/L]	< 0.00001	< 0.00001	< 0.00001	0.00002	0.00001	< 0.00001	< 0.00001	< 0.00001
Hardness [mg/L as CaCO3]	77.8	38.6	284	259	194	20.9	11.2	15.6
Al (diss) [mg/L]	0.044	0.174	0.005	0.030	0.070	0.162	0.067	0.073
Sb (diss) [mg/L]	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009
As (diss) [mg/L]	< 0.0002	< 0.0002	< 0.0002	0.0010	0.0017	0.0002	< 0.0002	< 0.0002
B (diss) [mg/L]	0.061	0.028	0.402	0.917	1.29	0.145	0.010	0.009
Ba (diss) [mg/L]	0.0510	0.0139	0.120	0.265	0.173	0.00667	0.00458	0.00529
Be (diss) [mg/L]	0.000008	0.000027	0.000009	0.000008	0.000133	0.000011	0.000019	0.000015
Bi (diss) [mg/L]	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Cd (diss) [mg/L]	0.000034	< 0.000003	0.000013	0.000028	0.000213	0.000003	0.000006	0.000005
Ca (diss) [mg/L]	16.4	6.10	82.5	67.6	54.4	5.60	3.02	4.42
Cr (diss) [mg/L]	0.00036	0.00066	0.00416	0.00044	0.00042	0.00042	0.00018	0.00024
Co (diss) [mg/L]	0.000069	0.000166	0.000178	0.001150	0.001899	0.000081	0.000050	0.000075
Cu (diss) [mg/L]	0.0005	0.0013	0.0013	0.0098	0.0077	0.0017	0.0005	0.0005
Fe (diss) [mg/L]	0.037	0.139	< 0.007	0.015	0.028	0.080	0.039	0.039
Pb (diss) [mg/L]	< 0.00009	0.00010	< 0.00009	< 0.00009	< 0.00009	0.00011	< 0.00009	< 0.00009
Li (diss) [mg/L]	0.0020	0.0084	0.0048	0.0001	0.0004	0.0011	0.0002	0.0004
Mg (diss) [mg/L]	8.96	5.69	19.0	21.9	14.2	1.68	0.895	1.11
Mn (diss) [mg/L]	0.00122	0.0210	0.00829	0.404	1.83	0.00270	0.00246	0.00132
Mo (diss) [mg/L]	0.00054	0.00008	0.00006	0.00068	0.00019	0.00022	0.00008	0.00032
Ni (diss) [mg/L]	0.0005	0.0019	0.0006	0.0015	0.0037	0.0012	0.0003	0.0003
P (diss) [mg/L]	0.013	0.034	0.016	0.021	0.020	0.052	0.022	0.022
K (diss) [mg/L]	2.00	0.926	17.7	35.1	17.6	0.618	0.363	0.450
Se (diss) [mg/L]	< 0.00004	0.00005	0.00014	< 0.00004	0.00017	0.00005	0.00004	< 0.00004
Si (diss) [mg/L]	8.40	10.9	6.87	3.14	6.82	7.00	6.01	4.70
Si [mg/L]	18.0	23.2	14.7	6.73	14.6	15.0	12.9	10.0
Ag (diss) [mg/L]	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Na (diss) [mg/L]	9.89	7.32	28.5	20.7	98.9	3.19	1.63	1.53
Sr (diss) [mg/L]	0.143	0.0561	0.565	0.787	0.692	0.0455	0.0319	0.0381
Tl (diss) [mg/L]	< 0.000005	0.000008	< 0.000005	0.000022	0.000072	< 0.000005	< 0.000005	< 0.000005

SGS Canada Inc.
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LR Report : **CA15222-MAY22**

Analysis	10: MW6	11: MW7	12: MW8	13: MW9	14: MW10	15: MW11	16: MW12	17: MW13
Sn (diss) [mg/L]	0.00009	< 0.00006	0.00006	0.00012	0.00015	0.00008	< 0.00006	0.00024
Ti (diss) [mg/L]	0.00248	0.00760	0.00017	0.00084	0.00132	0.00506	0.00254	0.00154
V (diss) [mg/L]	0.00034	0.00104	0.00009	0.00026	0.00019	0.00033	0.00027	0.00017
U (diss) [mg/L]	0.000245	0.000057	0.00198	0.00258	0.000351	0.000086	0.000024	0.000127
Zn (diss) [mg/L]	< 0.002	< 0.002	0.002	< 0.002	0.003	< 0.002	< 0.002	< 0.002
Zr (diss) [mg/L]	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Benzene [ug/L]	---	---	---	---	---	---	---	---
1,4-Dichlorobenzene [µg/L]	---	---	---	---	---	---	---	---
Dichloromethane [µg/L]	---	---	---	---	---	---	---	---
Toluene [ug/L]	---	---	---	---	---	---	---	---
Vinyl Chloride [µg/L]	---	---	---	---	---	---	---	---
MEK [µg/L]	---	---	---	---	---	---	---	---
Acetone [µg/L]	---	---	---	---	---	---	---	---

Analysis	18: MW14	19: MW4-DUP	20: MW6-DUP
Sample Date & Time	11-May-22 09:00	11-May-22 08:20	11-May-22 10:45
Temp Upon Receipt [°C]	11.0	11.0	11.0
TSS [mg/L]	384	729	7670
Alkalinity [mg/L as CaCO3]	12	582	78
Conductivity [uS/cm]	43	1110	187
pH [No unit]	6.62	7.03	7.23
TDS [mg/L]	< 30	594	77
Cl [mg/L]	< 1	35	6
NH3+NH4 [as N mg/L]	< 0.1	25.6	< 0.1
SO4 [mg/L]	6	67	16
NO2 [as N mg/L]	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	< 0.06	< 0.06	0.82
COD [mg/L]	< 8	192	< 8

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LR Report : **CA15222-MAY22**

Analysis	18: MW14	19: MW4-DUP	20: MW6-DUP
DOC [mg/L]	2	27	1
4AAP-Phenolics [mg/L]	< 0.002	0.006	< 0.002
TKN [as N mg/L]	< 0.5	26.1	< 0.5
Hg (diss) [mg/L]	< 0.00001	0.00003	< 0.00001
Hardness [mg/L as CaCO3]	13.1	338	72.2
Al (diss) [mg/L]	0.020	0.010	0.156
Sb (diss) [mg/L]	< 0.0009	< 0.0009	< 0.0009
As (diss) [mg/L]	< 0.0002	0.0006	0.0003
B (diss) [mg/L]	0.008	1.80	0.179
Ba (diss) [mg/L]	0.0118	0.202	0.0445
Be (diss) [mg/L]	0.000034	0.000009	0.000012
Bi (diss) [mg/L]	< 0.00001	< 0.00001	< 0.00001
Cd (diss) [mg/L]	0.000047	< 0.000003	0.000011
Ca (diss) [mg/L]	3.92	102	15.5
Cr (diss) [mg/L]	0.00020	0.00236	0.00057
Co (diss) [mg/L]	0.000076	0.008694	0.000130
Cu (diss) [mg/L]	0.0007	0.0004	0.0009
Fe (diss) [mg/L]	0.012	0.482	0.121
Pb (diss) [mg/L]	< 0.00009	< 0.00009	< 0.00009
Li (diss) [mg/L]	0.0006	< 0.0001	0.0019
Mg (diss) [mg/L]	0.808	19.9	8.11
Mn (diss) [mg/L]	0.00285	4.48	0.00275
Mo (diss) [mg/L]	0.00023	0.00049	0.00050
Ni (diss) [mg/L]	0.0004	0.0036	0.0010
P (diss) [mg/L]	0.022	0.052	0.082
K (diss) [mg/L]	0.363	31.0	2.07
Se (diss) [mg/L]	< 0.00004	0.00023	< 0.00004
Si (diss) [mg/L]	5.25	4.88	7.12
Si [mg/L]	11.2	10.4	15.2
Ag (diss) [mg/L]	< 0.00005	< 0.00005	< 0.00005
Na (diss) [mg/L]	1.78	46.6	9.95

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LR Report : **CA15222-MAY22**

Analysis	18: MW14	19: MW4-DUP	20: MW6-DUP
Sr (diss) [mg/L]	0.0333	0.588	0.137
Tl (diss) [mg/L]	0.000005	< 0.000005	< 0.000005
Sn (diss) [mg/L]	< 0.00006	0.00024	0.00008
Ti (diss) [mg/L]	0.00036	0.00061	0.00864
V (diss) [mg/L]	0.00008	0.00083	0.00059
U (diss) [mg/L]	0.000048	0.000317	0.000206
Zn (diss) [mg/L]	0.003	< 0.002	< 0.002
Zr (diss) [mg/L]	< 0.002	< 0.002	< 0.002
Benzene [ug/L]	---	< 0.5	---
1,4-Dichlorobenzene [µg/L]	---	2.3	---
Dichloromethane [µg/L]	---	< 0.5	---
Toluene [ug/L]	---	< 0.5	---
Vinyl Chloride [µg/L]	---	2.0	---
MEK [µg/L]	---	< 20	---
Acetone [µg/L]	---	< 30	---

Catharine Arnold

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OnLine LIMS

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30-June-2022

Corporation of the Municipality of Calvin
Attn : Jacob Grove

1355 Peddlers Dr RR#2
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P0H 1V0, Canada

Phone: 705-744-2700
Fax:705-744-0309

Date Rec. : 13 May 2022
LR Report: **CA15224-MAY22**
Reference: NB102-192/15

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: SW2	7: SW3	8: SW3-DUP	9: SW4
Sample Date & Time					11-May-22 16:00	11-May-22 16:20	11-May-22 16:20	11-May-22 15:50
Temp Upon Receipt [°C]	---	---	---	---	15.0	15.0	15.0	15.0
BOD5 [mg/L]	13-May-22	15:56	18-May-22	13:37	< 4	< 4	< 4	< 4
Alkalinity [mg/L as CaCO3]	16-May-22	17:19	17-May-22	10:24	14	7	7	12
Conductivity [uS/cm]	16-May-22	17:19	17-May-22	10:24	40	24	24	45
pH [No unit]	16-May-22	17:19	17-May-22	10:24	7.12	6.88	6.86	7.01
TDS [mg/L]	13-May-22	19:53	16-May-22	16:30	34	< 30	< 30	< 30
TSS [mg/L]	17-May-22	14:57	18-May-22	13:06	3	4	4	< 2
DOC [mg/L]	16-May-22	15:45	19-May-22	10:28	8	6	6	6
Cl [mg/L]	26-May-22	08:08	26-May-22	14:22	< 1	< 1	< 1	2
NH3+NH4 [as N mg/L]	18-May-22	07:37	20-May-22	10:40	< 0.1	< 0.1	< 0.1	< 0.1
TKN [as N mg/L]	18-May-22	15:08	19-May-22	13:44	< 0.5	< 0.5	< 0.5	< 0.5
SO4 [mg/L]	26-May-22	09:33	26-May-22	14:22	4	3	3	7
NO2 [as N mg/L]	17-May-22	18:17	18-May-22	09:11	< 0.03	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	17-May-22	18:17	18-May-22	09:11	< 0.06	< 0.06	< 0.06	< 0.06
4AAP-Phenolics [mg/L]	16-May-22	09:00	17-May-22	08:51	< 0.001	< 0.001	< 0.001	< 0.001
Hg (tot) [mg/L]	17-May-22	06:20	17-May-22	11:00	< 0.00001	< 0.00001	< 0.00001	< 0.00001

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LR Report : **CA15224-MAY22**

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: SW2	7: SW3	8: SW3-DUP	9: SW4
Hg (diss) [mg/L]	17-May-22	06:20	17-May-22	11:00	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Hardness [mg/L as CaCO3]	18-May-22	15:04	20-May-22	17:18	15.1	9.0	9.0	8.6
Al (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	0.258	0.066	0.069	0.138
Al (diss)-0.2µm [mg/L]	18-May-22	15:04	20-May-22	17:18	0.085	0.031	0.044	0.098
Sb (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	< 0.0009	< 0.0009	< 0.0009	< 0.0009
As (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	< 0.0002	< 0.0002	< 0.0002	< 0.0002
B (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	0.013	0.009	0.008	0.039
Ba (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	0.0193	0.0152	0.0153	0.0185
Be (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	0.000016	0.000008	0.000007	0.000019
Bi (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	0.00002	0.00001	< 0.00001	< 0.00001
Cd (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	0.000005	0.000007	0.000009	0.000026
Ca (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	3.54	2.32	2.31	2.40
Cr (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	0.00097	0.00026	0.00031	0.00054
Co (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	0.000124	0.000046	0.000050	0.000332
Cu (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	0.0013	0.0006	0.0005	0.0009
Fe (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	0.255	0.122	0.125	0.216
Pb (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	0.00022	0.00015	0.00016	0.00023
Li (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	0.0007	0.0004	0.0005	0.0002
Mg (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	1.53	0.784	0.785	0.621
Mn (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	0.00628	0.0126	0.0129	0.0384
Mo (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	0.00021	0.00006	< 0.00004	0.00010
Ni (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	0.0008	0.0003	0.0003	0.0006
P (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	0.026	0.018	0.020	0.022
K (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	0.932	0.495	0.490	2.34
Se (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	0.00009	0.00007	0.00006	0.00004
Si (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	6.08	2.68	4.76	5.03
Si [mg/L]	18-May-22	15:04	20-May-22	17:18	13.0	5.74	10.2	10.8
Ag (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Na (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	2.46	1.08	1.00	4.22
Sr (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	0.0326	0.0203	0.0205	0.0237
Tl (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	0.000005	< 0.000005	< 0.000005	0.000007

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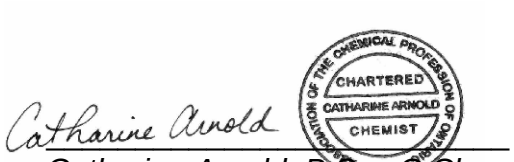
LR Report : **CA15224-MAY22**

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: SW2	7: SW3	8: SW3-DUP	9: SW4
Sn (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	0.00023	0.00010	< 0.00006	0.00006
Ti (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	0.00906	0.00216	0.00231	0.00374
U (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	0.000015	0.000016	0.000016	0.000012
V (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	0.00093	0.00019	0.00020	0.00075
Zn (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	0.008	< 0.002	< 0.002	0.003
Zr (tot) [mg/L]	18-May-22	15:04	20-May-22	17:18	< 0.002	< 0.002	< 0.002	< 0.002



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17-November-2022

Corporation of the Municipality of Calvin
Attn : Jacob Grove

1355 Peddlers Dr RR#2
Mattawa, ON
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Phone: 705-744-2700
Fax:705-744-0309

Date Rec. : 07 October 2022
LR Report: **CA14296-OCT22**
Reference: NB102-192/15

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: RL	7: MW7	8: MW14
Sample Date & Time						06-Oct-22 08:25	06-Oct-22 15:00
Temp Upon Receipt [°C]	---	---	---	---	---	11.0	11.0
Alkalinity [mg/L as CaCO3]	11-Oct-22	13:31	13-Oct-22	10:31		73	24
Conductivity [uS/cm]	11-Oct-22	13:31	13-Oct-22	10:31		203	61
pH [No unit]	11-Oct-22	13:31	13-Oct-22	10:31		6.43	6.91
TSS [mg/L]	11-Oct-22	08:00	12-Oct-22	14:02		3630	613
TDS [mg/L]	11-Oct-22	19:15	12-Oct-22	15:53		211	51
COD [mg/L]	14-Oct-22	12:45	17-Oct-22	14:38	8	13	< 8
Cl [mg/L]	14-Oct-22	17:00	27-Oct-22	14:46	1	9	< 1
NH3+NH4 [as N mg/L]	09-Oct-22	15:35	13-Oct-22	12:44	0.1	< 0.1	< 0.1
DOC [mg/L]	14-Oct-22	21:40	17-Oct-22	11:48	1	8	1
4AAP-Phenolics [mg/L]	11-Oct-22	14:20	17-Oct-22	10:10	0.002	< 0.002	< 0.002
TKN [as N mg/L]	12-Oct-22	14:06	17-Oct-22	15:12	0.5	< 0.5	< 0.5
SO4 [mg/L]	14-Oct-22	17:35	27-Oct-22	14:46	2	31	8
NO2 [as N mg/L]	13-Oct-22	09:41	27-Oct-22	12:15	0.03	< 0.03	< 0.03
NO3 [as N mg/L]	13-Oct-22	09:41	27-Oct-22	12:15	0.06	0.91	0.07
Hg (diss) [mg/L]	31-Oct-22	17:18	14-Oct-22	09:07	1e-005	< 0.00001	< 0.00001
Hardness [mg/L as CaCO3]	25-Oct-22	01:40	07-Nov-22	12:23		86.7	25.4
Ag (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		< 0.00005	< 0.00005
Al (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		0.202	0.027
As (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		0.0003	< 0.0002
B (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		0.033	0.019
Ba (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		0.0529	0.0208
Be (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		0.000170	0.000150
Bi (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		0.00004	0.00002
Cd (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		0.000100	0.000070
Ca (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		19.2	6.75
Cr (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		< 0.00008	< 0.00008
Co (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		0.003110	0.000820
Cu (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		0.0177	0.0031

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LR Report : **CA14296-OCT22**

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: RL	7: MW7	8: MW14
Fe (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		2.73	0.240
Li (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		0.0154	0.0051
K (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		1.36	0.720
Mg (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		9.40	2.07
Mn (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		0.134	0.0167
Mo (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		0.00037	0.00027
Na (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		8.12	2.60
Ni (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		0.0300	0.0199
P (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		< 0.003	< 0.003
Pb (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		0.00137	0.00012
Sb (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		< 0.0009	< 0.0009
Se (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		0.00027	0.00020
Si (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		14.8	6.31
Sn (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		0.00026	0.00012
Sr (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		0.200	0.0456
Tl (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		0.000050	0.000010
Ti (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		0.00042	0.00045
U (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		0.000890	0.000090
V (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		0.00053	< 0.00001
Zn (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		0.008	0.009
Zr (diss) [mg/L]	25-Oct-22	01:40	07-Nov-22	12:23		< 0.002	< 0.002
Benzene [ug/L]	12-Oct-22	13:29	13-Oct-22	09:51		---	---
1,4-Dichlorobenzene [µg/L]	12-Oct-22	13:29	13-Oct-22	09:51		---	---
Dichloromethane [µg/L]	12-Oct-22	13:29	13-Oct-22	09:51		---	---
Toluene [ug/L]	12-Oct-22	13:29	13-Oct-22	09:51		---	---
Vinyl Chloride [µg/L]	12-Oct-22	13:29	13-Oct-22	09:51		---	---
MEK [µg/L]	12-Oct-22	13:29	13-Oct-22	09:51		---	---
Acetone [µg/L]	12-Oct-22	13:29	13-Oct-22	09:51		---	---

Analysis	9: MW4	10: MW6	11: MW5S	12: MW5D	13: MW9
Sample Date & Time	06-Oct-22 14:45	06-Oct-22 09:40	06-Oct-22 10:40	06-Oct-22 10:50	06-Oct-22 11:20
Temp Upon Receipt [°C]	11.0	11.0	11.0	11.0	11.0
Alkalinity [mg/L as CaCO3]	439	100	223	172	362
Conductivity [uS/cm]	883	207	629	351	845
pH [No unit]	6.79	7.04	6.83	8.09	7.08
TSS [mg/L]	1110	2330	70	65	4860
TDS [mg/L]	520	151	371	246	534
COD [mg/L]	96	< 8	< 8	< 8	21
Cl [mg/L]	26	5	36	24	19
NH3+NH4 [as N mg/L]	17.7	< 0.1	0.3	< 0.1	1.6
DOC [mg/L]	16	1	3	1	10
4AAP-Phenolics [mg/L]	0.004	< 0.002	< 0.002	< 0.002	< 0.002

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LR Report : **CA14296-OCT22**

Analysis	9: MW4	10: MW6	11: MW5S	12: MW5D	13: MW9
TKN [as N mg/L]	20.9	< 0.5	< 0.5	< 0.5	2.0
SO4 [mg/L]	31	17	64	27	47
NO2 [as N mg/L]	< 0.03	< 0.03	< 0.03	< 0.03	0.06
NO3 [as N mg/L]	< 0.06	0.98	0.72	< 0.06	4.80
Hg (diss) [mg/L]	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Hardness [mg/L as CaCO3]	291	91.0	220	193	318
Ag (diss) [mg/L]	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Al (diss) [mg/L]	0.035	0.011	0.010	0.009	0.009
As (diss) [mg/L]	0.0005	< 0.0002	0.0003	< 0.0002	0.0013
B (diss) [mg/L]	0.908	0.092	0.213	0.078	0.895
Ba (diss) [mg/L]	0.194	0.0597	0.0673	0.0483	0.355
Be (diss) [mg/L]	0.000110	0.000110	0.000130	0.000100	0.000090
Bi (diss) [mg/L]	0.00004	0.00002	0.00002	0.00002	0.00001
Cd (diss) [mg/L]	< 0.000003	0.000040	0.000090	0.000050	0.000060
Ca (diss) [mg/L]	91.8	19.8	62.6	45.8	85.3
Cr (diss) [mg/L]	0.00133	< 0.00008	< 0.00008	< 0.00008	< 0.00008
Co (diss) [mg/L]	0.011940	0.000540	0.002100	0.000500	0.001750
Cu (diss) [mg/L]	0.0018	0.0014	0.0041	0.0010	0.0167
Fe (diss) [mg/L]	10.7	0.080	0.060	0.050	0.040
Li (diss) [mg/L]	0.0036	0.0054	0.0046	0.0034	0.0026
K (diss) [mg/L]	25.9	2.32	17.9	4.33	42.5
Mg (diss) [mg/L]	15.1	10.1	15.6	19.0	25.5
Mn (diss) [mg/L]	5.17	0.00950	1.67	0.146	0.824
Mo (diss) [mg/L]	0.00036	0.00066	0.00137	0.00451	0.00114
Na (diss) [mg/L]	31.8	10.1	15.2	9.46	31.6
Ni (diss) [mg/L]	0.0202	0.0160	0.0197	0.0164	0.0166
P (diss) [mg/L]	0.020	< 0.003	< 0.003	< 0.003	< 0.003
Pb (diss) [mg/L]	0.00036	< 0.00009	< 0.00009	< 0.00009	< 0.00009
Sb (diss) [mg/L]	0.0013	< 0.0009	< 0.0009	< 0.0009	< 0.0009
Se (diss) [mg/L]	0.00024	0.00013	0.00009	< 0.00004	0.00019
Si (diss) [mg/L]	4.68	8.15	5.50	4.17	2.98
Sn (diss) [mg/L]	0.00022	0.00021	0.00009	0.00006	0.00017
Sr (diss) [mg/L]	0.560	0.174	0.355	0.406	0.908
Tl (diss) [mg/L]	< 0.000005	0.000010	0.000030	0.000010	0.000060
Ti (diss) [mg/L]	0.00053	0.00021	0.00035	0.00026	0.00048
U (diss) [mg/L]	0.000600	0.000270	0.00245	0.00545	0.00377
V (diss) [mg/L]	0.00050	0.00032	0.00008	0.00101	0.00005
Zn (diss) [mg/L]	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Zr (diss) [mg/L]	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Benzene [ug/L]	< 0.5	---	---	---	---
1,4-Dichlorobenzene [µg/L]	< 0.5	---	---	---	---
Dichloromethane [µg/L]	< 0.5	---	---	---	---
Toluene [ug/L]	< 0.5	---	---	---	---
Vinyl Chloride [µg/L]	2.0	---	---	---	---
MEK [µg/L]	< 20	---	---	---	---

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LR Report : **CA14296-OCT22**

Analysis	9: MW4	10: MW6	11: MW5S	12: MW5D	13: MW9
Acetone [µg/L]	< 30	---	---	---	---

Analysis	14: MW42	15: MW-11	16: MW-10	17: MW-13	18: MW-9 DUP
Sample Date & Time	06-Oct-22 12:20	06-Oct-22 13:15	06-Oct-22 13:45	06-Oct-22 12:45	06-Oct-22 11:20
Temp Upon Receipt [°C]	11.0	11.0	11.0	11.0	11.0
Alkalinity [mg/L as CaCO3]	9	22	53	20	382
Conductivity [uS/cm]	29	64	681	50	849
pH [No unit]	6.33	6.65	6.11	6.57	7.12
TSS [mg/L]	5660	10300	355	329	4770
TDS [mg/L]	37	71	491	43	523
COD [mg/L]	15	< 8	30	< 8	24
Cl [mg/L]	1	4	56	< 1	19
NH3+NH4 [as N mg/L]	< 0.1	< 0.1	0.5	< 0.1	1.6
DOC [mg/L]	1	1	8	1	10
4AAP-Phenolics [mg/L]	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
TKN [as N mg/L]	< 0.5	< 0.5	0.8	< 0.5	2.1
SO4 [mg/L]	5	7	180	5	48
NO2 [as N mg/L]	< 0.03	< 0.03	< 0.03	< 0.03	0.12
NO3 [as N mg/L]	< 0.06	0.26	5.48	< 0.06	5.04
Hg (diss) [mg/L]	< 0.00001	< 0.00001	0.00002	< 0.00001	< 0.00001
Hardness [mg/L as CaCO3]	10.5	19.3	157	19.8	291
Ag (diss) [mg/L]	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Al (diss) [mg/L]	0.034	0.015	0.031	0.021	0.009
As (diss) [mg/L]	< 0.0002	< 0.0002	0.0010	< 0.0002	0.0011
B (diss) [mg/L]	0.070	0.037	0.836	0.070	0.765
Ba (diss) [mg/L]	0.00370	0.00694	0.136	0.00563	0.320
Be (diss) [mg/L]	0.000070	0.000080	0.000200	0.000040	0.000110
Bi (diss) [mg/L]	0.00001	0.00002	0.00002	0.00001	0.00005
Cd (diss) [mg/L]	< 0.000003	0.000030	0.000190	0.000040	0.000070
Ca (diss) [mg/L]	2.76	5.20	46.3	5.56	78.0
Cr (diss) [mg/L]	0.00011	< 0.00008	< 0.00008	< 0.00008	< 0.00008
Co (diss) [mg/L]	0.000360	0.000420	0.001620	0.000350	0.001430
Cu (diss) [mg/L]	0.0010	0.0011	0.0056	0.0008	0.0152
Fe (diss) [mg/L]	0.050	0.030	0.040	0.030	0.020
Li (diss) [mg/L]	0.0022	0.0030	0.0024	0.0022	0.0013
K (diss) [mg/L]	0.470	0.700	6.74	0.540	38.2
Mg (diss) [mg/L]	0.880	1.53	10.1	1.44	23.4
Mn (diss) [mg/L]	0.00747	0.00445	1.68	0.00469	0.773
Mo (diss) [mg/L]	0.00011	0.00082	0.00018	0.00035	0.00096
Na (diss) [mg/L]	1.83	4.66	58.0	1.84	29.3
Ni (diss) [mg/L]	0.0120	0.0117	0.0103	0.0078	0.0027
P (diss) [mg/L]	< 0.003	< 0.003	0.010	< 0.003	0.040

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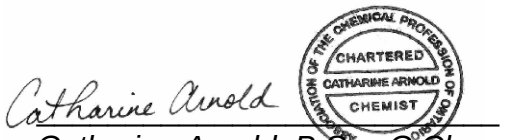
LR Report : **CA14296-OCT22**

Analysis	14: MW42	15: MW-11	16: MW-10	17: MW-13	18: MW-9 DUP
Pb (diss) [mg/L]	0.00016	< 0.00009	< 0.00009	< 0.00009	< 0.00009
Sb (diss) [mg/L]	< 0.0009	< 0.0009	< 0.0009	< 0.0009	0.0013
Se (diss) [mg/L]	0.00010	0.00011	0.00008	0.00010	0.00022
Si (diss) [mg/L]	5.71	7.12	6.67	5.96	2.54
Sn (diss) [mg/L]	0.00010	0.00008	0.00015	0.00009	0.00020
Sr (diss) [mg/L]	0.0295	0.0494	0.746	0.0478	0.832
Tl (diss) [mg/L]	< 0.000005	0.000010	0.000070	< 0.000005	0.000080
Ti (diss) [mg/L]	0.00129	0.00062	0.00030	0.00051	0.00088
U (diss) [mg/L]	0.000040	0.000140	0.000330	0.000160	0.00341
V (diss) [mg/L]	0.00010	< 0.00001	0.00005	< 0.00001	0.00008
Zn (diss) [mg/L]	0.005	< 0.002	0.003	< 0.002	0.004
Zr (diss) [mg/L]	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Benzene [ug/L]	---	---	---	---	---
1,4-Dichlorobenzene [µg/L]	---	---	---	---	---
Dichloromethane [µg/L]	---	---	---	---	---
Toluene [ug/L]	---	---	---	---	---
Vinyl Chloride [µg/L]	---	---	---	---	---
MEK [µg/L]	---	---	---	---	---
Acetone [µg/L]	---	---	---	---	---



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17-November-2022

Corporation of the Municipality of Calvin
Attn : Jacob Grove

1355 Peddlers Dr RR#2
Mattawa, ON
P0H 1V0, Canada

Phone: 705-744-2700
Fax:705-744-0309

Date Rec. : 07 October 2022
LR Report: **CA15105-OCT22**
Reference: NB102-192/15

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CERTIFICATE OF ANALYSIS
Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: SW3	7: SW3-DUP
Sample Date & Time					06-Oct-22 07:30	06-Oct-22 07:30
Temp Upon Receipt [°C]	---	---	---	---	11.0	11.0
BOD5 [mg/L]	12-Oct-22	17:30	17-Oct-22	16:11	< 4	< 4
Alkalinity [mg/L as CaCO3]	11-Oct-22	15:48	12-Oct-22	15:59	8	9
Conductivity [uS/cm]	11-Oct-22	15:48	12-Oct-22	15:59	28	27
pH [No unit]	11-Oct-22	15:48	12-Oct-22	15:59	7.00	7.06
TDS [mg/L]	13-Oct-22	15:36	14-Oct-22	14:37	< 30	< 30
TSS [mg/L]	12-Oct-22	14:01	18-Oct-22	11:49	3	4
DOC [mg/L]	13-Oct-22	19:34	14-Oct-22	14:58	6	5
Cl [mg/L]	17-Oct-22	13:54	22-Oct-22	09:53	< 1	< 1
NH3+NH4 [as N mg/L]	12-Oct-22	16:15	13-Oct-22	12:47	< 0.1	< 0.1
TKN [as N mg/L]	13-Oct-22	11:00	14-Oct-22	15:58	< 0.5	< 0.5
SO4 [mg/L]	14-Oct-22	14:16	23-Oct-22	09:57	3	3
NO2 [as N mg/L]	13-Oct-22	18:59	26-Oct-22	14:54	< 0.03	< 0.03
NO3 [as N mg/L]	13-Oct-22	18:59	26-Oct-22	14:54	< 0.06	< 0.06
4AAP-Phenolics [mg/L]	12-Oct-22	17:27	14-Oct-22	12:57	0.001	0.002
Hg (diss) [mg/L]	13-Oct-22	10:53	14-Oct-22	09:09	< 0.00001	< 0.00001
Hg (tot) [µg/L]	13-Oct-22	10:53	14-Oct-22	09:09	< 0.01	< 0.01
Hardness [mg/L as CaCO3]	18-Oct-22	01:53	18-Oct-22	14:49	11.6	11.8
Al (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	0.052	0.052
Al (diss)-0.2µm [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	0.017	0.017
Ag (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	< 0.00005	< 0.00005
As (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	< 0.0002	< 0.0002
B (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	0.006	0.006
Ba (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	0.0164	0.0166
Be (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	0.000012	< 0.000007
Bi (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	< 0.00001	< 0.00001
Cd (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	0.000006	0.000006
Ca (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	3.05	3.10
Cr (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	0.00029	0.00023

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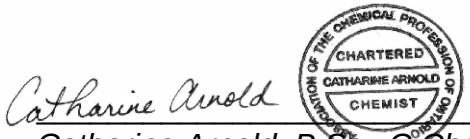
LR Report : **CA15105-OCT22**

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: SW3	7: SW3-DUP
Co (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	0.000044	0.000039
Cu (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	0.0007	0.0008
Fe (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	0.119	0.123
K (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	0.585	0.592
Li (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	0.0003	0.0003
Mg (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	0.976	0.981
Mn (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	0.00823	0.00855
Mo (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	< 0.00004	< 0.00004
Na (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	1.16	1.21
Ni (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	0.0004	0.0005
P (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	0.006	0.005
Pb (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	< 0.00009	< 0.00009
Sb (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	< 0.0009	< 0.0009
Se (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	0.00011	0.00006
Si (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	2.20	2.20
Sn (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	< 0.00006	< 0.00006
Sr (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	0.0246	0.0248
Tl (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	< 0.000005	< 0.000005
Ti (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	0.00194	0.00197
U (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	0.000012	0.000011
V (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	0.00020	0.00018
Zn (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	< 0.002	< 0.002
Zr (tot) [mg/L]	18-Oct-22	01:53	18-Oct-22	14:49	< 0.002	< 0.002



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31-May-2023

Corporation of the Municipality of Calvin
Attn : Jacob Grove

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P0H 1V0, Canada

Phone: 705-744-2700
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Date Rec. : 17 May 2023
LR Report: **CA15169-MAY23**
Reference: NB102-192/15

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CERTIFICATE OF ANALYSIS
Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: SW-4	7: SW-2	8: SW-3	9: SW-3-DUP
Sample Date & Time					16-May-23 07:45	16-May-23 08:00	16-May-23 08:20	16-May-23 08:20
Temp Upon Receipt [°C]	---	---	---	---	16.0	16.0	16.0	16.0
Alkalinity [mg/L as CaCO3]	17-May-23	15:48	18-May-23	12:52	11	17	7	6
Conductivity [uS/cm]	17-May-23	15:48	18-May-23	12:52	62	49	26	23
pH [No unit]	17-May-23	15:48	18-May-23	12:52	6.99	7.23	6.96	6.88
TDS [mg/L]	18-May-23	16:13	24-May-23	10:48	37	40	< 30	46
TSS [mg/L]	19-May-23	07:52	23-May-23	14:11	4	3	4	8
DOC [mg/L]	18-May-23	21:16	19-May-23	09:29	4	7	6	6
Cl [mg/L]	25-May-23	11:53	26-May-23	08:13	3	< 1	< 1	< 1
NH3+NH4 [as N mg/L]	17-May-23	18:00	19-May-23	13:37	< 0.1	< 0.1	< 0.1	< 0.1
SO4 [mg/L]	25-May-23	11:50	26-May-23	08:14	10	4	3	3
NO2 [as N mg/L]	20-May-23	08:43	29-May-23	15:14	< 0.03	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	20-May-23	08:43	29-May-23	15:14	< 0.06	< 0.06	< 0.06	< 0.06
TKN [as N mg/L]	17-May-23	20:05	20-May-23	10:45	< 0.5	< 0.5	< 0.5	< 0.5
BOD5 [mg/L]	17-May-23	17:57	23-May-23	11:11	< 4	< 4	< 4	< 4
4AAP-Phenolics [mg/L]	19-May-23	08:59	19-May-23	16:06	< 0.001	< 0.001	< 0.001	0.002

OnLine LIMS

0003350201

SGS Canada Inc.
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LR Report : **CA15169-MAY23**

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: SW-4	7: SW-2	8: SW-3	9: SW-3-DUP
Hg (tot) [mg/L]	18-May-23	10:06	18-May-23	11:38	0.00001	0.00001	< 0.00001	< 0.00001
Hg (diss) [mg/L]	18-May-23	10:06	18-May-23	11:38	0.00001	0.00001	< 0.00001	< 0.00001
Hardness [mg/L as CaCO3]	19-May-23	11:46	26-May-23	23:16	9.8	19.1	8.8	8.1
Ag (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Al (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	0.148	0.187	0.072	0.064
Al (diss)-0.2µm [mg/L]	19-May-23	11:46	26-May-23	23:16	0.109	0.088	0.037	0.038
As (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	< 0.0002	< 0.0002	< 0.0002	< 0.0002
B (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	0.062	0.005	0.004	0.003
Ba (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	0.0232	0.0210	0.0151	0.0143
Be (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	0.000016	0.000014	0.000009	0.000007
Bi (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Cd (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	0.000027	0.000005	0.000007	0.000008
Ca (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	2.70	4.48	2.30	2.13
Cr (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	0.00047	0.00072	0.00027	0.00023
Co (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	0.000259	0.000110	0.000056	0.000044
Cu (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	0.0010	0.0011	0.0007	0.0006
Fe (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	0.127	0.262	0.129	0.115
Pb (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	< 0.00009	< 0.00009	< 0.00009	< 0.00009
K (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	3.19	0.758	0.455	0.418
Li (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	0.0001	0.0004	0.0003	0.0003
Mg (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	0.739	1.92	0.742	0.672
Mn (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	0.0344	0.00577	0.0130	0.0120
Mo (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	0.00010	0.00017	0.00004	< 0.00004
Na (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	5.34	1.82	0.87	0.76
Ni (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	0.0003	0.0006	< 0.0001	< 0.0001
P (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	0.011	0.011	0.008	0.005
Sb (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	< 0.0009	< 0.0009	< 0.0009	< 0.0009
Se (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	0.00009	0.00009	0.00008	0.00006
Si (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	4.59	5.08	2.60	2.40

OnLine LIMS

0003350201

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LR Report : **CA15169-MAY23**

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: SW-4	7: SW-2	8: SW-3	9: SW-3-DUP
Sn (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	0.00015	0.00006	0.00007	< 0.00006
Sr (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	0.0265	0.0417	0.0209	0.0193
Tl (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	0.000007	0.000005	< 0.000005	< 0.000005
Ti (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	0.00433	0.00640	0.00217	0.00184
V (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	0.00060	0.00063	0.00019	0.00016
U (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	0.000015	0.000014	0.000019	0.000018
Zn (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	< 0.002	0.004	0.006	< 0.002
Zr (tot) [mg/L]	19-May-23	11:46	26-May-23	23:16	< 0.002	< 0.002	< 0.002	< 0.002

Catharine Arnold

CHARTERED CATHARINE ARNOLD CHEMIST — ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO

Catharine Arnold, B.Sc., C.Chem
Project Specialist,
Environment, Health & Safety

OnLine LIMS

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06-June-2023

Corporation of the Municipality of Calvin
Attn : Jacob Grove

1355 Peddlers Dr RR#2
Mattawa, ON
P0H 1V0, Canada

Phone: 705-744-2700
Fax:705-744-0309

Date Rec. : 17 May 2023
LR Report: **CA15168-MAY23**
Reference: NB102-192/15

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: MW7	7: MW8	8: MW6	9: MW10	10: MW11
Sample Date & Time					16-May-23 09:15	16-May-23 09:50	16-May-23 10:25	16-May-23 14:15	16-May-23 12:50
Temp Upon Receipt [°C]	---	---	---	---	16.0	16.0	16.0	16.0	16.0
Alkalinity [mg/L as CaCO3]	19-May-23	12:53	24-May-23	10:15	30	199	81	104	27
Conductivity [uS/cm]	19-May-23	12:53	24-May-23	10:15	122	668	223	591	130
pH [No unit]	19-May-23	12:53	24-May-23	10:15	6.28	6.60	6.66	6.19	6.39
TDS [mg/L]	18-May-23	16:13	24-May-23	10:48	107	409	137	329	97
Cl [mg/L]	25-May-23	10:02	25-May-23	12:51	6	37	10	42	9
NH3+NH4 [as N mg/L]	17-May-23	18:00	19-May-23	13:37	< 0.1	< 0.1	< 0.1	1.3	< 0.1
SO4 [mg/L]	25-May-23	10:00	25-May-23	12:51	15	84	15	110	17
NO2 [as N mg/L]	20-May-23	10:02	29-May-23	14:54	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	20-May-23	10:02	29-May-23	14:54	1.12	4.65	2.74	1.21	0.60
TKN [as N mg/L]	17-May-23	20:05	20-May-23	10:45	< 0.5	< 0.5	< 0.5	1.3	< 0.5
TSS [mg/L]	19-May-23	07:52	23-May-23	16:09	1220	229	1710	463	1200
COD [mg/L]	18-May-23	08:17	19-May-23	17:00	18	10	< 8	24	< 8
DOC [mg/L]	18-May-23	21:16	23-May-23	09:28	7	2	1	9	1
4AAP-Phenolics [mg/L]	19-May-23	08:59	19-May-23	16:05	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Hg (diss) [mg/L]	18-May-23	10:06	18-May-23	11:38	0.00002	0.00002	0.00006	0.00002	< 0.00001

OnLine LIMS

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LR Report : **CA15168-MAY23**

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: MW7	7: MW8	8: MW6	9: MW10	10: MW11
Hardness [mg/L as CaCO3]	24-May-23	18:16	25-May-23	17:37	41.2	285	82.7	146	45.5
Ag (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Al (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	0.044	0.002	0.005	0.017	0.011
As (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	< 0.0002	0.0003	< 0.0002	0.0011	< 0.0002
B (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	0.008	0.277	0.040	0.883	0.106
Ba (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	0.0103	0.164	0.0598	0.125	0.0130
Be (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	0.000017	0.000015	0.000009	0.000075	0.000035
Bi (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Cd (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	0.000011	0.000013	0.000013	0.000180	0.000014
Ca (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	6.11	85.4	19.6	42.5	12.6
Cr (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	0.00030	0.00066	0.00035	0.00034	0.00013
Co (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	0.000107	0.000147	0.000079	0.00148	0.000041
Cu (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	0.0013	0.0015	0.0005	0.0082	0.0005
Fe (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	0.023	0.012	< 0.007	0.010	0.011
K (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	0.677	20.6	2.81	6.32	0.938
Li (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	0.0081	0.0047	0.0016	0.0003	0.0015
Mg (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	6.29	17.5	8.23	9.60	3.42
Mn (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	0.00648	0.0249	0.00144	2.29	0.00120
Mo (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	0.00006	0.00015	0.00032	0.00033	0.00016
Na (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	7.55	19.9	11.1	55.8	4.61
Ni (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	0.0014	0.0011	0.0003	0.0026	0.0004
P (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	0.006	0.006	0.005	0.008	0.004
Pb (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009
Sb (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009
Se (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	0.00005	0.00011	< 0.00004	0.00023	0.00004
Si (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	8.84	8.35	6.59	6.38	8.39
Sn (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	0.00014	0.00007	0.00010	0.00015	0.00012
Sr (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	0.0492	0.590	0.161	0.623	0.110
Tl (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	0.000010	< 0.000005	0.000005	0.000055	< 0.000005
Ti (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	0.00100	< 0.00005	< 0.00005	0.00012	0.00011
U (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	0.000045	0.00189	0.000226	0.000396	0.000184

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LR Report : **CA15168-MAY23**

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: MW7	7: MW8	8: MW6	9: MW10	10: MW11
V (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	0.00094	0.00015	0.00033	0.00019	0.00016
Zn (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	< 0.002	0.003	< 0.002	0.004	< 0.002
Zr (diss) [mg/L]	24-May-23	18:16	25-May-23	17:37	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Benzene [ug/L]	20-May-23	08:59	25-May-23	13:40	---	---	---	---	---
1,4-Dichlorobenzene [µg/L]	20-May-23	08:59	25-May-23	13:40	---	---	---	---	---
Dichloromethane [µg/L]	20-May-23	08:59	25-May-23	13:40	---	---	---	---	---
Toluene [ug/L]	20-May-23	08:59	25-May-23	13:40	---	---	---	---	---
Vinyl Chloride [µg/L]	20-May-23	08:59	25-May-23	13:40	---	---	---	---	---
Acetone [µg/L]	20-May-23	08:59	25-May-23	13:40	---	---	---	---	---
MEK [µg/L]	20-May-23	08:59	25-May-23	13:40	---	---	---	---	---

Analysis	11: MW11-DUP	12: MW9	13: MW12	14: MW13	15: MW14	16: MW4	17: MW4-DUP	18: MW5D
Sample Date & Time	16-May-23 12:50	16-May-23 11:55	16-May-23 13:25	16-May-23 13:50	16-May-23 15:00	16-May-23 15:30	16-May-23 15:30	16-May-23 11:15
Temp Upon Receipt [°C]	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Alkalinity [mg/L as CaCO3]	28	284	10	13	8	474	449	175
Conductivity [uS/cm]	132	671	40	38	36	966	961	457
pH [No unit]	6.40	6.79	6.06	6.45	6.22	6.76	6.72	7.89
TDS [mg/L]	123	366	31	< 30	31	537	549	243
Cl [mg/L]	9	23	< 1	< 1	< 1	26	26	25
NH3+NH4 [as N mg/L]	< 0.1	0.2	< 0.1	< 0.1	< 0.1	21.2	21.2	< 0.1
SO4 [mg/L]	17	31	5	4	5	46	46	26
NO2 [as N mg/L]	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.04	0.05	< 0.03
NO3 [as N mg/L]	0.60	1.78	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
TKN [as N mg/L]	< 0.5	0.6	< 0.5	< 0.5	< 0.5	23.9	24.2	< 0.5
TSS [mg/L]	1730	5710	2570	1730	553	1130	1420	20
COD [mg/L]	< 8	18	15	< 8	< 8	142	140	< 8
DOC [mg/L]	2	9	1	1	2	19	17	1
4AAP-Phenolics [mg/L]	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.004	0.004	< 0.002

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LR Report : **CA15168-MAY23**

Analysis	11: MW11-DUP	12: MW9	13: MW12	14: MW13	15: MW14	16: MW4	17: MW4-DUP	18: MW5D
Hg (diss) [mg/L]	< 0.00001	0.00002	0.00001	0.00001	0.00002	0.00002	0.00002	< 0.00001
Hardness [mg/L as CaCO3]	44.9	240	13.6	16.0	12.2	326	336	228
Ag (diss) [mg/L]	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Al (diss) [mg/L]	0.009	0.004	0.020	0.056	0.020	0.014	0.013	0.002
As (diss) [mg/L]	< 0.0002	0.0011	< 0.0002	< 0.0002	< 0.0002	0.0006	0.0006	< 0.0002
B (diss) [mg/L]	0.080	0.717	0.033	0.013	0.008	1.73	1.92	0.061
Ba (diss) [mg/L]	0.0128	0.222	0.00406	0.00438	0.0111	0.176	0.167	0.0520
Be (diss) [mg/L]	0.000032	0.000013	0.000014	0.000010	0.000034	0.000008	0.000009	< 0.000007
Bi (diss) [mg/L]	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Cd (diss) [mg/L]	0.000007	0.000043	0.000010	0.000008	0.000041	< 0.000003	0.000003	0.000028
Ca (diss) [mg/L]	12.4	64.8	3.84	4.59	3.63	103	106	55.1
Cr (diss) [mg/L]	< 0.00008	0.00032	0.00023	0.00019	0.00017	0.00200	0.00204	< 0.00008
Co (diss) [mg/L]	0.000041	0.000960	0.000049	0.000055	0.000055	0.00686	0.00683	0.000043
Cu (diss) [mg/L]	0.0005	0.0119	0.0003	0.0004	0.0007	0.0004	0.0003	0.0003
Fe (diss) [mg/L]	0.007	< 0.007	0.011	0.033	0.020	0.593	0.582	< 0.007
K (diss) [mg/L]	0.926	28.8	0.420	0.507	0.360	28.7	29.4	4.95
Li (diss) [mg/L]	0.0014	0.0002	0.0001	0.0004	0.0005	0.0001	0.0001	0.0015
Mg (diss) [mg/L]	3.39	18.9	0.978	1.09	0.759	16.9	17.4	22.1
Mn (diss) [mg/L]	0.00080	0.791	0.00245	0.00179	0.00287	3.86	3.73	0.208
Mo (diss) [mg/L]	0.00016	0.00070	0.00008	0.00051	0.00014	0.00036	0.00046	0.00442
Na (diss) [mg/L]	4.50	37.5	1.82	1.67	1.76	41.5	42.4	9.64
Ni (diss) [mg/L]	0.0004	0.0018	< 0.0001	0.0001	0.0001	0.0033	0.0033	0.0001
P (diss) [mg/L]	< 0.003	0.004	< 0.003	0.005	0.004	0.019	0.015	< 0.003
Pb (diss) [mg/L]	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009
Sb (diss) [mg/L]	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009
Se (diss) [mg/L]	< 0.00004	0.00021	0.00005	< 0.00004	< 0.00004	0.00021	0.00022	< 0.00004
Si (diss) [mg/L]	8.35	3.35	6.14	4.63	4.97	5.09	5.21	4.90
Sn (diss) [mg/L]	< 0.00006	0.00017	0.00024	0.00009	< 0.00006	0.00023	0.00020	0.00007
Sr (diss) [mg/L]	0.107	0.760	0.0371	0.0334	0.0279	0.542	0.557	0.448
Tl (diss) [mg/L]	< 0.000005	0.000032	0.000006	< 0.000005	0.000006	< 0.000005	< 0.000005	0.000005
Ti (diss) [mg/L]	< 0.00005	< 0.00005	0.00049	0.00122	0.00084	0.00043	0.00039	< 0.00005

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SGS Canada Inc.
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Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

LR Report : **CA15168-MAY23**

Analysis	11: MW11-DUP	12: MW9	13: MW12	14: MW13	15: MW14	16: MW4	17: MW4-DUP	18: MW5D
U (diss) [mg/L]	0.000167	0.00191	0.000019	0.000101	0.000045	0.000226	0.000256	0.00519
V (diss) [mg/L]	0.00017	0.00025	0.00023	0.00026	0.00009	0.00091	0.00093	0.00092
Zn (diss) [mg/L]	< 0.002	0.002	< 0.002	< 0.002	0.002	< 0.002	< 0.002	< 0.002
Zr (diss) [mg/L]	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Benzene [ug/L]	---	---	---	---	---	2.3	2.3	---
1,4-Dichlorobenzene [µg/L]	---	---	---	---	---	4.3	4.4	---
Dichloromethane [µg/L]	---	---	---	---	---	< 0.5	< 0.5	---
Toluene [ug/L]	---	---	---	---	---	1.7	1.8	---
Vinyl Chloride [µg/L]	---	---	---	---	---	2.2	2.1	---
Acetone [µg/L]	---	---	---	---	---	< 30	< 30	---
MEK [µg/L]	---	---	---	---	---	< 20	< 20	---

Analysis	19: MW5S	20: MW3
Sample Date & Time	16-May-23 11:30	16-May-23 16:30
Temp Upon Receipt [°C]	16.0	16.0
Alkalinity [mg/L as CaCO3]	198	476
Conductivity [uS/cm]	580	1020
pH [No unit]	6.79	6.87
TDS [mg/L]	360	577
Cl [mg/L]	32	40
NH3+NH4 [as N mg/L]	0.3	6.6
SO4 [mg/L]	53	14
NO2 [as N mg/L]	< 0.03	0.06
NO3 [as N mg/L]	0.75	0.90
TKN [as N mg/L]	< 0.5	7.0
TSS [mg/L]	35	1970
COD [mg/L]	< 8	38
DOC [mg/L]	2	16

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LR Report : **CA15168-MAY23**

Analysis	19: MW5S	20: MW3
4AAP-Phenolics [mg/L]	< 0.002	< 0.002
Hg (diss) [mg/L]	0.00001	0.00002
Hardness [mg/L as CaCO3]	244	381
Ag (diss) [mg/L]	< 0.00005	< 0.00005
Al (diss) [mg/L]	0.003	0.009
As (diss) [mg/L]	0.0003	0.0017
B (diss) [mg/L]	0.227	0.685
Ba (diss) [mg/L]	0.0741	0.522
Be (diss) [mg/L]	0.000016	0.000021
Bi (diss) [mg/L]	< 0.00001	< 0.00001
Cd (diss) [mg/L]	0.000072	0.000089
Ca (diss) [mg/L]	70.7	92.7
Cr (diss) [mg/L]	0.00009	0.00064
Co (diss) [mg/L]	0.00126	0.00963
Cu (diss) [mg/L]	0.0031	0.0344
Fe (diss) [mg/L]	< 0.007	0.010
K (diss) [mg/L]	19.4	17.9
Li (diss) [mg/L]	0.0022	0.0008
Mg (diss) [mg/L]	16.4	36.4
Mn (diss) [mg/L]	1.55	5.88
Mo (diss) [mg/L]	0.00116	0.00135
Na (diss) [mg/L]	15.8	61.9
Ni (diss) [mg/L]	0.0017	0.0128
P (diss) [mg/L]	0.004	0.010
Pb (diss) [mg/L]	< 0.00009	0.00011
Sb (diss) [mg/L]	< 0.0009	< 0.0009
Se (diss) [mg/L]	0.00007	0.00040
Si (diss) [mg/L]	6.62	5.40
Sn (diss) [mg/L]	0.00010	0.00016
Sr (diss) [mg/L]	0.382	1.02
Tl (diss) [mg/L]	0.000010	< 0.000005

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LR Report : **CA15168-MAY23**

Analysis	19: MW5S	20: MW3
Ti (diss) [mg/L]	< 0.00005	0.00040
U (diss) [mg/L]	0.00199	0.00440
V (diss) [mg/L]	0.00025	0.00085
Zn (diss) [mg/L]	0.002	0.003
Zr (diss) [mg/L]	< 0.002	< 0.002
Benzene [ug/L]	---	---
1,4-Dichlorobenzene [µg/L]	---	---
Dichloromethane [µg/L]	---	---
Toluene [ug/L]	---	---
Vinyl Chloride [µg/L]	---	---
Acetone [µg/L]	---	---
MEK [µg/L]	---	---

Catharine Arnold

Catharine Arnold, B.Sc., C.Chem
Project Specialist,
Environment, Health & Safety

SGS Canada Inc.
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18-December-2023

Corporation of the Municipality of Calvin
Attn : Jacob Grove

1355 Peddlers Dr RR#2
Mattawa, ON
P0H 1V0, Canada

Phone: 705-744-2700
Fax:705-744-0309

Date Rec. : 15 November 2023
LR Report: **CA15212-NOV23**
Reference: NB102-192/15

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report - Revised

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: SW-4	7: SW-2	8: SW-3	9: SW-3-DUP
Sample Date & Time					14-Nov-23 07:45	14-Nov-23 08:00	14-Nov-23 08:15	14-Nov-23 08:15
Temperature Upon Receipt [°C]	---	---	---	---	16.0	16.0	16.0	16.0
Alkalinity [mg/L as CaCO3]	16-Nov-23	16:05	17-Nov-23	11:21	9	21	10	14
Conductivity [uS/cm]	16-Nov-23	16:05	17-Nov-23	11:21	112	59	30	38
pH [No unit]	16-Nov-23	16:05	17-Nov-23	11:21	6.78	7.03	6.59	7.06
Total Dissolved Solids [mg/L]	16-Nov-23	15:50	17-Nov-23	15:34	89	60	37	43
Total Suspended Solids [mg/L]	17-Nov-23	18:25	20-Nov-23	15:04	< 2	2	5	2
Dissolved Organic Carbon [mg/L]	17-Nov-23	09:14	21-Nov-23	10:02	4	6	4	4
Chloride [mg/L]	30-Nov-23	15:55	30-Nov-23	18:24	12	3	1	1
Ammonia+Ammonium (N) [as N mg/L]	17-Nov-23	15:57	20-Nov-23	14:26	< 0.1	< 0.1	< 0.1	< 0.1
Sulphate [mg/L]	30-Nov-23	15:36	30-Nov-23	18:24	23	5	8	9
Nitrite (as N) [mg/L]	19-Nov-23	16:32	27-Nov-23	15:19	< 0.03	< 0.03	< 0.03	< 0.03
Nitrate (as N) [mg/L]	19-Nov-23	16:32	27-Nov-23	15:19	< 0.06	0.12	0.07	0.07
Total Kjeldahl Nitrogen [as N mg/L]	16-Nov-23	19:57	20-Nov-23	13:50	< 0.5	< 0.5	0.8	0.5
Biochemical Oxygen Demand (BOD5) [mg/L]	16-Nov-23	15:37	21-Nov-23	11:25	< 4	< 4	< 4	< 4
4AAP-Phenolics [mg/L]	17-Nov-23	09:41	20-Nov-23	10:23	< 0.001	< 0.001	< 0.001	< 0.001
Mercury (total) [mg/L]	20-Nov-23	09:20	23-Nov-23	14:02	0.00001	0.00002	0.00002	< 0.00001
Mercury (dissolved) [mg/L]	20-Nov-23	09:20	23-Nov-23	14:02	0.00003	0.00002	0.00002	0.00003
Hardness [mg/L as CaCO3]	20-Nov-23	19:00	23-Nov-23	14:02	18.6	21.8	10.2	9.7
Silver (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	< 0.00005	< 0.00005	< 0.00005	< 0.00005

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LR Report : **CA15212-NOV23**

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: SW-4	7: SW-2	8: SW-3	9: SW-3-DUP
Aluminum (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	0.107	0.406	0.120	0.108
Aluminum (0.2µm) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	0.071	0.098	0.047	0.048
Arsenic (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	< 0.0002	0.0002	< 0.0002	< 0.0002
Boron (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	0.111	0.008	0.007	0.006
Barium (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	0.0385	0.0199	0.0176	0.0161
Beryllium (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	0.000016	0.000013	< 0.000007	< 0.000007
Bismuth (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Cadmium (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	0.000023	0.000003	0.000008	0.000009
Calcium (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	5.04	5.03	2.64	2.53
Chromium (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	0.00051	0.00143	0.00043	0.00041
Cobalt (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	0.000172	0.000226	0.000060	0.000050
Copper (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	0.0009	0.0012	0.0008	0.0006
Iron (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	0.076	0.717	0.232	0.223
Lead (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	< 0.00009	0.00019	< 0.00009	< 0.00009
Potassium (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	3.14	1.02	0.460	0.439
Lithium (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	0.0003	0.0006	0.0004	0.0004
Magnesium (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	1.47	2.23	0.867	0.822
Manganese (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	0.0165	0.0167	0.0133	0.0125
Molybdenum (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	0.00005	0.00018	0.00005	0.00004
Sodium (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	10.7	2.48	1.23	1.13
Nickel (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	0.0009	0.0010	0.0005	0.0005
Phosphorus (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	0.010	0.018	0.007	0.006
Antimony (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	< 0.0009	< 0.0009	< 0.0009	< 0.0009
Selenium (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	0.00004	0.00004	0.00006	< 0.00004
Silicon (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	5.42	7.29	2.86	2.78
Tin (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	< 0.00006	< 0.00006	< 0.00006	< 0.00006
Strontium (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	0.0471	0.0427	0.0231	0.0221
Thallium (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	< 0.000005	< 0.000005	< 0.000005	< 0.000005
Titanium (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	0.00193	0.0154	0.00351	0.00313
Vanadium (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	0.00032	0.00109	0.00026	0.00023
Uranium (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	0.000007	0.000019	0.000021	0.000020
Zinc (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	0.006	0.004	0.002	0.003
Zirconium (total) [mg/L]	20-Nov-23	19:00	23-Nov-23	14:02	< 0.002	< 0.002	< 0.002	< 0.002

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LR Report : **CA15212-NOV23**

.

Method Descriptions

Parameter	SGS Method Code	Reference Method Code
Alkalinity	ME-CA-[ENV]EWL-LAK-AN-006	SM 2320
Ammonia by SFA	ME-CA-[ENV]SFA-LAK-AN-007	SM 4500
Anions by discrete analyzer	ME-CA-[ENV]EWL-LAK-AN-026	US EPA 325.2
Anions by discrete analyzer	ME-CA-[ENV]EWL-LAK-AN-026	US EPA 375.4
Anions by IC	ME-CA-[ENV]IC-LAK-AN-001	EPA300/MA300-Ions1.3
Biochemical Oxygen Demand	ME-CA-[ENV]EWL-LAK-AN-007	SM 5210
Carbon by SFA	ME-CA-[ENV]SFA-LAK-AN-009	SM 5310
Conductivity	ME-CA-[ENV]EWL-LAK-AN-006	SM 2510
Mercury by CVAAS	ME-CA-[ENV]SPE-LAK-AN-004	EPA 7471A/SM 3112B
Metals in aqueous samples - ICP-MS	ME-CA-[ENV]SPE-LAK-AN-006	SM 3030/EPA 200.8
pH	ME-CA-[ENV]EWL-LAK-AN-006	SM 4500
Phenols by SFA	ME-CA-[ENV]SFA-LAK-AN-006	SM 5530B-D
Solids Analysis	ME-CA-[ENV]EWL-LAK-AN-005	SM 2540C
Suspended Solids	ME-CA-[ENV]EWL-LAK-AN-004	SM 2540D
Total Nitrogen	ME-CA-[ENV]SFA-LAK-AN-002	SM 4500-N C/4500-NO3- F

Chris Sullivan

CHARTERED
Christopher Sullivan
CHEMIST
THE CHEMICAL PROFESSION OF ONTARIO

Chris Sullivan, B.Sc., C.Chem
Project Specialist,
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OnLine LIMS

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LR Report : **CA15212-NOV23**

Quality Control Report

Inorganic Analysis														
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material			
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)		
							%		Low	High		Low	High	
Alkalinity - QCBatchID: EWL0398-NOV23														
Alkalinity	2	mg/L as Ca	< 2			0	20	100	80	120	NA			
Ammonia by SFA - QCBatchID: SKA0175-NOV23														
Ammonia+Ammonium (N)	0.1	as N mg/L	<0.1			3	10	95	90	110	93	75	125	
Anions by discrete analyzer - QCBatchID: DIO5082-NOV23														
Chloride	1	mg/L	<1			2	20	106	80	120	96	75	125	
Sulphate	2	mg/L	<2			1	20	108	80	120	106	75	125	
Anions by discrete analyzer - QCBatchID: DIO8037-NOV23														
Chloride	1	mg/L	<1			5	20	95	80	120	106	75	125	
Sulphate	2	mg/L	2			2	20	100	80	120	94	75	125	
Anions by discrete analyzer - QCBatchID: DIO8038-NOV23														
Chloride	1	mg/L	<1			2	20	106	80	120	98	75	125	
Sulphate	2	mg/L	2			7	20	103	80	120	99	75	125	
Anions by IC - QCBatchID: DIO0563-NOV23														
Nitrate (as N)	0.06	mg/L	<0.06			ND	20	101	90	110	103	75	125	
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	102	90	110	105	75	125	
Anions by IC - QCBatchID: DIO0566-NOV23														
Nitrate (as N)	0.06	mg/L	<0.06			0	20	101	90	110	87	75	125	
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	102	90	110	101	75	125	
Anions by IC - QCBatchID: DIO0572-NOV23														
Nitrate (as N)	0.06	mg/L	<0.06			ND	20	100	90	110	102	75	125	
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	102	90	110	102	75	125	
Biochemical Oxygen Demand - QCBatchID: BOD0032-NOV23														
Biochemical Oxygen Demand (BOD5)	2	mg/L	< 2			4	30	86	70	130	NV	70	130	
Carbon by SFA - QCBatchID: SKA0176-NOV23														
Dissolved Organic Carbon	1	mg/L	<1			2	20	96	90	110	92	75	125	
Carbon by SFA - QCBatchID: SKA0186-NOV23														
Dissolved Organic Carbon	1	mg/L	<1			ND	20	95	90	110	78	75	125	
Conductivity - QCBatchID: EWL0398-NOV23														
Conductivity	2	uS/cm	< 2			0	20	100	90	110	NA			
Mercury by CVAAS - QCBatchID: EHG0031-NOV23														
Mercury (total)	0.00001	mg/L	< 0.00001			ND	20	97	80	120	96	70	130	
Metals in aqueous samples - ICP-MS - QCBatchID: EMS0169-NOV23														
Aluminum (0.2µm)	0.001	mg/L	<0.001			1	20	99	90	110	119	70	130	
Aluminum (total)	0.001	mg/L	<0.001			1	20	99	90	110	119	70	130	
Antimony (total)	0.0009	mg/L	<0.0009			ND	20	107	90	110	93	70	130	

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LR Report : **CA15212-NOV23**

Inorganic Analysis														
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
							%		Low	High		Low	High
Arsenic (total)	0.0002	mg/L	<0.0002			20	20	101	90	110	106	70	130
Barium (total)	0.00008	mg/L	<0.00008			3	20	101	90	110	79	70	130
Beryllium (total)	0.000007	mg/L	<0.000007			16	20	100	90	110	104	70	130
Bismuth (total)	0.00001	mg/L	<0.00001			ND	20	109	90	110	105	70	130
Boron (total)	0.002	mg/L	<0.002			1	20	101	90	110	103	70	130
Cadmium (total)	0.000003	mg/L	<0.000003			0	20	108	90	110	115	70	130
Calcium (total)	0.01	mg/L	<0.01			0	20	98	90	110	110	70	130
Chromium (total)	0.00008	mg/L	<0.00008			5	20	102	90	110	98	70	130
Cobalt (total)	0.000004	mg/L	<0.000004			0	20	106	90	110	107	70	130
Copper (total)	0.0002	mg/L	<0.0002			0	20	104	90	110	105	70	130
Iron (total)	0.007	mg/L	<0.007			4	20	106	90	110	83	70	130
Lead (total)	0.00009	mg/L	<0.00009			4	20	107	90	110	99	70	130
Lithium (total)	0.0001	mg/L	<0.0001			0	20	100	90	110	111	70	130
Magnesium (total)	0.001	mg/L	<0.001			3	20	99	90	110	93	70	130
Manganese (total)	0.00001	mg/L	<0.00001			3	20	101	90	110	102	70	130
Molybdenum (total)	0.00004	mg/L	<0.00004			13	20	107	90	110	109	70	130
Nickel (total)	0.0001	mg/L	<0.0001			5	20	104	90	110	103	70	130
Phosphorus (total)	0.003	mg/L	<0.003			ND	20	96	90	110	NV	70	130
Potassium (total)	0.009	mg/L	<0.009			2	20	96	90	110	94	70	130
Selenium (total)	0.00004	mg/L	<0.00004			ND	20	104	90	110	115	70	130
Silicon (total)	0.02	mg/L	<0.02			2	20	97	90	110	NV	70	130
Silver (total)	0.00005	mg/L	<0.00005			ND	20	108	90	110	86	70	130
Sodium (total)	0.01	mg/L	<0.01			1	20	103	90	110	101	70	130
Strontium (total)	0.00008	mg/L	<0.00008			1	20	99	90	110	75	70	130
Thallium (total)	0.000005	mg/L	<0.000005			6	20	106	90	110	106	70	130
Tin (total)	0.00006	mg/L	<0.00006			6	20	102	90	110	NV	70	130
Titanium (total)	0.00007	mg/L	<0.00005			11	20	96	90	110	NV	70	130
Uranium (total)	0.000002	mg/L	<0.000002			0	20	105	90	110	107	70	130
Vanadium (total)	0.00001	mg/L	<0.00001			18	20	102	90	110	111	70	130
Zinc (total)	0.002	mg/L	<0.002			4	20	107	90	110	96	70	130
Zirconium (total)	0.002	mg/L	<0.002			ND	20	100	90	110	NV	70	130
pH - QCBatchID: EWL0398-NOV23													
pH	0.05	No unit	NA			0		101			NA		
Phenols by SFA - QCBatchID: SKA0173-NOV23													
4AAP-Phenolics	0.001	mg/L	<0.001			ND	10	103	80	120	96	75	125
Solids Analysis - QCBatchID: EWL0386-NOV23													
Total Dissolved Solids	30	mg/L	<30			1	20	97	80	120	NA		
Suspended Solids - QCBatchID: EWL0438-NOV23													
Total Suspended Solids	2	mg/L	< 2			2	10	96	90	110	NA		

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LR Report : **CA15212-NOV23**

Inorganic Analysis														
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material			
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)		
							%		Low	High		Low	High	
Total Nitrogen - QCBatchID: SKA0167-NOV23														
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			ND	10	96	90	110	83	75	125	
Total Nitrogen - QCBatchID: SKA0177-NOV23														
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			1	10	100	90	110	97	75	125	

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18-December-2023

Corporation of the Municipality of Calvin
Attn : Jacob Daniel

1355 Peddlers Dr RR#2
Mattawa, ON
P0H 1V0, Canada

Phone: 705-744-2700
Fax:705-744-0309

Date Rec. : 15 November 2023
LR Report: **CA15213-NOV23**
Reference: NB102-192/15

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: MW3	7: MW8	8: MW7	9: MW14	10: MW6	11: MW4
Sample Date & Time					14-Nov-23 09:00	14-Nov-23 09:25	14-Nov-23 09:45	14-Nov-23 10:30	14-Nov-23 11:05	14-Nov-23 15:40
Temperature Upon Receipt [°C]	---	---	---	---	16.0	16.0	16.0	16.0	16.0	16.0
Alkalinity [mg/L as CaCO3]	16-Nov-23	16:05	17-Nov-23	11:22	267	159	74	26	100	358
Conductivity [uS/cm]	16-Nov-23	16:05	17-Nov-23	11:22	587	473	228	72	247	742
pH [No unit]	16-Nov-23	16:05	17-Nov-23	11:22	7.31	7.21	6.64	6.79	7.21	7.06
Total Dissolved Solids [mg/L]	16-Nov-23	15:50	17-Nov-23	15:35	331	283	183	66	151	397
Chloride [mg/L]	30-Nov-23	15:55	30-Nov-23	18:24	15	32	6	< 1	4	11
Ammonia+Ammonium (N) [as N mg/L]	17-Nov-23	15:57	21-Nov-23	10:35	3.1	< 0.1	< 0.1	< 0.1	< 0.1	12.9
Sulphate [mg/L]	30-Nov-23	15:36	30-Nov-23	18:24	16	42	37	35	17	30
Nitrite (as N) [mg/L]	19-Nov-23	16:32	27-Nov-23	15:20	0.09	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Nitrate (as N) [mg/L]	19-Nov-23	16:32	27-Nov-23	15:20	3.42	1.24	0.38	0.07	1.07	< 0.06
Total Kjeldahl Nitrogen [as N mg/L]	16-Nov-23	19:57	20-Nov-23	13:50	3.0	< 0.5	0.6	0.6	< 0.5	15.2
Total Suspended Solids [mg/L]	17-Nov-23	18:25	20-Nov-23	16:04	1260	7	2900	134	2080	624
Chemical Oxygen Demand [mg/L]	17-Nov-23	09:33	17-Nov-23	15:08	18	< 8	19	< 8	< 8	124
Dissolved Organic Carbon [mg/L]	17-Nov-23	09:14	21-Nov-23	10:02	7	2	6	1	1	12
4AAP-Phenolics [mg/L]	17-Nov-23	09:41	20-Nov-23	10:23	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.003
Mercury (dissolved) [mg/L]	21-Nov-23	14:38	22-Nov-23	17:21	< 0.00001	< 0.00001	0.00003	< 0.00001	< 0.00001	< 0.00001
Hardness (dissolved) [mg/L as CaCO3]	20-Nov-23	12:53	23-Nov-23	13:54	200	172	85.2	23.8	117	260
Silver (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Aluminum (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	0.005	0.002	0.008	0.005	5.66	0.013

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LR Report : **CA15213-NOV23**

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: MW3	7: MW8	8: MW7	9: MW14	10: MW6	11: MW4
Arsenic (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	0.0008	< 0.0002	< 0.0002	< 0.0002	0.0015	0.0004
Boron (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	0.376	0.154	0.018	0.004	0.032	0.748
Barium (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	0.250	0.0828	0.0512	0.0197	0.310	0.132
Beryllium (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	0.000022	0.000020	0.000044	0.000024	0.000729	0.000014
Bismuth (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Cadmium (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	0.000052	0.000017	0.000034	0.000103	0.000109	0.000005
Calcium (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	48.6	52.6	17.9	6.51	27.4	82.3
Chromium (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	0.00028	0.00014	0.00010	0.00021	0.00660	0.00163
Cobalt (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	0.00451	0.000085	0.000894	0.000063	0.00821	0.00887
Copper (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	0.0146	0.0015	0.0014	0.0010	0.0185	0.0004
Iron (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	< 0.007	< 0.007	0.007	< 0.007	4.97	0.077
Potassium (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	10.5	11.6	1.30	0.769	3.45	20.5
Lithium (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	0.0008	0.0036	0.0107	0.0014	0.0092	0.0001
Magnesium (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	19.1	9.83	9.86	1.84	11.8	13.2
Manganese (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	2.72	0.0631	0.124	0.00500	0.300	3.63
Molybdenum (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	0.00085	0.00014	0.00008	0.00030	0.00037	0.00027
Sodium (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	30.1	18.1	8.16	2.17	9.27	23.6
Nickel (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	0.0064	0.0006	0.0074	0.0003	0.0084	0.0028
Phosphorus (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	< 0.003	< 0.003	< 0.003	< 0.003	3.36	< 0.003
Lead (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	< 0.00009	< 0.00009	< 0.00009	< 0.00009	0.00436	< 0.00009
Antimony (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009
Selenium (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	0.00030	0.00020	0.00016	0.00013	0.00011	0.00022
Silicon (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	5.18	6.75	13.2	6.85	13.3	5.05
Tin (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	0.00006	< 0.00006	< 0.00006	< 0.00006	0.00010	0.00009
Strontium (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	0.570	0.419	0.180	0.0461	0.203	0.490
Thallium (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	0.000010	0.000007	0.000013	0.000013	0.000041	< 0.000005
Titanium (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	< 0.00007	< 0.00007	< 0.00007	< 0.00007	0.05925	< 0.00007
Uranium (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	0.002123	0.000947	0.000152	0.000051	0.001463	0.000068
Vanadium (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	0.00062	0.00012	0.00045	0.00008	0.01215	0.00065
Zinc (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	< 0.002	0.004	0.003	0.007	0.029	< 0.002
Zirconium (dissolved) [mg/L]	20-Nov-23	12:53	23-Nov-23	13:54	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Benzene [ug/L]	20-Nov-23	07:31	21-Nov-23	12:45	---	---	---	---	---	0.7
1,4-Dichlorobenzene [ug/L]	20-Nov-23	07:31	21-Nov-23	12:45	---	---	---	---	---	1.0
Dichloromethane [ug/L]	20-Nov-23	07:31	21-Nov-23	12:45	---	---	---	---	---	< 0.5
Toluene [ug/L]	20-Nov-23	07:31	21-Nov-23	12:45	---	---	---	---	---	< 0.5
Vinyl Chloride [ug/L]	20-Nov-23	07:31	21-Nov-23	12:45	---	---	---	---	---	4.3

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LR Report : **CA15213-NOV23**

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: MW3	7: MW8	8: MW7	9: MW14	10: MW6	11: MW4
Acetone [ug/L]	20-Nov-23	07:31	21-Nov-23	12:45	---	---	---	---	---	< 30
Methyl ethyl ketone [ug/L]	20-Nov-23	07:31	21-Nov-23	12:45	---	---	---	---	---	< 20

Analysis	12: MW4-DUP	13: MW13	14: MW12	15: MW11	16: MW9	17: MW5D	18: MW55	19: MW12-DUP
Sample Date & Time	14-Nov-23 15:40	14-Nov-23 14:30	14-Nov-23 14:00	14-Nov-23 13:30	14-Nov-23 12:50	14-Nov-23 12:00	14-Nov-23 12:15	14-Nov-23 14:00
Temperature Upon Receipt [°C]	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Alkalinity [mg/L as CaCO3]	391	23	15	23	247	177	216	17
Conductivity [uS/cm]	748	59	46	158	578	453	674	50
pH [No unit]	7.09	6.69	6.61	6.60	7.30	8.00	7.16	6.67
Total Dissolved Solids [mg/L]	403	57	49	120	360	246	389	46
Chloride [mg/L]	10	< 1	< 1	15	6	22	39	< 1
Ammonia+Ammonium (N) [as N mg/L]	13.0	< 0.1	< 0.1	< 0.1	0.2	< 0.1	0.3	< 0.1
Sulphate [mg/L]	30	14	4	20	36	28	69	4
Nitrite (as N) [mg/L]	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Nitrate (as N) [mg/L]	< 0.06	< 0.06	0.06	1.27	2.58	< 0.06	1.17	< 0.06
Total Kjeldahl Nitrogen [as N mg/L]	15.4	< 0.5	< 0.5	0.6	0.9	< 0.5	< 0.5	< 0.5
Total Suspended Solids [mg/L]	692	1020	1760	870	7110	46	486	761
Chemical Oxygen Demand [mg/L]	120	< 8	10	8	17	8	12	< 8
Dissolved Organic Carbon [mg/L]	12	1	1	1	6	1	3	1
4AAP-Phenolics [mg/L]	0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Mercury (dissolved) [mg/L]	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Hardness (dissolved) [mg/L as CaCO3]	264	21.1	10.2	37.8	220	213	274	10.3
Silver (dissolved) [mg/L]	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Aluminum (dissolved) [mg/L]	0.012	0.011	0.015	0.007	0.004	0.395	0.412	0.015
Arsenic (dissolved) [mg/L]	0.0004	< 0.0002	< 0.0002	< 0.0002	0.0008	< 0.0002	0.0006	< 0.0002
Boron (dissolved) [mg/L]	0.744	0.005	0.003	0.078	0.681	0.069	0.242	0.009
Barium (dissolved) [mg/L]	0.143	0.00586	0.00425	0.0157	0.216	0.0642	0.0990	0.00451
Beryllium (dissolved) [mg/L]	0.000013	0.000021	0.000023	0.000039	0.000012	0.000096	0.000058	0.000021
Bismuth (dissolved) [mg/L]	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Cadmium (dissolved) [mg/L]	0.000004	0.000016	0.000006	0.000015	0.000022	0.000025	0.000101	< 0.000003
Calcium (dissolved) [mg/L]	84.0	5.92	2.82	10.3	61.6	51.3	78.8	2.87
Chromium (dissolved) [mg/L]	0.00161	0.00015	0.00015	0.00012	0.00029	0.00056	0.00095	0.00015
Cobalt (dissolved) [mg/L]	0.00782	0.000027	0.000036	0.000039	0.000722	0.000339	0.00483	0.000035

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LR Report : **CA15213-NOV23**

Analysis	12: MW4-DUP	13: MW13	14: MW12	15: MW11	16: MW9	17: MW5D	18: MW55	19: MW12-DUP
Copper (dissolved) [mg/L]	0.0004	0.0003	0.0003	0.0006	0.0092	0.0018	0.0070	0.0003
Iron (dissolved) [mg/L]	0.094	0.012	0.011	0.011	0.007	0.650	0.568	< 0.007
Potassium (dissolved) [mg/L]	21.0	0.572	0.383	0.920	29.0	4.98	19.5	0.394
Lithium (dissolved) [mg/L]	0.0001	0.0005	0.0001	0.0015	< 0.0001	0.0026	0.0032	0.0001
Magnesium (dissolved) [mg/L]	13.1	1.53	0.756	2.91	16.0	20.7	18.9	0.762
Manganese (dissolved) [mg/L]	3.50	0.00068	0.00184	0.00343	0.619	0.262	2.28	0.00168
Molybdenum (dissolved) [mg/L]	0.00027	0.00032	0.00005	0.00013	0.00077	0.00371	0.00146	0.00006
Sodium (dissolved) [mg/L]	23.7	2.00	1.74	7.08	16.9	9.19	17.0	1.80
Nickel (dissolved) [mg/L]	0.0027	< 0.0001	< 0.0001	0.0005	0.0011	0.0006	0.0027	0.0001
Phosphorus (dissolved) [mg/L]	< 0.003	0.018	0.018	0.018	0.016	0.048	0.176	0.009
Lead (dissolved) [mg/L]	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	0.00039	0.00034	< 0.00009
Antimony (dissolved) [mg/L]	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009
Selenium (dissolved) [mg/L]	0.00023	0.00006	< 0.00004	0.00006	0.00011	< 0.00004	0.00009	< 0.00004
Silicon (dissolved) [mg/L]	5.19	6.58	5.88	7.71	3.14	5.30	6.82	6.07
Tin (dissolved) [mg/L]	0.00009	< 0.00006	< 0.00006	< 0.00006	< 0.00006	0.00010	0.00008	< 0.00006
Strontium (dissolved) [mg/L]	0.511	0.0513	0.0328	0.106	0.642	0.484	0.475	0.0340
Thallium (dissolved) [mg/L]	0.000006	0.000005	< 0.000005	< 0.000005	0.000036	< 0.000005	0.000010	0.000007
Titanium (dissolved) [mg/L]	< 0.00007	0.00012	0.00011	0.00010	0.00014	0.03529	0.02270	0.00011
Uranium (dissolved) [mg/L]	0.000067	0.000150	0.000018	0.000153	0.002067	0.005938	0.003250	0.000018
Vanadium (dissolved) [mg/L]	0.00065	0.00014	0.00015	0.00017	0.00024	0.00196	0.00157	0.00015
Zinc (dissolved) [mg/L]	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.003	0.003	< 0.002
Zirconium (dissolved) [mg/L]	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Benzene [ug/L]	0.8	---	---	---	---	---	---	---
1,4-Dichlorobenzene [ug/L]	1.0	---	---	---	---	---	---	---
Dichloromethane [ug/L]	< 0.5	---	---	---	---	---	---	---
Toluene [ug/L]	< 0.5	---	---	---	---	---	---	---
Vinyl Chloride [ug/L]	4.5	---	---	---	---	---	---	---
Acetone [ug/L]	< 30	---	---	---	---	---	---	---
Methyl ethyl ketone [ug/L]	< 20	---	---	---	---	---	---	---

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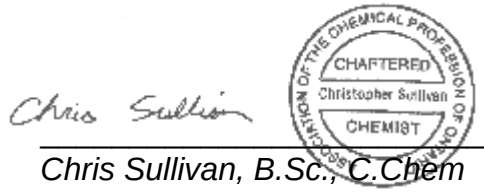
LR Report : **CA15213-NOV23**

Method Descriptions

Parameter	SGS Method Code	Reference Method Code
Alkalinity	ME-CA-[ENV]EWL-LAK-AN-006	SM 2320
Ammonia by SFA	ME-CA-[ENV]SFA-LAK-AN-007	SM 4500
Anions by discrete analyzer	ME-CA-[ENV]EWL-LAK-AN-026	US EPA 325.2
Anions by discrete analyzer	ME-CA-[ENV]EWL-LAK-AN-026	US EPA 375.4
Anions by IC	ME-CA-[ENV]IC-LAK-AN-001	EPA300/MA300-Ions1.3
Carbon by SFA	ME-CA-[ENV]SFA-LAK-AN-009	SM 5310
Chemical Oxygen Demand	ME-CA-[ENV]EWL-LAK-AN-009	HACH 8000
Conductivity	ME-CA-[ENV]EWL-LAK-AN-006	SM 2510
Mercury by CVAAS	ME-CA-[ENV]SPE-LAK-AN-004	EPA 7471A/SM 3112B
Metals in aqueous samples - ICP-MS	ME-CA-[ENV]SPE-LAK-AN-006	SM 3030/EPA 200.7
Metals in aqueous samples - ICP-MS	ME-CA-[ENV]SPE-LAK-AN-006	SM 3030/EPA 200.8
pH	ME-CA-[ENV]EWL-LAK-AN-006	SM 4500
Phenols by SFA	ME-CA-[ENV]SFA-LAK-AN-006	SM 5530B-D
Solids Analysis	ME-CA-[ENV]EWL-LAK-AN-005	SM 2540C
Suspended Solids	ME-CA-[ENV]EWL-LAK-AN-004	SM 2540D
Total Nitrogen	ME-CA-[ENV]SFA-LAK-AN-002	SM 4500-N C/4500-NO3- F
Volatile Organics	ME-CA-[ENV]GC-LAK-AN-004	EPA 5030B/8260C



Chris Sullivan, B.Sc., C.Chem
Project Specialist,
Environment, Health & Safety

OnLine LIMS

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LR Report : **CA15213-NOV23**

Quality Control Report

Organic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
							%		Low	High		Low	High
Volatile Organics - QCBatchID: GCM0302-NOV23													
1,4-Dichlorobenzene	0.5	ug/L	<0.5			ND	30	98	60	130	103	50	140
Acetone	30	ug/L	<30			ND	30	83	50	140	88	50	140
Benzene	0.5	ug/L	<0.5			ND	30	97	60	130	99	50	140
Dichloromethane	0.5	ug/L	<0.5			ND	30	95	60	130	96	50	140
Methyl ethyl ketone	20	ug/L	<20			ND	30	92	60	130	98	50	140
Toluene	0.5	ug/L	<0.5			ND	30	96	60	130	100	50	140
Vinyl Chloride	0.2	ug/L	<0.2			ND	30	90	50	140	91	50	140

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
							%		Low	High		Low	High
Alkalinity - QCBatchID: EWL0398-NOV23													
Alkalinity	2	mg/L as Ca	< 2			0	20	100	80	120	NA		
Ammonia by SFA - QCBatchID: SKA0175-NOV23													
Ammonia+Ammonium (N)	0.1	as N mg/L	<0.1			3	10	95	90	110	93	75	125
Ammonia by SFA - QCBatchID: SKA0182-NOV23													
Ammonia+Ammonium (N)	0.1	as N mg/L	<0.1			ND	10	106	90	110	91	75	125
Anions by discrete analyzer - QCBatchID: DIO5082-NOV23													
Chloride	1	mg/L	<1			2	20	106	80	120	96	75	125
Sulphate	2	mg/L	<2			1	20	108	80	120	106	75	125
Anions by discrete analyzer - QCBatchID: DIO8037-NOV23													
Chloride	1	mg/L	<1			5	20	95	80	120	106	75	125
Sulphate	2	mg/L	2			2	20	100	80	120	94	75	125
Anions by discrete analyzer - QCBatchID: DIO8038-NOV23													
Chloride	1	mg/L	<1			2	20	106	80	120	98	75	125
Sulphate	2	mg/L	2			7	20	103	80	120	99	75	125
Anions by IC - QCBatchID: DIO0563-NOV23													
Nitrate (as N)	0.06	mg/L	<0.06			ND	20	101	90	110	103	75	125
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	102	90	110	105	75	125
Anions by IC - QCBatchID: DIO0566-NOV23													
Nitrate (as N)	0.06	mg/L	<0.06			0	20	101	90	110	87	75	125
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	102	90	110	101	75	125
Anions by IC - QCBatchID: DIO0572-NOV23													
Nitrate (as N)	0.06	mg/L	<0.06			ND	20	100	90	110	102	75	125

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LR Report : **CA15213-NOV23**

Inorganic Analysis														
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material			
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
							%		Low	High		Low	High
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	102	90	110	102	75	125
Anions by IC - QCBatchID: DIO0573-NOV23													
Nitrate (as N)	0.06	mg/L	<0.06			0	20	100	90	110	87	75	125
Nitrite (as N)	0.03	mg/L	<0.03			2	20	101	90	110	99	75	125
Carbon by SFA - QCBatchID: SKA0176-NOV23													
Dissolved Organic Carbon	1	mg/L	<1			2	20	96	90	110	92	75	125
Carbon by SFA - QCBatchID: SKA0186-NOV23													
Dissolved Organic Carbon	1	mg/L	<1			ND	20	95	90	110	78	75	125
Chemical Oxygen Demand - QCBatchID: EWL0417-NOV23													
Chemical Oxygen Demand	8	mg/L	<8			6	20	104	80	120	100	75	125
Chemical Oxygen Demand - QCBatchID: EWL0420-NOV23													
Chemical Oxygen Demand	8	mg/L	<8			ND	20	102	80	120	96	75	125
Conductivity - QCBatchID: EWL0398-NOV23													
Conductivity	2	uS/cm	< 2			0	20	100	90	110	NA		
Mercury by CVAAS - QCBatchID: EHG0030-NOV23													
Mercury (dissolved)	0.00001	mg/L	< 0.00001			1	20	88	80	120	97	70	130
Mercury by CVAAS - QCBatchID: EHG0031-NOV23													
Mercury (dissolved)	0.00001	mg/L	< 0.00001			ND	20	97	80	120	96	70	130
Metals in aqueous samples - ICP-MS - QCBatchID: EMS0162-NOV23													
Aluminum (dissolved)	0.001	mg/L	<0.001			1	20	99	90	110	109	70	130
Antimony (dissolved)	0.0009	mg/L	<0.0009			2	20	107	90	110	71	70	130
Arsenic (dissolved)	0.0002	mg/L	<0.0002			1	20	101	90	110	100	70	130
Barium (dissolved)	0.00008	mg/L	<0.00008			1	20	101	90	110	100	70	130
Beryllium (dissolved)	0.000007	mg/L	<0.000007			ND	20	100	90	110	97	70	130
Bismuth (dissolved)	0.00001	mg/L	<0.00001			ND	20	93	90	110	84	70	130
Boron (dissolved)	0.002	mg/L	<0.002			0	20	101	90	110	103	70	130
Cadmium (dissolved)	0.000003	mg/L	<0.000003			ND	20	103	90	110	106	70	130
Calcium (dissolved)	0.01	mg/L	<0.01			1	20	93	90	110	90	70	130
Chromium (dissolved)	0.00008	mg/L	<0.00008			0	20	102	90	110	108	70	130
Cobalt (dissolved)	0.000004	mg/L	<0.000004			6	20	99	90	110	95	70	130
Copper (dissolved)	0.0002	mg/L	<0.0002			0	20	100	90	110	92	70	130
Iron (dissolved)	0.007	mg/L	<0.007			ND	20	102	90	110	80	70	130
Lead (dissolved)	0.00009	mg/L	<0.00009			ND	20	102	90	110	101	70	130
Lithium (dissolved)	0.0001	mg/L	<0.0001			3	20	100	90	110	80	70	130
Magnesium (dissolved)	0.001	mg/L	<0.001			2	20	94	90	110	88	70	130
Manganese (dissolved)	0.00001	mg/L	<0.00001			1	20	101	90	110	102	70	130
Molybdenum (dissolved)	0.00004	mg/L	<0.00004			1	20	100	90	110	84	70	130
Nickel (dissolved)	0.0001	mg/L	<0.0001			5	20	99	90	110	97	70	130
Phosphorus (dissolved)	0.003	mg/L	<0.003			0	20	93	90	110	NV	70	130

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LR Report : **CA15213-NOV23**

Inorganic Analysis														
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
							%		Low	High		Low	High
Potassium (dissolved)	0.009	mg/L	<0.009			0	20	96	90	110	81	70	130
Selenium (dissolved)	0.00004	mg/L	<0.00004			4	20	104	90	110	86	70	130
Silicon (dissolved)	0.02	mg/L	<0.02			1	20	93	90	110	NV	70	130
Silver (dissolved)	0.00005	mg/L	<0.00005			ND	20	102	90	110	84	70	130
Sodium (dissolved)	0.01	mg/L	<0.01			2	20	91	90	110	90	70	130
Strontium (dissolved)	0.00008	mg/L	<0.00008			0	20	99	90	110	97	70	130
Thallium (dissolved)	0.000005	mg/L	<0.000005			ND	20	94	90	110	95	70	130
Tin (dissolved)	0.00006	mg/L	<0.00006			ND	20	97	90	110	NV	70	130
Titanium (dissolved)	0.00007	mg/L	<0.00005			7	20	96	90	110	NV	70	130
Uranium (dissolved)	0.000002	mg/L	<0.000002			8	20	99	90	110	86	70	130
Vanadium (dissolved)	0.00001	mg/L	<0.00001			0	20	102	90	110	81	70	130
Zinc (dissolved)	0.002	mg/L	<0.002			ND	20	102	90	110	111	70	130
Zirconium (dissolved)	0.002	mg/L	<0.002			ND	20	96	90	110	NV	70	130
pH - QCBatchID: EWL0398-NOV23													
pH	0.05	No unit	NA			0		101			NA		
Phenols by SFA - QCBatchID: SKA0173-NOV23													
4AAP-Phenolics	0.002	mg/L	<0.002			ND	10	103	80	120	96	75	125
Solids Analysis - QCBatchID: EWL0386-NOV23													
Total Dissolved Solids	30	mg/L	<30			1	20	97	80	120	NA		
Solids Analysis - QCBatchID: EWL0403-NOV23													
Total Dissolved Solids	30	mg/L	<30			0	20	102	80	120	NA		
Suspended Solids - QCBatchID: EWL0438-NOV23													
Total Suspended Solids	2	mg/L	< 2			2	10	96	90	110	NA		
Suspended Solids - QCBatchID: EWL0444-NOV23													
Total Suspended Solids	2	mg/L	< 2			2	10	93	90	110	NA		
Suspended Solids - QCBatchID: EWL0448-NOV23													
Total Suspended Solids	2	mg/L	< 2			2	10	95	90	110	NA		
Total Nitrogen - QCBatchID: SKA0167-NOV23													
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			ND	10	96	90	110	83	75	125
Total Nitrogen - QCBatchID: SKA0177-NOV23													
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			1	10	100	90	110	97	75	125