FINAL

2024 Annual Monitoring Report

Croft Waste Disposal Site
Magnetawan, Ontario

Prepared for:

Municipality of Magnetawan
4304 Highway 520
Magnetawan, Ontario P0A 1P0

February 28, 2025

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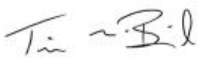

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Director, Northern Ontario

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1.0 INTRODUCTION

Pinchin Ltd. (Pinchin) was retained by the Corporation of the Municipality of Magnetawan (Client) to prepare the 2024 annual groundwater and surface water monitoring report for the Croft Waste Disposal Site (the Site). The following report provides a detailed evaluation and summary of the 2024 monitoring data and was completed to constitute the 2024 Annual Monitoring Report. This document includes but is not limited to a summary of historical geochemical data, a review/evaluation of the historical and current geochemical data (as well as groundwater flow) and a summary of geochemical trends.

The purpose of completing the monitoring program was to assess the hydraulic media for contaminants of concern as a compliance requirement under the Site Certificate of Approval (CofA, now referred to as an Environmental Compliance Approval (ECA)) Number **A7034002** and the applicable regulatory requirements during the spring and fall of 2024. To achieve the reporting objectives of this Site monitoring program, Pinchin carried out groundwater and surface water sampling at the Site in general accordance with the documents referenced within this report.

1.1 Location

The Site property is located in Lot 26, Concession 11, within the Municipality of Magnetawan, District of Parry Sound, Ontario and is located approximately 12 kilometres (km) east-northeast of the Township of Magnetawan, Ontario. The Site is situated in an undeveloped area and the visibility of landfilling activities is limited from the adjacent roadway due to mature tree growth. The Site location is indicated on Figure 1 (all Figures are provided in Appendix I).

The Site is located at Universal Transverse Mercator (UTM) coordinates Zone 17U, 593,659 meters (m) Easting and 5,058,398 m Northing (North American Datum (NAD) 1983). Landfill coordinates were obtained using a Global Positioning System and are accurate within 10 m.

1.1.1 Site Survey and Aerial Photography

At the time of preparation of this report, previous survey information of the Site and existing monitoring well elevations were provided to Pinchin for review. The available top of casing monitoring well elevation data obtained from the previous survey has been used in the following sections of this report to calculate groundwater elevation contours.

A topographic survey of the Site was completed in 2019 using an Unmanned Aerial Vehicle (UAV) in conjunction with the spring 2019 monitoring event completed by Pinchin, for the purpose of creating an accurate aerial image of the Site while also capturing the current Site topographic conditions. An additional UAV survey was completed in 2023 in order to provide an assessment of the current deposited waste volume and waste disposal rates.

1.2 Ownership and Key Personnel

The Site is owned and operated by the Corporation of the Municipality of Magnetawan (the Municipality), located in Magnetawan, Ontario. The project was completed for the following representative on behalf of the Municipality:

Kerstin Vroom, Clerk/CAO

Municipality of Magnetawan Government Office

4304 Highway #520

Magnetawan, Ontario P0A 1P0

The Competent Environmental Practitioner (CEP) for the Site groundwater and surface water monitoring program was Mr. Tim McBride of Pinchin Ltd. Mr. McBride's contact information is provided below:

Mr. Tim McBride, B.Sc., P.Geo., QP_{ESA}

Pinchin Ltd.

662 Falconbridge Road, Unit #3

Sudbury, Ontario P3A 4S4

1.3 Description and Development of the Site

The Site is operated under CofA Number **A7034002** as a domestic landfill for municipal and non-hazardous, solid, industrial and commercial wastes to be utilized by residents of the area. A copy of the most recent CofA is provided in Appendix II. The Site was approved with a total fill area of 2.5 hectares (ha) within a 33.7 ha property. A road with a locked gate is located east of the Site which provides access to the Site from the west side of 25th and 26th Side Road, approximately 1 km north of the intersection of 25th and 26th Side Road and Highway 520.

The active landfilling area is currently located within the northern portion of the Site. A site capacity survey was completed by D.M. Wills Associates Ltd. (D.M. Wills) on November 1, 2018, which resulted in an estimated remaining capacity of approximately 23,565 cubic metres (m^3) and an approximate remaining life expectancy of 39 years.

As previously discussed, updated topographic surveys were completed by Pinchin in June 2019 and October 2023 in order to complete an updated estimate of the Site volumes, remaining capacity and remaining life span. Based on the results of the surveys, it was estimated a current in-place volume of 36,115 m^3 of waste was existing at the Site, as of October 2023.

Based on the approved waste disposal footprint of 2.5 ha and utilizing the Ministry of the Environment, Conservation and Parks (MECP) landfill design standards, it was estimated that the total maximum

capacity of the Site is approximately 141,875 m^3. Utilizing a 5-year average annual waste deposition rate based on the results of the 2018 through 2023 surveys of approximately 731.5 m^3 per year, the remaining lifespan of the Site would be estimated in excess of 100 years. However, it is anticipated that the annual waste deposition rate at the Croft Landfill Site will increase following closure of the Chapman Landfill Site, resulting in a reduction of the remaining lifespan for the Croft Landfill Site to approximately 31 years as of October 2023.

A map illustrating the site features is provided as Figure 2.

1.3.1 Site Document Review

Pinchin reviewed the following reports for the Site and are referenced within this document:

- Report entitled "*2018 Annual Monitoring Report, Croft Waste Disposal Site, Magnetawan, Ontario*" completed by D.M. Wills Associates Limited for the Corporation of the Municipality of Magnetawan, dated March 2019 (the 2018 D.M. Wills Monitoring Report);
- Report entitled "*2019 Annual Monitoring Report, Croft Waste Disposal Site, Magnetawan, Ontario*" completed by Pinchin for the Municipality of Magnetawan, dated December 12, 2019 (the 2019 Pinchin Monitoring Report);
- Report entitled "*Aquifer Instrumentation Memo, Croft Waste Disposal Site, Magnetawan, Ontario"* completed by Pinchin for the Municipality of Magnetawan, dated June 16, 2020;
- Report entitled "*2020 Annual Monitoring Report, Croft Waste Disposal Site, Magnetawan, Ontario*" completed by Pinchin for the Municipality of Magnetawan, dated February 2, 2020 (the 2020 Pinchin Monitoring Report);
- Report entitled "*2021 Annual Monitoring Report, Croft Waste Disposal Site, Magnetawan, Ontario*" completed by Pinchin for the Municipality of Magnetawan, dated March 25, 2022 (the 2021 Pinchin Monitoring Report);
- Report entitled "*2022 Annual Monitoring Report, Croft Waste Disposal Site, Magnetawan, Ontario*" completed by Pinchin for the Municipality of Magnetawan dated January 18, 2023 (the 2022 Pinchin Monitoring Report);
- Report entitled "*2023 Annual Monitoring Report, Croft Waste Disposal Site, Magnetawan, Ontario*" completed by Pinchin for the Municipality of Magnetawan, dated February 29, 2024 (the 2023 Pinchin Monitoring Report); and
- Report entitled "*2024 Landfill Closure and Post-Closure Care Liability Estimates, Chapman and Croft Waste Disposal Sites, Magnetawan, Ontario*" completed by Pinchin for the Municipality of Magnetawan, dated September 17, 2024.

A copy of these documents can be obtained from the Client. Pinchin has relied on the information available in the previous environmental reports reviewed for the Site as part of this assessment. Information reviewed within this report is referenced in pertinent sections throughout this document.

1.4 Monitoring and Reporting Program Objectives and Requirements

The site-specific CofA does not outline detailed monitoring and reporting objectives. A copy of the CofA is provided in Appendix II.

The monitoring and reporting completed by Pinchin has been generally developed based on the MECP document entitled "*Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document*" dated November 2010, as well as the Client's requests for 2024 monitoring and annual reporting.

1.5 Assumptions and Limitations

Pinchin has assumed that the information generated from historical investigations is accurate and has been completed in accordance with standard engineering practices and regulations. It should be noted that the historical background information made available to Pinchin by the Client was limited, and as such previous reports have been relied on for information where required.

The scope of the monitoring activities was limited to the parameters listed in the 2018 D.M. Wills Monitoring Report and the 2019, 2020, 2021, 2022 and 2023 Pinchin Monitoring Reports for groundwater and surface water. The investigations were limited solely to the groundwater within the monitoring well installations on-Site and the surface water immediately surrounding the Site. The investigation does not constitute an exhaustive investigation of the Site property or adjacent properties for potentially unknown contaminants and/or other unknown sources of environmental impact.

Pinchin's limitation of liability and scope of work is as follows:

- The work performed in this report was carried out in accordance with the Terms and Conditions made part of the contract. The conclusions presented herein are based solely upon the scope of services and time and budgetary limitations described in the contract;
- The report has been prepared in accordance with generally accepted environmental study and/or engineering practices. No other warranties, either expressed or implied, are made as to the professional services provided under the terms of the contract and included in this report;
- The services performed and outlined in this report were based in part upon a previously installed monitoring network established by others and approved by the applicable regulatory agencies. Pinchin's opinion cannot be extended to portions of the Site which were unavailable for direct observations, reasonably beyond the control of Pinchin;

- The objective of this report was to assess the water quality conditions at the Site, given the context of the contract, with respect to existing environmental regulations within the applicable jurisdiction;
- The Site history interpreted herein relies on information supplied by others such as local, provincial and federal agencies, as well as Site personnel. No attempt has been made to independently verify the accuracy of such information, unless specifically noted in this report;
- Pinchin's interpretations relating to the landfill-derived leachate plume at the Site are described in this report. Where testing was performed, it was executed in accordance with the contract for these services. It should be noted that other compounds or materials not tested for may be present in the Site environment;
- The conclusions of this report are based in part on the information provided by others. The possibility remains that unexpected environmental conditions may be encountered at the Site in locations not specifically investigated. Should such an event occur, Pinchin must be notified in order that we may determine if modifications to the conclusions in this report are necessary;
- The utilization of Pinchin's services during future monitoring at the Site will allow Pinchin to observe compliance with the conclusions and recommendations contained herein. It will also provide for changes as necessary to suit field conditions as they are encountered; and
- Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, is the responsibility of such third parties. Pinchin accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

2.0 PHYSICAL SETTING

2.1 Geology and Hydrogeology

The Site is located in an area of low relief with numerous small shallow lakes and wetlands interspersed within forested lands dominated by black spruce and poplar. According to previous annual monitoring reports for the Site, the Ontario Geological Survey mapping indicates that the regional geology near the Site is dominated by Precambrian bedrock with local areas of very thin overburden and sand pockets. The underlying Precambrian bedrock is of gneissic composition with very little weathering and lies within the Ahmic Domain of the Central Gneiss Belt. According to previous annual monitoring reports for the Site, mapping indicates the presence of a glaciolacustrine sand deposits in the vicinity of the Site, as well as a historical sand pit that operated in the area, which is likely where the landfill was developed.

To the north of the Site, bedrock outcrops are noted at the surface and rise gradually in elevation toward the north, defining a minor east-west trending ridge approximately 50 m north of the Site. To the east of the Site, the bedrock gradually dips southward from the east-west trending ridge. To the south and west of the Site, the shallow bedrock is inferred to define a minor northwest trending bedrock ridge. Previous intrusive investigations also indicate that the overburden in this area appeared to be thin and was composed of sandy silt till and sand.

Based on the borehole logs for the monitoring wells and drive points at the Site, the subsoil conditions beneath the Site consist of sand and sandy silt till overlying gneissic bedrock. Borehole logs for the monitoring wells on-Site are provided in Appendix III, with the exception of the borehole log for BH1, which has not been made available for Pinchin's review at the time of writing this report. No other borehole logs were provided to Pinchin for review.

Static water levels were recorded by Pinchin in all of the accessible wells for each of the 2024 groundwater monitoring events, with the exception of BH12, which was found to be damaged at the time of the fall 2024 sampling event. Water levels were measured prior to purging and developing in preparation for sampling to ensure the water levels are representative of static conditions. A summary of the spring and fall 2024 groundwater elevations, as measured by Pinchin personnel, are presented in Table 1 (all tables are provided in Appendix IV).

In general, the static groundwater levels exist within 4 m of surface for most wells, with the deepest depth to water in 2024 (3.29 metres below ground surface (mbgs)) recorded at BH8, located northwest of the Site, during the fall monitoring event. Groundwater movement at the Site has been established (by water level contouring) as being directed in a northerly direction, with the highest groundwater elevations recorded at BH1 and the lowest at DP7. In addition, there appears to be a radial influence on the local groundwater table associated with the apparent groundwater mounding within the above grade waste deposits.

2.2 Surface Water Features

An unnamed tributary to Ahmic Lake is located to the south of the Site, where surface water monitoring location SW-1 is located. Love Lake is located approximately 500 m northeast of the Site, where surface water monitoring location SW-2 is located to monitor overland flow into the lake from the north side of the Site. A third surface water monitoring location, SW-3, is situated in a pool of water along the northwest edge of the landfill footprint to characterize surface water run-off originating within the landfill footprint.

2.3 Historical Data

Pinchin reviewed the 2018 D.M. Wills Annual Monitoring Report and the 2019, 2020, 2021, 2022 and 2023 Pinchin Annual Monitoring Reports to evaluate historical data and groundwater and surface water quality conditions. No other water quality data from the existing monitoring well network was available to review as part of this monitoring program.

2.3.1 Historical Groundwater Data

Monitoring well BH1 was determined to be located upgradient of the waste deposits and has historically been used to monitor background water quality at the Site. Based on the results of the 2019, 2020, 2021, 2022 and 2023 Pinchin Annual Monitoring Reports, moderate leachate effects are present immediately downgradient of the landfill along the limit of waste, as measured at wells BH10 and BH11. Guideline B-7 Exceedances for chloride, sodium, alkalinity and total dissolved solids (TDS) were quantified at well BH11 in 2023. The results of the 2023 Pinchin Annual Monitoring Report also indicated that well BH9 may also be experiencing minor leachate impacts for multiple parameters, which were interpreted to be attenuating with further distance from the Site. The furthest downgradient well, BH8, was interpreted to be only slightly affected by landfill leachate. Pinchin noted that significant distance to the downgradient (northern) property boundary existed to allow for additional natural attenuation.

Additional well installations were recommended to further characterize the groundwater at the Site in the downgradient directions and closer to the property boundary (2019 Pinchin Annual Monitoring Report). It was recommended that one well be installed directly north of the proposed limit of the waste and one well be installed further downgradient from BH10 and BH11 to the east-northeast. These well installations were completed in 2020 by Pinchin and included wells BH12, BH13 and BH14. Previous monitoring reports indicated that no landfill derived impacts were observed at BH12 and BH13. Slightly higher concentrations of select parameters were observed at BH14, however it was interpreted that additional monitoring was required in order to characterize water quality at this location.

2.3.2 Historical Surface Water Data

A review of the 2019, 2020, 2021, 2022 and 2023 surface water quality results identified slight leachate effects at the downgradient surface water location SW-2. These effects were interpreted to be minor and possibly attributed to naturally elevated levels of iron, aluminum, phenols, total phosphorous and cobalt.

3.0 METHODOLOGY

3.1 Scope of Work

The objectives of the monitoring program as requested by the Client included the following scope of work:

- Mobilization to the Site during the spring and fall of 2024 and collection of groundwater and surface water samples from the existing well network and surface water monitoring locations;
- Submission of the groundwater and surface water samples to an accredited analytical laboratory for analysis of the chemical parameters specified by the Client; and
- Preparation of a report outlining the 2024 field work completed and the analytical results, an evaluation of the results and any subsequent recommendations.

The investigation methodology was also conducted in general accordance with, and reference is made to, the following regulatory and guidance documents:

- MECP document entitled "*Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario*", dated December 1996 (MECP Sampling Guideline);
- MECP document entitled "*Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act*", dated March 9, 2004, amended July 1, 2011 (Analytical Methods);
- Ontario Regulation 169/03 "*Ontario Drinking Water Quality Standards*" under the Safe Drinking Water Act, dated 2002;
- MECP document entitled "*Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines*", dated June 2003 (ODWQS Guideline);
- MECP document entitled "*Incorporation of the Reasonable Use Concept into MECPE Groundwater Management Activities, Guideline B-7 (formerly 15-08)*" (Guideline B-7), dated April 1994;
- MECP document entitled "*Determination of Contaminant Limits and Attenuation Zones, Procedure B-7-1*", (formerly referenced by 15-08), dated 2015 and updated in 2022;
- Ontario Regulation 903 R.R.O. 1990 "*Wells*", under the Ontario Water Resources Act (as amended);
- MECP document entitled "*Water Management Policies Guidelines Provincial Water Quality Objectives*" (PWQO), dated July 1994, revised February 1999; and
- Canadian Council of Ministers of the Environment (CCME) document entitled "*Canadian Water Quality Guidelines*" (Table 3-1 – Summary Guidelines for Freshwater Aquatic Life) dated November 2008.

3.2 Groundwater Monitoring Well Locations

The original groundwater monitoring well network for the Site was established in 2003 and consisted of seven shallow overburden wells (BH1, BH2, BH3, BH4, BH5, BH6 and BH7). Monitoring wells BH2, BH3,

BH5, BH6 and BH7 were found to be destroyed prior to 2016. Additional monitoring wells (BH8, BH9, BH10 and BH11) and drive point monitors (DP6, DP7, DP8 and DP9) were installed in June 2015 to replace the destroyed wells. In the spring of 2017, monitoring well BH4 and drive point monitor DP6 were also found to be destroyed due to landfilling operations at the Site.

The configuration of the existing monitoring well network was interpreted to be sufficient to monitor the performance of the landfill; however, was deemed to be overly conservative as a measure of compliance, as these wells were being utilized to monitor groundwater conditions on-Site, rather than at the downgradient property line as described in the MECP Guideline B-7. As a result, the installation of additional bedrock monitoring wells (BH12, BH13 and BH14) was recommended in the 2019 Pinchin Annual Monitoring Report in order to allow for further characterization of groundwater quality downgradient of the Site in the north and east directions. The installation of these additional monitoring wells was completed on April 22, 2020. The details of the well installations are included in the Pinchin Aquifer Instrumentation Memo dated June 16, 2020. Borehole logs for each of the three newly installed wells are included within Appendix III.

In the fall of 2024, monitoring well BH12 was found to have been damaged. Monitoring well BH12 was repaired under the supervision of Pinchin personnel in November 2024, subsequent to the completion of the fall sampling event.

The current groundwater monitoring well network at the Site consists of eight groundwater monitoring wells (BH1, BH8, BH9, BH10, BH11, BH12, BH13 and BH14) and three drive point monitors (DP-7, DP-8 and DP-9). The locations of the monitoring wells included in the current monitoring program are illustrated on Figure 3. Detailed locations, with coordinates in NAD 83, and the available top of casing monitoring well elevations are provided in Table 1.

All groundwater monitoring wells were sampled during the spring and fall 2024 sampling events, with the exception of BH12, which was found to be damaged at the time of the fall 2024 sampling event. Based on the results of previous monitoring programs, all three of the drive point monitors have consistently been observed to have an insufficient volume of water for sample collection and have since been retained as water level only monitoring locations to supplement the groundwater elevation monitoring for the Site.

The following table presents a summary of the well construction details and respective on-Site positions of the groundwater monitoring network based on the borehole logs provided in Appendix III. Pinchin was not provided with the borehole log for monitoring well BH1 at the time of writing this report; therefore, the construction details for monitoring BH1 are unknown.

All wells were inspected and found to be in good condition, and no wells displayed evidence of a condition non-compliant with Ontario Regulation 903, with the exception of DP7 which requires a well cap and BH12, which was found to have fallen over, with the polyvinyl chloride (PVC) riser broken at the

ground surface. Monitoring well BH12 was subsequently repaired by Marathon Underground Constructors Corporation (Marathon) under Pinchin's supervision on November 28, 2024. Marathon is a licensed well driller under Ontario Regulation 903 (as amended). A photographic log of all groundwater monitoring wells is provided in Appendix V.

Well ID	Condition	Total Depth (mbgs)	Screened Interval (mbgs)	Screened Interval (masl)	Unit Screened
BH1	Good	Unknown			
BH8	Good	5.72	1.2 – 5.7	290.4 – 285.9	Gneissic bedrock
BH9	Good	3.89	0.8 – 3.9	288.4 – 285.6	Sand and gneissic bedrock
BH10	Good	4.06	0.9 – 4.1	290.0 – 286.8	Sand and gneissic bedrock
BH11	Good	4.39	0.9 – 4.4	289.9 – 286.4	Gneissic bedrock
DP-7	Good	1.72	1.0 – 1.7	288.3 – 287.6	Sandy silt till
DP-8	Good	1.41	0.7 – 1.4	289. 8 – 289.1	Sand
DP-9	Good	1.27	0.5 – 1.3	289.5 – 288.7	Sand
BH12	Good	6.10	3.0 - 6.0	285.9 – 282.9	Gneissic bedrock
BH13	Good	6.10	3.0 - 6.0	287.8 – 281.8	Gneissic bedrock
BH14	Good	6.10	3.0 - 6.0	286.4 – 283.4	Gneissic bedrock

The following table illustrates the location of each of the monitoring wells with respect to its rationale in the annual monitoring program.

Monitoring Well ID	Location	Rationale
BH1	Southwest of the Site	Background
BH8	Northwest of the Site	Downgradient
BH9	Immediately northwest of the Site	Downgradient
BH10	Immediately east of the Site	Immediately Downgradient
BH11	Immediately northeast of the Site	Immediately Downgradient
DP7	Northwest of the Site	Downgradient
DP8	East of the Site	Downgradient
DP9	East of the Site	Downgradient
BH12	North of the Site	Downgradient
BH13	Northeast of the Site	Downgradient
BH14	Northeast of the Site	Downgradient

3.3 Surface Water Monitoring Locations

The Site has three historical points for surface water monitoring, SW-1 through SW-3. All surface water monitoring locations were monitored during the spring and fall 2024 sampling events; however, SW-1 was found to be dry at the time of both sampling events, and SW-3 was found to be dry at the time of the fall sampling event. The following table illustrates the location of each of the surface water monitoring locations with respect to its rationale in the annual monitoring program.

Location ID	Location	Rationale
SW-1	Stream to the south of the Site, at culvert on west side of 25th and 26th Side Road North.	Upstream Monitoring Location
SW-2	Love Lake, north of the Site.	Downstream Monitoring Location
SW-3	Pool of water at northwest corner of the Site.	Source Monitoring Location

The locations of the surface water monitoring locations are illustrated on Figure 3. Details regarding the surface water monitoring locations are provided in Table 2. Photos of all surface water monitoring locations are provided in Appendix V.

3.4 Monitoring Frequency

As per previous annual monitoring events, groundwater and surface water was sampled twice annually, in the spring and fall, by Pinchin during 2024. The groundwater and surface water sampling events occurred on the following dates:

- Spring – April 24, 2024; and
- Fall – October 2 and 3, 2024.

3.5 Monitoring Parameters

3.5.1 Groundwater Monitoring Parameters

Groundwater samples were submitted for laboratory analysis of the parameters listed in the previous monitoring reports. At the time of sample collection, field readings for the following parameters were measured: temperature, pH, conductivity, oxidation reduction potential (ORP) and dissolved oxygen (DO).

3.5.2 Surface Water Monitoring Parameters

Surface water samples were submitted for laboratory analysis of the parameters listed in the previous monitoring reports. At the time of the surface water sample collection, field readings for the following parameters were measured: temperature, pH, conductivity, ORP and DO.

3.6 Monitoring Procedures and Methods

3.6.1 Standard Operating Procedures

The following Pinchin Standard Operating Procedures (SOPs) were followed by Pinchin field personnel for each portion of this project:

- Groundwater Sampling SOP; and
- Surface Water Sampling SOP.

All Pinchin monitoring SOPs have been developed in accordance with the MECP Sampling Document and are consistent with standard engineering practices.

3.6.2 Groundwater Monitoring Activities

To perform the groundwater monitoring activities, the following tasks were conducted:

- Pinchin notified the Client prior to field activities, and subsequently mobilized staff to the Site to complete the sampling program;
- Static groundwater levels were collected using a Solinst™ water level tape. Measurements were collected from the top of riser pipe;
- During the monitoring events, groundwater from each monitoring well was purged prior to the collection of the sample using a moderate-flow sample methodology via high-density polyethylene (HDPE) or low-density polyethylene (LDPE) 3/8" tubing and a Waterra™ inertial foot valve system. The inertial pump system was chosen as an approved method to minimize sediment/particulate within each sample and to minimize sample agitation and well trauma in accordance with the MECP Sampling Document. Pinchin purged a minimum of three well volumes to a maximum of six well volumes, or purged until dry, using the inertial pump system, until the well volume column was representative of the surrounding formation. During purging activities, additional groundwater monitoring parameters were collected from each monitoring well using a YSI-556 water quality meter for measurement of field parameters. Sample residual was disposed of onto the ground surface, on-site and up-gradient within the landfill confines;
- Groundwater samples were collected using the inertial pump system in accordance with the MECP Sampling Document. Dissolved metals were field-filtered using a dedicated in-line 0.45-micron disposable filter. Upon completion of field sampling and monitoring activities, all samples collected were submitted to the project laboratory, SGS Canada Inc. (SGS) in Lakefield, Ontario. All parameters were analyzed by the project laboratory using MECP approved procedures and are consistent with the analytical methods prescribed in the Analytical Methods document; and

- The groundwater samples collected were analyzed at the project laboratory for the parameters listed in the previous monitoring reports. Groundwater sample results were compared to the applicable ODWQS as applied in accordance with the ODWQS Guideline document. Groundwater sample results were also compared to the reasonable usage parameters and were assessed using Guideline B-7 to establish and determine levels of contaminant discharges to the groundwater formation which would be considered acceptable by the MECP from naturally attenuating landfill sites with respect to human consumption and potable considerations.

3.6.3 Surface Water Monitoring Activities

To perform the surface water monitoring activities, the following tasks were conducted:

- Pinchin notified the Client prior to field activities and subsequently mobilized staff to the Site;
- All field activities at each monitoring location were initiated at down-stream locations working up-stream to avoid sediment disturbance and influencing sample integrity;
- Care was taken during collection of surface water samples to ensure that a representative sample was collected and that underlying sediments were not disturbed. Surface water samples were not filtered (in accordance with MECP surface water sampling protocols);
- Surface water samples were collected during each sampling event using a direct grab sampling methodology in accordance with the MECP Sampling Document. Upon completion of field sampling and monitoring activities, all samples collected were submitted to SGS. All parameters were analyzed by the project laboratory using MECP approved procedures and are consistent with the analytical methods prescribed in the Analytical Methods document;
- During sampling activities, surface water monitoring field parameters were collected at each surface water monitoring location using a YSI-556 water quality meter; and
- Surface water samples were analyzed during the monitoring event at the pre-determined monitoring locations for parameters listed in the previous monitoring reports. Sample results were compared to the applicable PWQO and CWQG criteria.

3.6.4 Groundwater and Surface Water Field Measurements

Prior to sampling groundwater in the wells, Pinchin monitored groundwater depth using a Solinst™ 30-m electronic water level meter. The water level tape is calibrated in 1.0-millimeter (mm) increments. Reproducibility of the depth measurements is generally within 2.0 mm or less.

Subsequent to groundwater depth measurement and during purging activities, additional groundwater monitoring parameters were collected from each monitoring well using a YSI-556 water quality meter for measurement of field parameters. Field parameters at each surface water monitoring location were also collected using the YSI-556. The following field parameters were measured during the 2024 monitoring program:

- *Dissolved Oxygen (DO)* refers to the relative quantity of oxygen molecules which are dissolved or carried within a quantity of water. Oxygen enters water as rooted aquatic plants and algae undergo photosynthesis and as oxygen is transferred across an air and water interface. Oxygen's solubility in water is indirectly correlated with water's temperature, salinity and pressure. DO concentrations have a significant effect on groundwater quality by regulating the valence state of trace of metals and constraining the bacterial metabolism of dissolved organic species;
- *Conductivity* is the measurement of water's capacity to pass an electrical current. It is considered to be a reasonable indicator of ionic activity and dissolved solids concentration levels. It is affected by the presence of inorganic dissolved solids which carry a negative charge such as chloride, nitrate, sulphate and phosphate anions, or a positive charge such as sodium, magnesium, calcium, iron, and aluminum cations. Organic compounds such as oil and phenol do not conduct an electrical current very well, and would therefore, have low conductivity in water. Conductivity is also directly correlated to the water temperature. Specific conductivity is a measurement of conductivity values which have been compensated to 25 degrees Celsius (ºC);
- *pH* is a measure of water's acidic/basic properties on a logarithmic scale from 1 (strongly acidic) to 14 (strongly alkaline or basic). It determines the solubility and biological availability of chemical constituents such as nutrients and heavy metals. For example, in addition to affecting how much and what form of phosphorus is most abundant in the water, pH also determines whether aquatic life can use it. The degree to which heavy metals are soluble determines their toxicity. Metals tend to be more toxic at lower pH values because they are more soluble. Excessively high and low pHs can have serious environmental and health effects. A high pH may cause the release of iron, copper or lead into potable water, corrosion on water pipes and water using appliances and reduces the effectiveness of water disinfection with chlorine. Low pH values corrode substances such as metals and plastics. Fluctuations in groundwater pH values may be indicative of groundwater contamination;

- *Temperature* has a dramatic influence on water quality. The rate of chemical reactions is generally correlated to temperature which in turn affects the biological availability of nutrients within the water. As previously mentioned, oxygen's solubility in water is indirectly correlated with its temperature. Declining concentrations of oxygen within warming water is magnified by aquatic plants increasing metabolism as water temperature increases. Low concentrations of DO weaken aquatic plants resistance to disease, parasites and other pollutants; and
- *Oxidation-reduction potential* (ORP) characterizes the oxidation-reduction state of the water on a scale from approximately -300 millivolts (mV) (strongly reducing) up to +500 mV (strongly oxidizing). The primary application of ORP is recording significant changes in the redox potential which is observed when purging a stagnant water column in piezometer and replacing it with "fresh" groundwater.

3.6.5 Record Keeping and Field Notes

Field notes were collected during the water quality monitoring events and recorded relevant observations including, but not limited to:

- Dates and time of work being completed;
- Instrumentation and instrument condition;
- Calibration methods and results;
- Field parameter measurements;
- Field personnel conducting the investigations;
- Field methods used;
- Sampling location identifications;
- Sampling equipment and condition;
- Sample identification (i.e., type, media, number of containers, etc.);
- Sample preparation methods (i.e., preservatives, filtration, etc.);
- Field QA/QC measurements;
- Field and sample identifiers;
- Anomalous conditions (i.e., damage to monitoring wells);
- Photographs of monitoring wells and monitoring stations;
- Weather conditions at the time of the monitoring events; and
- Field conditions.

All raw data and field notes are preserved and retained in Pinchin's custody.

3.7 Quality Assurance for Sampling and Analysis

Pinchin uses recognized industry standards, including the Canadian Council of Ministers of the Environment (CCME) *Subsurface Assessment Handbook for Contaminated Sites* and MECP's manual *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario* for conducting environmental assessments. For quality assurance, all work is supervised and internally reviewed by senior staff members. As such, various quality assurance/quality control (QA/QC) protocols were followed during the water quality sampling events to ensure that representative samples were obtained, and that representative analytical data were reported by the laboratory.

Field QA/QC protocols that were employed by Pinchin included the following:

- Clean, labelled and pre-preserved (when applicable) sample containers were provided by the laboratory;
- Water quality samples were placed in laboratory-supplied sample jars;
- The monitoring wells were purged to remove stagnant water prior to sample collection, so that representative groundwater samples could be obtained. Dedicated purging and sampling equipment was used for monitoring well development, purging and sampling to minimize the potential for cross-contamination;
- All water quality samples were placed in coolers on ice immediately upon collection with appropriate sample temperatures maintained prior submission to the laboratory;
- Dedicated and disposable Nitrile™ gloves were used for all sample handling;
- All non-dedicated monitoring and sampling equipment (i.e. water level meter and YSI-556) was cleaned before initial use and between uses to minimize the potential for cross-contamination by washing with an Alconox™/potable water mixture followed by a deionized water rinse;
- Field duplicate groundwater and surface water samples were collected during the spring and fall sampling event (1 in 10); and
- Sample collection and handling procedures were performed in general accordance with the MECP Sampling Guideline.

The SGS laboratory has an established QA/QC program and is a member of the Canadian Association for Laboratory Accreditation (CALA) and is accredited by the Standards Council of Canada (SCC) for specified environmental analyses.

SGS's internal laboratory QA/QC consisted of the analysis of laboratory duplicate, method blank, matrix spike and spiked blank samples, an evaluation of relative percent difference calculations for laboratory

duplicate samples and an evaluation of surrogate recoveries for the method blank, matrix spike and spiked blank samples.

3.8 Data Quality Evaluation

In order to provide confidence in the data obtained, a comprehensive QA/QC component was included in the monitoring program. The QA/QC procedures developed for this monitoring program are prepared in accordance with MECP Sampling Document and in most cases, exceed the minimum requirements.

Relative per cent difference (RPD) values (the absolute difference between two values divided by the average value and expressed as a per cent) were calculated between the parent sample and the field duplicate as part of the QA/QC program. RPD results of sample and duplicate analyses that are less than 50 percent indicate an acceptable level of analytical uncertainty. RPD values calculated for measured analyte concentrations for sample and duplicate pairs that exceed 50 per cent generally warrant discussion because they may indicate the presence of elevated analytical uncertainty and a potential for making interpretive errors based on the analysis results. Use of calculated RPD values to assess analytical uncertainty when using measured analyte concentrations for sample and sample duplicate pairs is not appropriate when either measured analyte concentration is within a multiple of 5 of the method detection limit (a value designated as the practical quantification limit (PQL)) where analytical uncertainty is typically elevated.

All field instrumentation calibration checks were completed by Pinchin field staff members prior to use on-Site. All field operations conducted by Pinchin field staff members were completed using standard equipment decontamination and sampling procedures, and no deviations from the sampling plan were noted.

4.0 ASSESSMENT, INTERPRETATION AND DISCUSSION

4.1 Groundwater Flow Interpretation

The hydraulic flow vector was historically estimated to range to the north. The groundwater flow direction may be influenced by seasonal variations in the amount of precipitation, by aquifer heterogeneity and the deposited fill material at the Site. Groundwater level trends indicate seasonal fluctuations in the depth to groundwater which is consistent with seasonal fluctuations in precipitation events. The depth to groundwater measurement results are presented in Table 1.

During the spring monitoring event on April 24, 2024, the depth to groundwater was observed to range from 292.92 metres above sea level (masl) at BH1 to 288.49 masl at DP7. During the fall monitoring events on October 2 and 3, 2024, the depth to groundwater was observed to range from 292.13 masl at BH1 to 287.99 masl at DP7.

Accurate triangulation of the water table elevations was undertaken for the 2024 sampling events using the available monitoring well system and the survey elevation data. The inferred groundwater contours for both the spring and fall events are presented on Figures 4 and 5, respectively. The presentation of the groundwater contours and the associated inferred groundwater flow direction for the 2024 sampling events, as illustrated on Figures 4 and 5, indicates that groundwater flows towards the north, which is consistent with the findings of previous monitoring reports.

It should be noted that monitoring well BH12 was repaired in November 2024. It is therefore recommended that the top of casing elevation be re-surveyed and tied into the existing survey network during the next annual monitoring event in the spring of 2025 in order to ensure accurate groundwater elevations can continue to be calculated for monitoring location.

4.2 Groundwater Quality Monitoring

4.2.1 The Reasonable Use Criteria Assessment (RUC)

Guideline B-7, the "reasonable use concept" (RUC) approach, is the MECP's groundwater management strategy for mitigating the effect of contamination on properties adjacent to its source.

It establishes procedures for determining the reasonable use of groundwater on a property adjacent to sources of contaminants and establishes limits on the discharge of contaminants from facilities which dispose of waste into the shallow subsurface.

The application of "reasonable use" is outlined in Procedure B-7-1 "*Determination of Contaminant Limits and Attenuation Zones*". The procedure determines the maximum concentration (Cm) of a particular contaminant that would be acceptable in the groundwater beneath an adjacent property and is calculated in accordance with the relationship:

$$C_m = C_b + x\,(C_r - C_b)$$

C_b – This is the background concentration of the particular groundwater contaminant in consideration before it has been affected by human activities. From this, it is possible to calculate the extent of human activities impact on contaminant levels.

C_r – In accordance with the Ontario Water Management Guideline, this is the maximum concentration of a particular contaminant that should be present in the groundwater. This value is dependent on property's use of the groundwater as outlined in B-7. It also allows for the total amount of contamination. Pinchin conservatively assumes that the reasonable use of the groundwater on-site is potentially for potable drinking purposes.

x – As determined by the MECP, this constant determines the extent which the contamination has on the groundwater's use. For drinking water, x is 0.5 for non-health related parameters or 0.25 for health-related parameters. For other reasonable uses, it is 0.5.

Contamination concentrations which exceed C_m may have an appreciable effect on the use of an adjacent property, and as such the Site should be managed in a manner to minimize environmental damage, or the operation should be modified. It is acceptable to modify the operation of the disposal site to meet the specified limits. However, if these limits are exceeded, all waste disposals, except for that done in conjunction with a reasonable plan for closure or with remedial activities, should be terminated until the specified limits have been met, or until monitoring data indicate that these limits will be met. Determination of the replacement of contaminated water supplies and the abatement of the contaminant plume must be made on a case-by-case basis in accordance with "*Resolution of Groundwater Quality Interference Problems*", Guideline B-9. For the purpose of evaluating compliance with respect to the RUC, Pinchin has compared the calculated C_m values versus the applicable downgradient compliance monitoring wells.

4.2.2 The Ontario Drinking Water Quality Standards (ODWQS)

Through the establishment of the ODWQS, the province of Ontario has determined legally enforceable standards on contaminants in drinking water. The standards are designed to protect public health by restricting the quality of specific contaminants in drinking water. Three categories of contaminates are regulated under the Ontario Regulation 169/03 Drinking Water Standards:

- Microbiological – Originating from human and animals waste, coliforms and bacteria are common in the environment. Most are harmless; however, their presence may be indicative of other harmful bacteria in the water. Under the ODWQS, *Escherichia coli*, fecal coliforms and total coliforms must be non-detectable in drinking water;
- Chemical – ODWQS regulates maximum quantities of organic and inorganic chemicals allowed in drinking water. Industrial discharges or agricultural runoff are not necessarily removed by drinking water treatment. Consuming water exhibiting a greater concentration of these chemicals than the ODWQS may cause serious health problems; and
- Radiation – Natural and artificial radio nuclides are also regulated in the ODWQS. Standards are expressed as maximum allowable concentrations in becquerels per litre. Radiological contaminants include radio nuclides such as radium 228 which are caused from the erosion of naturally occurring deposits, or artificial radio nuclides such as tritium released into the water by nuclear power plants. Radiological contaminants do not naturally occur within the study area and the disposal of radiological waste was not suspected in the Site, and as a result, radiation was not monitored for this study.

The ODWQS Guideline Document is the MECP technical guidance document which provides guidance on applicability of the ODWQS and also provides applicable interim guidelines where legal standards are

absent. Both the ODWQS and Guideline B-7 were used in assessing the groundwater results obtained during the 2024 monitoring program.

4.3 Groundwater Results

The following discussion of parameters documents the groundwater quality in comparison to the calculated reasonable use criteria as per Guideline B-7. The reasonable use criteria are the MECP's groundwater management strategy for mitigating the effect of contamination on properties adjacent to its source. It establishes procedures for determining what constitutes the reasonable use of groundwater on a property adjacent to sources of contaminants and establishes limits on the discharge of contaminants from landfills which have a potential to migrate hydraulically downgradient and off-site and impair the current and future groundwater use at downgradient properties. To implement Guideline B-7, groundwater samples collected from downgradient monitoring wells have been compared to the calculated RUC values (C_m).

Monitoring well BH1 is located potentially hydraulically upgradient of the Site and has been used to estimate the background water quality coming onto the Site. An average of the historical results from BH1 has been applied as the source of background water quality for the Guideline B-7 calculations.

The analytical data for each well in comparison to the applicable regulatory criteria is provided in Tables 3 through 11. An evaluation of the RUC criteria in comparison to the downgradient compliance wells is provided in Tables 12 and 13 for the spring and fall events, respectively. Copies of the laboratory analytical reports are presented in Appendix VI. The following is a breakdown of the water quality observed the monitoring well locations with comparison to the background quality and leachate being produced on-Site.

4.3.1 Background Water Quality Evaluation

Monitoring Well BH1

Monitoring well BH1 has historically been utilized to evaluate the background water quality at the Site. Elevated levels of common landfill-related contaminant parameters such as conductivity, TDS, chloride, sulphate, calcium, sodium, potassium or nitrate have not historically been reported in groundwater collected from BH1; however, Pinchin notes that increasing conductivity and concentrations of several parameters including TDS, chloride, boron, sulphate, calcium and sodium have been observed at BH1 over the course of the most recent annual monitoring events. Furthermore, concentrations of landfill-related contaminant parameters are elevated at BH1 when compared to monitoring wells located downgradient of the landfill (i.e., BH8, BH13). Therefore, it is possible that, due to its proximity to the active fill zone, groundwater at BH1 is being impacted by landfill leachate. Pinchin recommends that this well continue to be monitored in 2025; if elevated concentrations of landfill-related parameters continue to be identified at BH1, this well may no longer be a suitable representation of background conditions.

During the spring and fall sampling events, concentrations of hardness (low in spring, high in fall), dissolved organic carbon (DOC), iron, manganese, turbidity and aluminium were quantified at levels exceeding the ODWQS. Additionally, the pH reported at BH1 fell outside of the range specified by the ODWQS (low) during the fall event. These parameters are either aesthetic objectives or operational guidelines for drinking water systems set by the ODWQS and are not considered to be a significant environmental concern originating from the Site.

4.3.2 Leachate Source Quality Evaluation

No groundwater monitoring wells in the existing monitoring well network are situated within the active landfill area to evaluate the source leachate quality.

4.3.3 Immediately Downgradient Water Quality Evaluation

Monitoring Well BH10

In comparison to background water quality, groundwater at monitoring well BH10, located immediately east of the waste fill area, was reported to have higher concentrations of conductivity, alkalinity, TDS, chloride, sodium, potassium and nitrate. This suggests temperate impacts originating from the landfill, which is consistent with historical observations at this location. The groundwater at this location is expected to be impacted by landfill leachate due to its proximity to the active fill zone; therefore, monitoring well BH10 is not strictly a compliance station, and would more appropriately be considered a near-source well.

During the 2024 monitoring program, BH10 satisfied the applicable ODWQS, with the exception of hardness, TDS, chloride, DOC and manganese in the spring and fall, as well as turbidity in the spring and sodium in the fall. Concentrations of chloride, sodium, alkalinity, DOC (fall only), TDS and manganese (fall only) exceeded the Guideline B-7 Criteria during all sampling events. Hardness, TDS, chloride, DOC, manganese, turbidity, sodium and pH are all either aesthetic objectives or operational guidelines for drinking water systems and are not considered to be a significant environmental concern originating from the Site.

Elevated concentrations of DOC, manganese and turbidity are also quantified at the background monitoring location; however, the concentrations of these parameters are further elevated at BH10 and are therefore considered to be landfill derived.

Monitoring Well BH11

In comparison to background water quality, groundwater at monitoring well BH11, located immediately northeast of the Site, was reported to have higher concentrations of chloride, sodium, potassium and nitrate. This suggests temperate impacts originating from the landfill, which is consistent with historical

observations at this location. The groundwater at this location is expected to be impacted by minor amounts of landfill leachate due to its proximity to the active fill zone.

During the 2024 monitoring program, BH11 satisfied the applicable ODWQS, with the exception of hardness (low), DOC, manganese, turbidity and aluminium during all sampling events. In addition, concentrations of DOC exceeded the Guideline B-7 Criteria during the fall sampling event. These parameters are all either aesthetic objectives or operational guidelines for drinking water systems and are not considered to be a significant environmental concern originating from the Site.

Elevated concentrations of DOC, aluminum and turbidity are also quantified at the background monitoring location; however, the concentrations of these parameters are further elevated at BH11 and are therefore considered to be landfill derived. It is also noted that concentrations at BH11 are generally lower in comparison to near-source well BH10.

4.3.4 Downgradient Water Quality Evaluation

Monitoring Well BH8

In comparison to background water quality, groundwater at monitoring well BH8, located northwest of the Site, was reported to have lower concentrations of conductivity, alkalinity, TDS, nitrate, chloride, sulphate, calcium, sodium and potassium, indicating little to no impact from the upgradient landfill, which is consistent with historical observations at this location. It is interpreted that natural attenuation of the landfill leachate is occurring with distance from the active fill zone.

During the 2024 monitoring program, BH8 satisfied the applicable ODWQS, with the exception of hardness (low), alkalinity (low) and turbidity during all sampling events, as well as aluminium during the spring event. In addition, concentrations of alkalinity were below the range specified by the Guideline B-7 Criteria during all sampling events. These results are consistent with historical observations at this location. These parameters are all either aesthetic objectives or operational guidelines for drinking water systems set by the ODWQS and are not considered to be a significant environmental concern originating from the Site.

Monitoring Well BH9

In comparison to the background water quality, groundwater at monitoring well BH9, located northwest of the Site, was observed to have higher concentrations of conductivity, alkalinity, TDS, chloride, sulphate, calcium, sodium and potassium, indicating minor impacts from the landfill, which is consistent with historical observations at this location. These elevated concentrations are observed to attenuate to concentrations similar to or less than background conditions at the further downgradient monitoring location, BH8.

During the 2024 monitoring program, BH9 satisfied the applicable ODWQS, with the exception of hardness (high), DOC, iron, manganese, turbidity and aluminium during all sampling events. In addition, concentrations of DOC, TDS, iron and manganese exceeded the Guideline B-7 Criteria during all sampling events. These parameters are all either aesthetic objectives or operational guidelines for drinking water systems set by the ODWQS and are not considered to be a significant environmental concern originating from the Site.

Monitoring Well BH12

Groundwater monitoring well BH12 was installed in April 2020, in order to characterize downgradient water quality to the north of the Site. BH12 was found to be damaged during the fall event of the 2024 monitoring program; therefore, a sample was not collected from this monitoring well during the fall event. In comparison to background water quality, groundwater at monitoring well BH12 was observed to have generally similar concentrations of conductivity, alkalinity, TDS, nitrate, chloride, sulphate, calcium, sodium and potassium, indicating little to no impact from the upgradient landfill. It is interpreted that natural attenuation of the landfill leachate is occurring with distance from the active fill zone.

During the 2024 monitoring program, BH12 satisfied the applicable ODWQS, with the exception of hardness (low), iron, manganese and turbidity during the spring event. These parameters are all either aesthetic objectives or operational guidelines for drinking water systems set by the ODWQS and are not considered to be a significant environmental concern originating from the Site. No exceedances of the Guideline B-7 criteria were quantified at BH12 during the spring event.

Depressed hardness and elevated concentrations of iron and manganese are also quantified at the background monitoring location. Concentrations of these parameters at BH12 are either similar to or lower than the background concentrations; therefore, they are not considered to be landfill-derived.

Further monitoring events are required to establish a scientifically defensible database at this monitoring location before this interpretation can be confirmed.

Monitoring Well BH13

Groundwater monitoring well BH13 was installed in April 2020 in order to characterize downgradient water quality to the northeast of the Site, further downgradient from wells BH10 and BH11 at which temperate leachate impacts have been quantified. In comparison to background water quality, groundwater at monitoring well BH13 was observed to have generally lower concentrations of conductivity, alkalinity, TDS, nitrate, chloride, sulphate, calcium, sodium and potassium indicating little to no impact from the landfill. It is interpreted that natural attenuation of the landfill leachate is occurring with distance from the active fill zone.

During the 2024 monitoring program, BH13 satisfied the applicable ODWQS, with the exception of hardness (low), manganese, turbidity and aluminium during all sampling events, as well as alkalinity (low) during the spring event and DOC during the fall event. In addition, alkalinity fell below the range specified by the Guideline B-7 criteria during the spring event. These parameters are all either aesthetic objectives or operational guidelines for drinking water systems set by the ODWQS and are not considered to be a significant environmental concern originating from the Site.

Further monitoring events are required to establish a scientifically defensible database at this monitoring location before this interpretation can be confirmed.

Monitoring Well BH14

Groundwater monitoring well BH14 was installed in April 2020, in order to further characterize downgradient water quality to the northeast of the Site, closer to the property boundary. In comparison to background water quality, groundwater at monitoring well BH14 was observed to have slightly higher concentrations of chloride, sodium and calcium during the spring event; however, concentrations of these parameters were noted to be below the background levels during the fall event. This may indicate minor impacts from the landfill. Pinchin notes that concentrations of certain landfill-related parameters at BH14 are elevated in comparison to those reported at upgradient monitoring well BH11 (i.e., conductivity, TDS (spring), chloride (spring) and calcium (all events)). Additionally, concentrations of all landfill-related parameters with the exception of nitrate are elevated at BH14 in comparison to cross-gradient monitoring well BH13. Further monitoring events are required to establish a scientifically defensible database at this monitoring location before this interpretation can be confirmed.

During the 2024 monitoring program, BH14 satisfied the applicable ODWQS with the exception of iron, manganese and turbidity during all events, as well as hardness (high) during the spring event. In addition, concentrations of manganese exceeded the Guideline B-7 criteria during all events. These parameters are all either aesthetic objectives or operational guidelines for drinking water systems set by the ODWQS and are not considered to be a significant environmental concern originating from the Site. Furthermore, with the exception of turbidity, all of these parameters are quantified at similar or higher concentrations at the background monitoring location; therefore, these are not considered landfill-derived impacts.

In summary, the current 2024 groundwater monitoring data indicates that the Site is continuing to operate effectively as designed, as a natural attenuation type facility, with any landfill derived groundwater impacts attenuated to acceptable levels prior to the downgradient property boundaries.

4.4 Groundwater Trend Analysis

A hydrograph was developed to identify any changes in the historical and current groundwater elevation data over time for each of the wells. A series of time versus concentration graphs were also developed to evaluate the concentrations of several select landfill indicator parameters (including alkalinity, chloride,

DOC, pH, TDS, nitrate, aluminum and copper) at each monitoring well for the Site. Current and historical groundwater quality data was utilized to identify any apparent trends or inconsistencies in the water quality within the monitoring well network. The groundwater trend analysis graphs are provided in Appendix VII.

The groundwater elevations displayed on the hydrograph indicate generally stable elevations with respect to time at all monitoring well locations with the exception of BH8, at which the fluctuation in elevation between spring and fall events is more apparent than at other monitoring wells. A change in elevation of approximately 2 m was noted in 2019, 2022 and 2023. Additionally, the elevation reported at BH8 during the spring 2024 sampling event was recorded below the range of the available historic monitoring record and may be anomalous. The groundwater elevation recorded at monitoring well BH13 was below the range of the available historical records during the fall 2022 event. Groundwater elevations at BH13 have since stabilized; therefore, the elevation recorded in the fall of 2022 is considered anomalous.

In general, the landfill indicator parameters are demonstrating fairly stable trends with respect to time at all monitoring well locations with some exceptions. Concentrations of most parameters generally appear to follow a seasonal trend, with lower values reported in the spring as compared to the fall.

Concentrations of alkalinity are generally stable and fall within the range specified by the ODWQS, with the exception of the following:

- Concentrations of alkalinity at monitoring wells BH8 and BH13 are generally stable, but often fall below the range specified by the ODWQS; and
- Concentrations of alkalinity at monitoring wells BH10 and BH11, which appear to fluctuate considerably in comparison to other monitoring wells (increasing and decreasing in the range of hundreds of milligrams per liter), and which have previously exceeded the range specified by the ODWQS. Alkalinity concentrations at BH11 have significantly decreased since spring 2021.

A decreasing trend in both chloride and TDS concentrations has been noted at monitoring well BH11. Chloride and TDS concentrations at monitoring well BH10 have generally increased over the course of the available monitoring record, with concentrations of chloride exceeding the ODWQS consistently since the fall of 2019 and TDS consistently exceeding the ODWQS over the available monitoring record. Concentrations of chloride and TDS in the remaining wells are generally stable and remained within the limits specified by the ODWQS.

Concentrations of DOC are generally stable at all monitoring wells, with the exception of some historical fluctuations in monitoring well BH11 that appear to have stabilized since the fall of 2021.

Concentrations of nitrate are generally stable, with the exception of at monitoring wells BH10 and BH11, where concentrations have been observed to fluctuate significantly, occasionally exceeding the ODWQS.

Concentrations of nitrate at BH10 and BH11 during 2019 and 2020 were significantly higher than the historical record at these locations and are interpreted to be anomalous.

pH levels have fluctuated over the available historical record, with no apparent trends noted. Concentrations of aluminum and copper have remained stable, with the exception of decreasing trends noted at monitoring wells BH1 and BH11.

Further monitoring investigations are required to confirm the trends observed during this monitoring period. Concentrations of all parameters quantified at newly installed wells BH12, BH13 and BH14 generally appear to be stable, with the exception of aluminium concentrations reported at BH13; however, additional sampling events are required at these locations before a detailed trend analysis can be completed.

4.5 Groundwater Field Measurement Results

On April 24 and October 2 and 3, 2024, Pinchin collected groundwater monitoring parameters from each of the well locations using a YSI-556 water quality meter for measurement of field parameters. The field parameter measurements are provided in Tables 3 through 11.

A review of the field parameters for the project identified no significant concerns in the water quality during the monitoring events. The water quality at the Site monitoring locations did not change significantly between each of the monitoring locations, and the measured field parameters were within the normal variability associated with shallow groundwater monitoring systems.

4.6 Surface Water Quality Monitoring

4.6.1 The Provincial Water Quality Objectives (PWQO)

The PWQO are numerical and narrative criteria which serve as chemical and physical indicators representing satisfactory levels for surface water and groundwater where it discharges to the surface. The PWQO are levels which are protective of the water quality for all forms of aquatic life during their indefinite exposures to the water. The PWQO levels include protection for anthropogenic recreational water uses where there is a high potential of exposure and are based on public health and aesthetic considerations.

In general, the PWQO state that the surface water quality of a water body shall be “free from contaminating levels of substances and materials attributable to human activities which in themselves, or in combination with other factors can: settle to form objectionable deposits; float as debris or scum or oil or other matter to form nuisances; product objectionable colour, odour, taste, or turbidity; injure, are toxic to or produce adverse physiological or behavioural responses in humans, animals, or plants; or enhance the production of undesirable aquatic life or result in the dominance of nuisance species”.

4.6.2 Canadian Water Quality Guidelines (CWQG)

The CWQG were developed by the Canadian Council of Resources and Environment to provide basic scientific information about the effects of water quality parameters on uses in order to assess water quality issues and concerns and to establish water quality objectives for specific sites. The guidelines contain recommendations for chemical, physical, radiological and biological parameters necessary to protect and enhance designated uses of water. They apply only to inland surface waters and groundwater and not to estuarine and marine waterbodies. The rationale for each parameter is included to assist in the development of water quality objectives to suit local water conditions.

4.7 Surface Water Results

Pinchin collected surface water samples from all surface water monitoring locations during the spring and fall monitoring events in 2024, with the exception of SW-1, which was dry during all sampling events, and SW-3, which was dry during the fall event. Surface water samples were collected to monitor the surface water for contaminants of concern as a compliance requirement. A summary of water quality monitoring data relative to the regulatory standards is presented in the attached Tables 14 through 16. Copies of the laboratory analytical reports are presented in Appendix VI.

Surface water monitoring location SW-1, located within the creek to the south of the Site at the culvert on 25th and 26th Side Road, is considered representative of background water quality conditions and is characterized by low pH and naturally elevated concentrations of chloride, phenols, iron, phosphorus, aluminum, cobalt and zinc. These parameter concentrations could not be evaluated during the 2024 monitoring program due to the dry conditions encountered during all sampling events.

Surface water monitoring location SW-3, located in the pool of water at the northwest edge of the waste deposits, is considered to be representative of source surface water quality at the Site. Pinchin notes that SW-3 was observed to be dry during the fall event; therefore, a sample was not collected from SW-3 during the fall event. During the spring 2024 monitoring event, SW-3 satisfied the PWQO and/or CWQG, with the exception of phenols and cobalt in exceedance of the PWQO, as well as iron in exceedance of both the PWQO and CWQG. These elevated concentrations are not interpreted to be landfill-derived, as they are consistent with or lower than concentrations reported at background location SW-1. Previous concentrations at SW3 also indicated elevated boron concentrations, which are interpreted to be landfill derived.

Surface water monitoring location SW-2, located within Love Lake north of the Site, is considered to be representative of surface water conditions downgradient from the Site. During the 2024 monitoring program, SW-2 satisfied the PWQO and/or CWQG, with the exception of iron in exceedance of the PWQO and CWQG during all sampling events, as well as aluminium in exceedance of the PWQO and CWQG and pH below the range specified by the PWQO and CWQG during the spring event. The low pH

and elevated concentrations of iron and aluminium are not interpreted to be landfill-derived, as they are consistent with the conditions reported at background location SW-1.

Pinchin notes that the presence of clay within surface water samples may result in biased high aluminium concentrations due to interference. The PWQO requires that samples analyzed for aluminium be free of clay. Based on the concentration of total suspended solids (TSS) reported within the samples, there is a potential for interference during aluminium analysis.

4.8 Surface Water Trend Analysis

A series of time versus concentration graphs were developed to evaluate the concentrations of several select landfill indicator parameters (including alkalinity, chloride, DOC, pH, TDS, nitrate, aluminum and copper) at each surface water monitoring location for the Site. Current and historical surface water quality data was utilized to identify any apparent trends or inconsistencies in the water quality at the Site. The surface water time versus concentration graphs are provided in Appendix VIII.

In general, the landfill indicator parameters are demonstrating stable trends with respect to time at all surface water monitoring locations with some exceptions. Concentrations of alkalinity, DOC, TDS and nitrate are generally stable except for SW-3, at which concentrations fluctuate and do not demonstrate an apparent trend. Concentrations of chloride are increasing at SW-1 and decreasing at SW-3 between 2020 and 2024. Alkalinity is generally consistent at SW-1 and SW-2 but is significantly higher and less stable at SW-3. DOC appears to fluctuate at all three surface water monitoring locations but has generally decreased over the course of the available monitoring record.

Concentrations of pH and aluminum do not appear to be indicative of an apparent trend, although SW-1 and SW-2 are consistently below the PWQO range for pH. Concentrations of aluminum are generally stable at SW-2 and SW-3, although reported concentrations at SW-1 were significantly higher during the fall of 2020 and spring of 2021.Concentrations of copper appear to be decreasing at SW-3.

Further monitoring investigations are required to confirm the trends observed during this monitoring period. Furthermore, it may be necessary to determine a new background monitoring location, should the background monitoring location SW-1 remain persistently dry.

4.9 Surface Water Field Measurement Results

On April 24 and October 2 and 3, 2024, Pinchin collected surface water monitoring parameters from each surface water monitoring location using a YSI-556 water quality meter for real-time in-situ measurement of field parameters. The field parameter measurements are provided in Tables 14 through 16.

A review of the field parameters for the project identified no significant concerns in the water quality during the monitoring event. The quality at the surface water monitoring locations did not change significantly between each of the monitoring locations. Surface water flow measurements were not

obtained. SW-1 was observed to be dry during all sampling events, and SW-3 was observed to be dry during the fall sampling event.

4.10 Leachate Characterization

The Site is an operating landfill with minor operational or maintenance being overseen by the Client. The Site does not have a leachate collection system whereby leachate quality monitoring and characterization is being completed. Currently, there is no groundwater monitoring well included in the existing monitoring well network at the Site that is situated within the active landfill area or which is considered representative of source leachate water quality. Therefore, leachate at the Site cannot be characterized at the time of preparation of this report.

4.11 Contaminant Attenuation Zone

A formal Contaminant Attenuation Zone (CAZ) has not been established for the Site. However, it should be noted that based on the current observed water quality data, landfill derived leachate impacts appear to attenuate prior to the property boundary.

4.12 Adequacy of the Monitoring Program

At this time, there is currently no formal monitoring program for the Site outlined within the CofA. Pinchin recommends continuation of sampling the groundwater and surface water two times per year (spring and fall) to establish any notable trends or impacts emanating from the landfill. The results of inspection and monitoring will be reported annually to the MECP.

During these sampling and reporting events, it is recommended that the monitoring well network be continually evaluated for adequacy and determine if there is a need for additional monitoring locations.

4.12.1 Monitoring Well Network Efficiency

Additional well installations were completed in April 2020 to supplement the existing groundwater monitoring well network at the Croft Waste Disposal Site. These additional wells (BH12, BH13 and BH14) were installed downgradient of the Site to the north and northwest to allow for further water quality characterization in all downgradient directions and closer to the property boundary. Pinchin concludes that the current groundwater monitoring well network is considered adequate for evaluating the Croft Waste Disposal Site geological and hydrogeological characteristics downgradient of the Site.

4.12.2 Background Monitoring Well Efficiency

Based on a review of the groundwater contaminant data from BH1, as well as the assumed groundwater flow direction, monitoring well BH1 has been identified as a best-case background location; however, Pinchin notes that increasing conductivity and concentrations of TDS, chloride, sulphate, calcium and

sodium have been observed at BH1 over the course of the most recent annual monitoring events. Pinchin recommends that this well continue to be monitored in 2025; if elevated concentrations of landfill-related parameters continue to be identified at BH1, this well may no longer be a suitable representation of background conditions.

4.13 Supplemental Monitoring: Sediment, Benthic and/or Toxicity Monitoring

No supplemental monitoring was completed as part of the 2024 monitoring program completed by Pinchin.

4.14 Assessment of the Need for Implementation of Contingency Measures

There are currently no set trigger levels designed for the Site. At this time, Pinchin does not recommend any need or implementation for contingency measures.

4.15 Waste Disposal Site Gas Impacts

At this time, no evidence has been documented to suggest that methane gas generation from the Site is a significant concern.

4.16 Effectiveness of Engineered Controls

With the exception of the intermittent landfill cover, there are no operational engineered controls in effect at the Site. The Client should continue to maintain the integrity of the landfill cover. Annual monitoring and inspections should continue to be completed to ensure regular maintenance is occurring on an as needed basis. At the time of the 2024 monitoring events, no significant damage or concerns were noted.

4.17 Control Systems Monitoring

Environmental control systems are designed, constructed and utilized at some waste disposal sites to reduce or increase an environmental variable to an acceptable level, or to maintain an environmental variable within an acceptable range in order to prevent a negative environmental outcome. Certain environmental control systems such as a leachate collection system or a methane gas collection system can provide the basis for operator intervention to bring about or maintain a desired condition to operate the landfill. The Site does not currently operate any control systems; therefore, no control system monitoring was completed as part of the 2024 monitoring program.

4.18 QA/QC Results

In order to provide confidence in the data obtained, a comprehensive QA/QC component was included in the monitoring program. The QA/QC procedures developed for this monitoring program are prepared in accordance with MECP Sampling Document and in most cases, exceed the minimum requirements.

Water quality samples collected by Pinchin were generated in accordance with acceptable procedures. No analytical hold times were exceeded for samples submitted for analyses and sample temperatures upon receipt at the project laboratory were below 10˚ Celsius.

One groundwater duplicate sample pair and one surface water duplicate sample pair were collected from the Site during the spring and fall sampling events and submitted for laboratory analysis of the full suite of analytical parameters. All duplicate data for 2024 are provided in Tables 17 and 18 for groundwater and surface water, respectively.

The following table summarizes the duplicate pairs for 2024:

Sampling Event	Duplicate Sample ID	Original Sample ID
Spring	GW DUP	BH13
	SW DUP	SW-2
Fall	GW DUP	BH1
	SW DUP	SW-2

The calculated RPDs for the original and field duplicate groundwater sample has been compared to the performance standards considered acceptable by Pinchin (i.e., 50%). Each of the calculated groundwater RPDs met the corresponding performance standard.

The analytical laboratory employed to perform the laboratory analyses (SGS) is accredited by the Standards Council of Canada/Canadian Association for Laboratory Accreditation in accordance with ISO/IEC 17025:1999 – "*General Requirements for the Competence of Testing and Calibration Laboratories*" for the tested parameters and has met the standards for proficiency testing developed by the Standards Council of Canada for parameters set out in the Soil, Ground Water and Sediment Standards.

Sample analysis dates provided on the laboratory analytical reports issued by SGS indicate that all sample analyses were performed within the required sample/extract hold times as indicated by the dates presented in columns for each sample parameter on the analytical report. The laboratory minimum detection limits were reported to be at or lower than the required MECP reporting detection limits for the parameters analyzed. A comparison of the internal laboratory duplicate samples indicates that all samples and the respective duplicates are within acceptable limits.

Upon review of the QA/QC results for spring and fall sampling programs, Pinchin has not identified any significant concerns that would warrant the invalidation of any of the field or laboratory data; therefore, considers the data generated as part of this program to be reliable.

5.0 CONCLUSIONS

Based on the work completed, the following is a summary of the activities and findings of the 2024 water quality monitoring program:

- Groundwater samples were collected from all monitoring wells at the Site on April 24 and October 2 and 3, 2024. It is noted that BH12 was observed to be damaged at the time of the fall 2024 sampling event; therefore, a sample could not be collected. All groundwater samples were submitted for laboratory analysis of parameters identified in the previous monitoring reports. The groundwater quality was assessed based on the ODWQS and Guideline B-7;
- Surface water samples were collected from all monitoring locations on April 24 and October 2, 2024, with the exception of SW-1 during all events and SW-3 in the fall of 2024 as they was observed to be dry at the time. All surface water samples were submitted for laboratory analysis of parameters identified in the previous monitoring reports. Surface water quality was assessed based on the PWQO and CWQG;
- Groundwater flow at the Site is interpreted to flow towards the north;
- All reported concentrations in the groundwater samples submitted for analysis satisfied the respective ODWQS parameters with the exception the following:
  - pH (low) at BH1;
  - Hardness (high) at BH1, BH9, BH10 and BH14;
  - Hardness (low) at BH1, BH8, BH11, BH12 and BH13;
  - TDS at BH10;
  - Alkalinity (low) at BH8 and BH13;
  - Chloride at BH10;
  - Sodium at BH10;
  - DOC at BH1, BH9, BH10, BH11 and BH13;
  - Iron at BH1, BH9, BH12 and BH14;
  - Manganese at BH1, BH9, BH10, BH11, BH12, BH13 and BH14;
  - Turbidity at BH1, BH8, BH9, BH10, BH11, BH12, BH13 and BH14; and
  - Aluminum at BH1, BH8, BH9, BH11 and BH13.
- All reported concentrations in the groundwater samples collected from the downgradient monitoring wells met the applicable Guideline B-7 criteria for all parameters analyzed with the exception of the following:

- Chloride at BH10 during the spring and fall;
- Sodium at BH10 during the spring and fall;
- Alkalinity (low) at BH8 during the spring and fall, as well as at BH13 during the spring;
- Alkalinity (high) at BH10 during the spring and fall;
- DOC at BH9 during the spring and fall, as well as at BH10 and Bh11 during the fall;
- TDS at BH9 and BH10 during the spring and fall;
- Iron at BH9 during the spring and fall; and
- Manganese at BH9 during the spring and fall, as well as BH10 during the fall.

- All reported concentrations in the surface water samples submitted for analysis satisfied the respective PWQO and/or CWQG parameters with the exception of the following:
  - pH (low) at SW-2;
  - Phenolics at SW-3;
  - Iron at SW-2 and SW-3;
  - Aluminum at SW-2; and
  - Cobalt at SW-3.

Based on the results obtained from the existing groundwater monitoring wells and surface water monitoring locations, Pinchin has not identified any significant landfill related impacts at the Site. Elevated concentration parameters within the groundwater samples analyzed at the furthest downgradient monitoring locations (i.e., BH8, BH9, BH12, BH13 and BH14) are likely attributed to either naturally occurring conditions within the shallow unconfined aquifer on-site or from temperate impacts from leachate sourced from the waste deposits at the Site. All exceedances of the Guideline B-7 RUC at the downgradient wells considered representative of the property boundary are related to operational guidelines and/or aesthetic objectives associated with drinking water systems set by the ODWQS and are not considered to be an immediate significant human health or environmental concern originating from the Site. These concentrations are interpreted to attenuate with further distance from the Site. In summary, the current 2024 groundwater monitoring data indicates that the Site is continuing to effectively operate as designed, as a natural attenuation type facility, with any landfill derived groundwater impacts attenuated to acceptable levels prior to the downgradient property boundaries.

6.0 RECOMMENDATIONS

Based on a review of the existing dataset and regulatory requirements to date, Pinchin recommends the following:

- Continue with routine monitoring of all the available groundwater monitoring wells and surface water monitoring locations. Groundwater and surface water monitoring shall be completed with analyses for the parameters identified in the historical monitoring record. It is recommended that groundwater and surface water monitoring continue to be completed during the spring and late fall to generate a baseline data set, to evaluate trends and to determine the need and scope of a long-term monitoring program for the Site;
- Should elevated concentrations of landfill-related parameters continue to be observed at monitoring well BH1, it may be necessary to re-evaluate its use as the background monitoring location for this Site. Furthermore, should dry conditions persist at SW-1, a new background location for surface water quality evaluation may be necessary;
- A new PVC well slip cap should be installed at drive point DP7;
- It should be noted that monitoring well BH12 was repaired in November 2024. It is therefore recommended that the top of casing elevation be re-surveyed and tied into the existing survey network during the next annual monitoring event in the spring of 2025 in order to ensure accurate groundwater elevations can continue to be calculated for monitoring location; and
- The Client should continue to ensure that the requirements as specified in the CofA are complied with.

7.0 MONITORING AND SCREENING CHECKLIST

In accordance with the MECP Landfill Standards, the Monitoring and Screening Checklist for the Site completed by the Pinchin CEP is completed and provided in Appendix IX.

8.0 DISCLAIMER

This Water Quality Monitoring Program was performed for the Corporation of the Municipality of Magnetawan (Client) in order to investigate the environmental condition of the groundwater and surface water at the Croft Waste Disposal Site (Site). The term recognized environmental condition means the presence or likely presence of any hazardous substance on a property under conditions that indicate an existing release, past release, or a material threat of a release of a hazardous substance into structures on the property or into the ground, groundwater, or surface water of the property. This Water Quality

Monitoring Program does not quantify the extent of the extent of the current and/or recognized environmental condition or the cost of any remediation.

Conclusions derived are specific to the immediate area of study and cannot be extrapolated extensively away from sample locations. Samples have been analyzed for a limited number of contaminants that are expected to be present at the Site, and the absence of information relating to a specific contaminant does not indicate that it is not present.

No environmental site assessment can wholly eliminate uncertainty regarding the potential for recognized environmental conditions on a property. Performance of this Water Quality Monitoring Program to the standards established by Pinchin is intended to reduce, but not eliminate uncertainty regarding the potential for recognized environmental conditions on the Site and recognizes reasonable limits on time and cost.

This Water Quality Monitoring Program was performed in general compliance with currently acceptable practices for environmental site investigations and specific Client requests as applicable to this Site.

This report was prepared for the exclusive use of the Client, subject to the conditions and limitations contained within the duly authorized work plan. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, is the responsibility of the third parties. If additional parties require reliance on this report, written authorization from Pinchin will be required. Pinchin disclaims responsibility of consequential financial effects on transactions or property values, or requirements for follow-up actions and costs. No other warranties are implied or expressed. Furthermore, this report should not be construed as legal advice.

Pinchin will not be responsible for any consequential or indirect damages. Pinchin will only be held liable for damages resulting from the negligence of Pinchin. Pinchin will not be liable for any losses or damage if the Client has failed, within a period of two years following the date upon which the claim is discovered within the meaning of the Limitations Act, 2002 (Ontario), to commence legal proceedings against Pinchin to recover such losses or damage.

Pinchin makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this report, including, but not limited to ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and these interpretations may change over time.

APPENDIX I
Figures

PINCHIN

PROJECT NAME:	2024 ANNUAL MONITORING REPORT
CLIENT NAME:	THE MUNICIPALITY OF MAGNETAWAN
PROJECT LOCATION:	CROFT WASTE DISPOSAL SITE, MAGNETAWAN, ONTARIO
FIGURE NAME:	KEY MAP
FIGURE NUMBER	1

PROJECT NUMBER:	SCALE:	DRAWN BY:	REVIEWED BY:	DATE:
225335.008	AS SHOWN	NJ	OK	FEBRUARY 2025

N

LEGEND

- PROPERTY BOUNDARY
- PROPOSED LIMIT OF WASTE
- 30m BUFFER
- UAV IMAGE

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

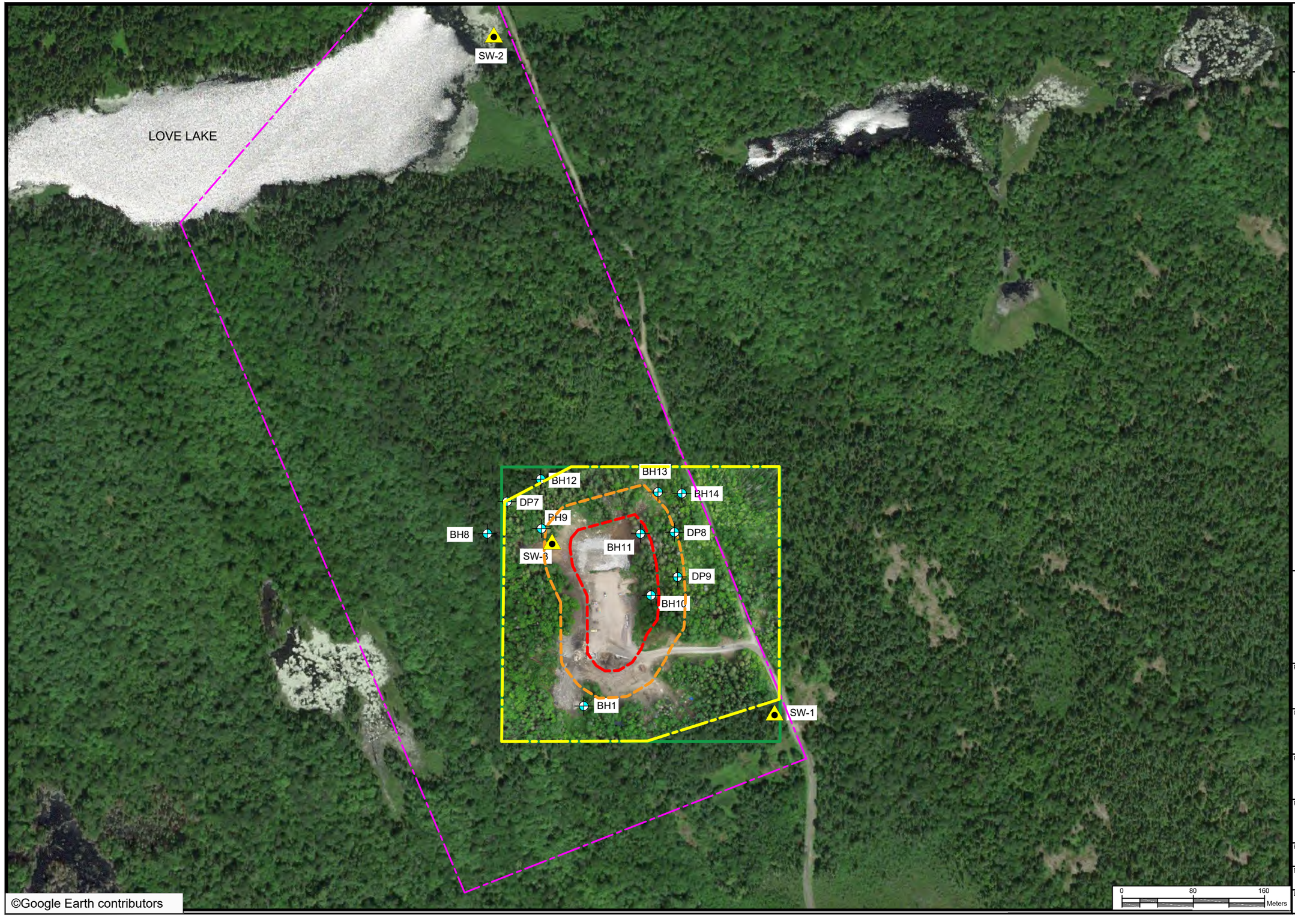
PROJECT NAME:
2024 ANNUAL MONITORING REPORT

CLIENT NAME:
THE MUNICIPALITY OF MAGNETAWAN

PROJECT LOCATION:
CROFT WASTE DISPOSAL SITE, MAGNETAWAN, ONTARIO

FIGURE NAME:
SITE PLAN

PROJECT NUMBER:	SCALE:
225335.008	AS SHOWN
DRAWN BY: NJ	REVIEWED BY: OK
DATE: FEBRUARY 2025	FIGURE NUMBER: 2



N

LEGEND

- PROPERTY BOUNDARY
- PROPOSED LIMIT OF WASTE
- 30m BUFFER
- UAV IMAGE
- GROUNDWATER MONITORING WELL
- SURFACE WATER MONITORING LOCATION

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

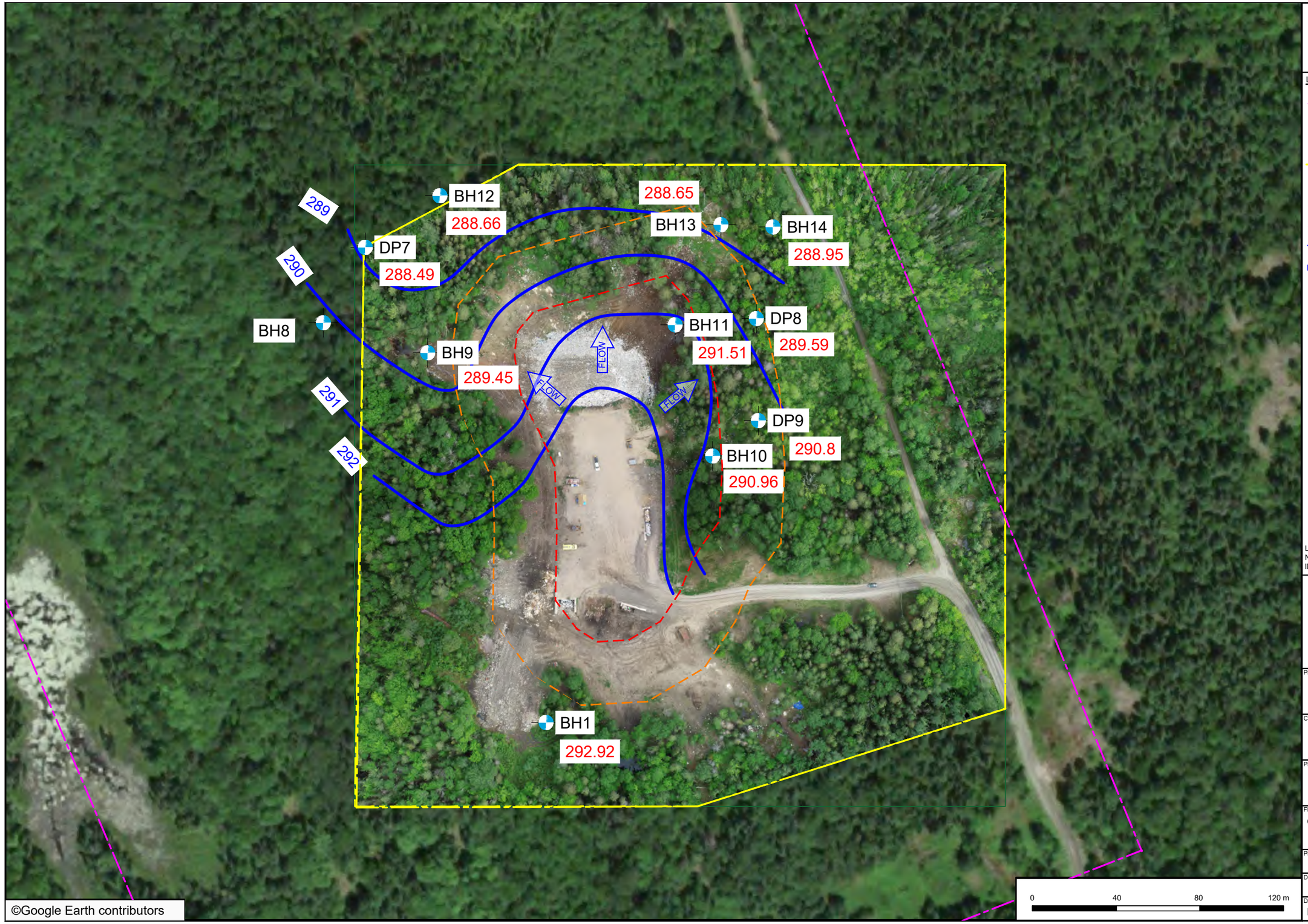
PROJECT NAME:
2024 ANNUAL MONITORING REPORT

CLIENT NAME:
THE MUNICIPALITY OF MAGNETAWAN

PROJECT LOCATION:
CROFT WASTE DISPOSAL SITE, MAGNETAWAN, ONTARIO

FIGURE NAME:
MONITORING LOCATIONS

PROJECT NUMBER:	SCALE:
225335.008	AS SHOWN
DRAWN BY: NJ	REVIEWED BY: OK
DATE: FEBRUARY 2025	FIGURE NUMBER: 3



N

LEGEND

- PROPERTY BOUNDARY
- PROPOSED LIMIT OF WASTE
- 30m BUFFER
- UAV IMAGE
- GROUNDWATER MONITORING WELL
- 100.0 GROUNDWATER MONITORING WELL ELEVATION (masl.)
- 100.0 GROUNDWATER CONTOUR ELEVATION (masl.)
- GROUNDWATER CONTOUR LINES
- FLOW GROUNDWATER FLOW DIRECTION

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

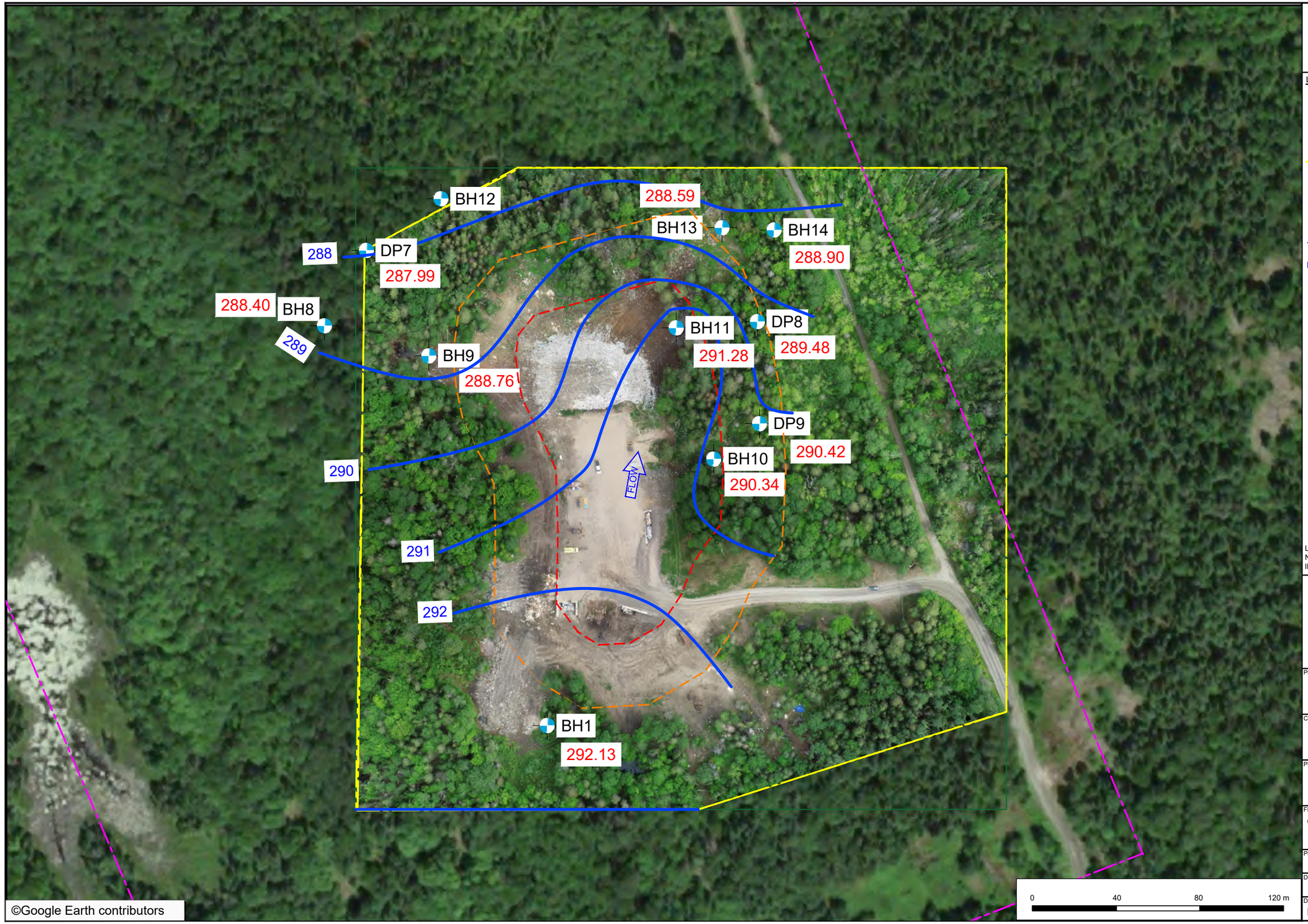
PROJECT NAME:
2024
ANNUAL MONITORING REPORT

CLIENT NAME:
THE MUNICIPALITY OF MAGNETAWAN

PROJECT LOCATION:
CROFT WASTE DISPOSAL SITE, MAGNETAWAN, ONTARIO

FIGURE NAME:
GROUNDWATER CONTOUR PLAN SPRING 2024

PROJECT NUMBER:	SCALE:
225335.008	AS SHOWN
DRAWN BY:	REVIEWED BY:
NJ	OK
DATE:	FIGURE NUMBER:
FEBRUARY 2025	4



N

LEGEND

- PROPERTY BOUNDARY
- PROPOSED LIMIT OF WASTE
- 30m BUFFER
- UAV IMAGE
- GROUNDWATER MONITORING WELL
- 100.0 GROUNDWATER MONITORING WELL ELEVATION (masl.)
- 100.0 GROUNDWATER CONTOUR ELEVATION (masl.)
- GROUNDWATER CONTOUR LINES
- FLOW GROUNDWATER FLOW DIRECTION

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME:
2024
ANNUAL MONITORING REPORT

CLIENT NAME:
THE MUNICIPALITY OF MAGNETAWAN

PROJECT LOCATION:
CROFT WASTE DISPOSAL SITE, MAGNETAWAN, ONTARIO

FIGURE NAME:
GROUNDWATER CONTOUR PLAN FALL 2024

PROJECT NUMBER:	SCALE:
225335.008	AS SHOWN
DRAWN BY: NJ	REVIEWED BY: OK
DATE: FEBRUARY 2025	FIGURE NUMBER: 5

APPENDIX II

Certificate of Approval

Ministry of the Environment

PROVISIONAL CERTIFICATE # A-703402

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:

Her Majesty the Queen in Right of Ontario
as represented by the Minister of Natural Resources
4 Miller Street
Parry Sound, Ontario

for the use and operation of a 2.5 hectare landfilling site

all in accordance with the following plans and specifications:

Located: Lot 26, Concession 11
Township of Croft
District of Parry Sound

which includes the use of the site only for the 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 Waste and Brush

and subject to the following conditions:

Dated this 2nd day of April, 19 80.

Director, Section 39,
The Environmental Protection Act, 1971

MOE 1408 (10/79)

APPENDIX III

Borehole Logs

BOREHOLE LOG	PROJECT: 60336434	BOREHOLE: DP7 1 of 1
Subsurface Investigation Croft Landfill **Client:** Township of Magnetawan	**Northing:** N/A **Easting:** N/A **Methodology:** Hand Auger **Contractor:** N/A	**DATE:** June 9, 2015 **LOGGED BY** TLC/SRB **GROUND ELEV** 289.30 m ASL

DEPTH (m) (mASL)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE TYPE	N VALUE	% WATER	% REC	% RQD	RECOVERY (%) 25 50 75 100	RQD (%) 25 50 75 100
0.3 289.0		**TOPSOIL** Dark brown to black, silty topsoil, trace to some sand, occasional rootlets, moist becoming saturated below about 0.2 m.		1		GS						
				2		GS						
0.5 288.8		**SAND** Brown to grey fine to medium sand, trace fine gravel, trace silt, saturated. -Changing to a silty fine sand with occasional fine gravel and cobles below about 0.4 m.		3		GS						
1				4		GS						
		SANDY SILT TILL Brown to grey silty sand to sandy silt till, brown oxidation observed, trace fiine gravel, moist to wet, dense. -Hand auger refusal in dense till at about 0.8 m										
1.7 287.6		Borehole teminated at 1.72 m in assumed till due to drive point refusal on assumed bedrock.										

Printed: Jan 15, 16
File Location:

AECOM

BOREHOLE LOG	PROJECT: 60336434	BOREHOLE: DP8 1 of 1
Subsurface Investigation Croft Landfill **Client:** Township of Magnetawan	**Northing:** N/A **Easting:** N/A **Methodology:** Hand Auger **Contractor:** N/A	**DATE:** June 9, 2015 **LOGGED BY** TLC/SRB **GROUND ELEV** 290.54 m ASL

DEPTH (m) (mASL)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE TYPE	N VALUE	% WATER	% REC	% RQD	RECOVERY (%) 25 50 75 100	RQD (%) 25 50 75 100
0.2 290.3		**TOPSOIL** Dark brown to black, silty topsoil, trace to some sand, occasional rootlets, moist.		1		GS						
				2		GS						
		SAND Brown to grey fine to medium sand, trace fine gravel, trace silt, wet. -Becoming saturated below about 0.4 m. -Changing to a silty fine sand with trace fine gravel below about 0.5 m. -Hand auger refusal in dense soil at about 0.9 m		3		GS						
				4		GS						
				5		GS						
				6		GS						
1				7		GS						
1.4 289.1		Borehole teminated at 1.41 m in assumed silty sand due to drive point refusal on assumed bedrock.										

AECOM

BOREHOLE LOG	PROJECT: 60336434	BOREHOLE: DP9 1 of 1
Subsurface Investigation Croft Landfill **Client:** Township of Magnetawan	**Northing:** N/A **Easting:** N/A **Methodology:** Hand Auger **Contractor:** N/A	**DATE:** June 9, 2015 **LOGGED BY** TLC/SRB **GROUND ELEV** 289.97 m ASL

DEPTH (m) (mASL)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE TYPE	SAMPLE N VALUE	SAMPLE % WATER	SAMPLE % REC	SAMPLE % RQD	RECOVERY (%) 25 50 75 100	RQD (%) 25 50 75 100
0.2 289.8		**TOPSOIL** Dark brown to black, silty topsoil, trace to some sand, occasional rootlets, saturated.		1		GS						
		SAND Grey fine to medium sand, trace fine gravel, trace silt, saturated.		2		GS						
		-Changing to a medium sand with trace fine sand below about 0.7 m.		3		GS						
1		-Grey silty sand noted below about 0.9 m.		4		GS						
		-Hand auger refusal in dense soil at about 1.0 m.		5		GS						
1.3 288.7		Borehole teminated at 1.27 m in assumed silty fine sand.		6		GS						

AECOM

BOREHOLE LOG	PROJECT: 60336434	BOREHOLE: BH8 1 of 1
Subsurface Investigation Croft Landfill **Client:** Township of Magnetawan	**Northing:** N/A **Easting:** N/A **Methodology:** Auger/Coring **Contractor:** pontil drilling	**DATE:** June 22, 2015 **LOGGED BY** SRB **GROUND ELEV** 291.63 m ASL

DEPTH (m) (mASL)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE TYPE	SAMPLE N VALUE	SAMPLE % WATER	SAMPLE % REC	SAMPLE % RQD	RECOVERY (%) 25 50 75 100	RQD (%) 25 50 75 100
0.2 291.5		**TOPSOIL** Dark brown, silty topsoil, trace to some sand, trace rootlets, moist.		1		SS	9					
		SAND Brown fine to medium sand, trace coarse sand and fine to medium gravel, moist.		2		SS	8/0.23m					
1.0 290.6		**GNEISSIC BEDROCK** Grey to black metamorphic bedrock, some quartzite and biotite with garnet mineralization, massive.		3		HQ			100	100		
				4		HQ			100	100		
				5		HQ			100	100		
				6		HQ			100	92		
				7		HQ			100	92		
5.7 285.9		Borehole terminated at 5.72 m in Gniessic Bedrock.										

Printed: Jan 15, 16
File Location:

AECOM

BOREHOLE LOG	PROJECT: 60336434	BOREHOLE: BH9 1 of 1
Subsurface Investigation Croft Landfill **Client:** Township of Magnetawan	**Northing:** N/A **Easting:** N/A **Methodology:** Auger/Coring **Contractor:** pontil drilling	**DATE:** June 22, 2015 **LOGGED BY** SRB **GROUND ELEV** 289.52 m ASL

DEPTH (m) (mASL)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE TYPE	SAMPLE N VALUE	SAMPLE % WATER	SAMPLE % REC	SAMPLE % RQD	RECOVERY (%) 25 50 75 100	RQD (%) 25 50 75 100
		SAND Brown fine to medium sand, some fine gravel, wet. -0.15 m layer of brown to grey silty fine sand, trace gravel at about 0.2 m.		1		SS	4					
				2		SS	31					
1		-0.15 m layer of medium to coarse sand, some gravel, saturated, at bedrock contact.										
1.4 288.2		**GNEISSIC BEDROCK** Grey to black metamorphic bedrock, some quartzite and biotite with garnet mineralization, massive.		3		HQ			100	100		
2												
3				4		HQ			100	100		
				5		HQ			100	100		
3.9 285.6		Borehole terminated at 3.89 m in Gniessic Bedrock.										

Printed: Jan 15, 16
File Location:

AECOM

BOREHOLE LOG	PROJECT: 60336434	BOREHOLE: BH10 1 of 1
Subsurface Investigation Croft Landfill **Client:** Township of Magnetawan	**Northing:** N/A **Easting:** N/A **Methodology:** Auger/Coring **Contractor:** pontil drilling	**DATE:** June 23, 2015 **LOGGED BY** SRB **GROUND ELEV** 290.87 m ASL

DEPTH (m) (mASL)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE TYPE	SAMPLE N VALUE	SAMPLE % WATER	SAMPLE % REC	SAMPLE % RQD	RECOVERY (%) 25 50 75 100	RQD (%) 25 50 75 100
0.2 290.7		**TOPSOIL** Dark brown, silty topsoil, trace to some sand, trace rootlets, moist.		1		SS	0					
		SAND Brown silty sand, trace fine gravel, moist. -Becoming fine sand and saturated below about 0.76 m -Changing to a fine to medium sand below about 0.9 m.		2		SS	23					
1												
				3		SS	21					
2												
2.1 288.7		**GNEISSIC BEDROCK** Grey to black metamorphic bedrock, some quartzite and biotite with garnet mineralization, massive.		4 5		HQ HQ			100 100			
3				6		HQ			100			
4.1 286.8	4	Borehole terminated at 4.06 m in Gniessic Bedrock.										

Printed: Jan 15, 16
File Location:

AECOM

BOREHOLE LOG	PROJECT: 60336434	BOREHOLE: BH11 1 of 1
Subsurface Investigation Croft Landfill **Client:** Township of Magnetawan	**Northing:** N/A **Easting:** N/A **Methodology:** Auger/Coring **Contractor:** pontil drilling	**DATE:** June 24, 2015 **LOGGED BY** JNB **GROUND ELEV** 290.74 m ASL

DEPTH (m) (mASL)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE TYPE	SAMPLE N VALUE	SAMPLE % WATER	SAMPLE % REC	SAMPLE % RQD	RECOVERY (%) 25 50 75 100	RQD (%) 25 50 75 100
		GNEISSIC BEDROCK Grey to black metamorphic bedrock, some quartzite and biotite with garnet mineralization, massive.		1		HQ			100			
1				2		HQ			100			
2												
3				3		HQ			100			
4												
4.4 286.4		Borehole terminated at 4.39 m in Gniessic Bedrock.										

Printed: Jan 15, 16
File Location:

AECOM

Log of Borehole: BH12

Project #: 225335.005 **Logged By:** TG

Project: Groundwater Monitoring Well Installation

Client: The Corporation of the Municipality of Magnetawan

Location: Croft Waste Disposal Site, Magnetawan, Ontario

Drill Date: April 21, 2020 **Sheet:** 1 of 1

SUBSURFACE PROFILE					SAMPLE			
Depth (ft / m)	Symbol	Description	Elevation (m)	Monitoring Well Details	Recovery (%)	Sample ID	Soil Vapour Concentration (ppm) CGI/PID	Laboratory Analysis
0 / 0		Ground Surface	0.00					
0–20 / 0–6		***Gneissic Bedrock*** Grey to black metamorphic bedrock, some quartzite and biotite with garnet mineral, ization, massive		Riser; Bentonite; Silica Sand; Screen	100	RC1		
					100	RC2		
					100	RC3		
					100	RC4		
20 / 6		End of Borehole	-6.10					

Contractor: Marathon Underground Constructors Corporation

Grade Elevation: 288.896 mREL

Drilling Method: HQ Diamond Core Bit

Top of Casing Elevation: 289.866 mREL

Well Casing Size: 5.08 cm

UTM Coordinates: 17T 593608mE 5058582 mN

Log of Borehole: BH13

Project #: 225335.005 **Logged By:** TG

Project: Groundwater Monitoring Well Installation

Client: The Corporation of the Municipality of Magnetawan

Location: Croft Waste Disposal Site, Magnetawan, Ontario

Drill Date: April 22, 2020 **Sheet:** 1 of 1

SUBSURFACE PROFILE					SAMPLE			
Depth (ft / m)	Symbol	Description	Elevation (m)	Monitoring Well Details	Recovery (%)	Sample ID	Soil Vapour Concentration (ppm) CGI/PID	Laboratory Analysis
0 / 0		Ground Surface	0.00					
0–20 / 0–6		***Gneissic Bedrock*** Grey to black metamorphic bedrock, some quartzite and biotite with garnet mineral, ization, massive		Riser; Bentonite; Silica Sand; Screen	100	RC1		
					100	RC2		
					100	RC3		
					100	RC4		
20 / 6		End of Borehole	-6.10					

Contractor: Marathon Underground Constructors Corporation

Grade Elevation: 290.821 mREL

Drilling Method: HQ Diamond Core Bit

Top of Casing Elevation: 291.566 mREL

Well Casing Size: 5.08 cm

UTM Coordinates: 17T 593714 mE 5058508 mN

Log of Borehole: BH14

Project #: 225335.005 **Logged By:** TG

Project: Groundwater Monitoring Well Installation

Client: The Corporation of the Municipality of Magnetawan

Location: Croft Waste Disposal Site, Magnetawan, Ontario

Drill Date: April 22, 2020 **Sheet:** 1 of 1

SUBSURFACE PROFILE					SAMPLE			
Depth (ft / m)	Symbol	Description	Elevation (m)	Monitoring Well Details	Recovery (%)	Sample ID	Soil Vapour Concentration (ppm) CGI/PID	Laboratory Analysis
0 / 0		Ground Surface	0.00					
0–20 / 0–6		***Gneissic Bedrock*** Grey to black metamorphic bedrock, some quartzite and biotite with garnet mineral, ization, massive		Riser; Bentonite; Silica Sand; Screen	100	RC1		
					100	RC2		
					100	RC3		
					100	RC4		
20 / 6		End of Borehole	-6.10					

Contractor: Marathon Underground Constructors Corporation

Grade Elevation: 289.416 mREL

Drilling Method: HQ Diamond Core Bit

Top of Casing Elevation: 290.259 mREL

Well Casing Size: 5.08 cm

UTM Coordinates: 17T 593733 mE 5058558 mN

APPENDIX IV
Summary Tables

TABLE 1
Groundwater Monitoring Location Data
Croft Waste Disposal Site
Magnetawan , Ontario

Well ID Number	Date (dd/mm/yyyy)	Ground Surface Elevation (masl)	TOC Elevation (masl)	Height of TOC from Ground Surface (m)	Water Level Measurement from TOC (m)	Total Well Depth from TOC (m)	Depth to Groundwater (mbgs)	Calculated Water Level Elevation (masl)	UTM Coordinates			Comments
									Zone	Northing (m)	Easting (m)	
BH1	8-May-14	NA	293.82	-	0.93	-	-	292.89	17T	5058316	593651	-
	30-Oct-14			-	0.91	-	-	292.91				-
	9-Jun-15			-	-	-	-	-				-
	22-Jun-15			-	-	-	-	-				-
	23-Jun-15			-	-	-	-	-				-
	6-Aug-15			-	1.78	-	-	292.04				-
	22-Oct-15			-	-	-	-	-				-
	13-Oct-16			-	1.66	-	-	292.16				-
	18-May-17			-	0.97	-	-	292.85				-
	25-Oct-17			-	0.92	-	-	292.90				-
	2-May-18			-	0.84	-	-	292.98				-
	17-Oct-18			-	1.06	-	-	292.76				-
	11-Jun-19			0.72	0.95	4.34	0.23	292.87				-
	25-Sep-19			0.65	1.42	4.29	0.77	292.40				-
	2-Jun-20			0.65	1.12	4.29	0.47	292.70				-
	1-Oct-20			0.66	1.02	3.47	0.36	292.80				Orange, odour.
	12-May-21			0.72	1.08	4.40	0.36	292.74				-
	7-Oct-21			0.72	0.97	4.38	0.25	292.85				-
	4-May-22			-	-	-	-	-				No data.
	18-Oct-22			0.72	1.18	4.39	0.46	292.64				-
	10-May-23			0.70	0.93	4.39	0.23	292.89				-
	28-Sep-23			0.70	1.64	3.63	0.94	292.18				Clear, no odour, good well condition.
	24-Apr-24			0.69	0.90	4.35	0.21	292.92				Yellow tint, sulphur-like odour.
	3-Oct-24			0.68	1.69	4.47	1.01	292.13				Yellow tint, sulphur-like odour.
BH8	8-May-14	291.63	292.47	-	-	-	-	-	17T	5058508	593544	-
	30-Oct-14			-	-	-	-	-				-
	9-Jun-15			-	-	-	-	-				-
	22-Jun-15			-	2.24	-	-	290.23				-
	23-Jun-15			-	-	-	-	-				-
	6-Aug-15			-	4.04	-	-	288.43				-
	22-Oct-15			-	4.55	-	-	287.92				-
	13-Oct-16			-	4.20	-	-	288.27				-
	18-May-17			-	2.36	-	-	290.11				-
	25-Oct-17			-	2.43	-	-	290.04				-
	2-May-18			-	1.69	-	-	290.78				-
	17-Oct-18			-	2.90	-	-	289.57				-
	11-Jun-19			0.83	2.59	6.52	1.76	289.88				-
	25-Sep-19			0.75	3.95	6.45	3.20	288.52				Partial sample.
	2-Jun-20			0.76	2.75	6.54	1.99	289.72				Purged dry.
	1-Oct-20			0.84	2.79	6.41	1.95	289.68				-
	12-May-21			0.82	2.44	6.51	1.62	290.03				Purged dry.
	7-Oct-21			0.82	2.35	6.51	1.53	290.12				Purged dry.
	4-May-22			0.82	2.30	6.52	1.48	290.17				-
	18-Oct-22			0.82	4.00	6.50	3.18	288.47				-
	10-May-23			0.82	2.33	6.36	1.51	290.14				-
	28-Sep-23			0.82	3.93	6.48	3.11	288.54				Cloudy, no odour, good well condition.
	24-Apr-24			0.80	6.27	6.48	5.47	286.20				Clear, no odour.
	2-Oct-24			0.78	4.07	6.54	3.29	288.40				Clear, no odour. Purged dry, poor recovery.
BH9	8-May-14	289.52	290.44	-	-	-	-	-	17T	5058495	593597	-
	30-Oct-14			-	-	-	-	-				-
	9-Jun-15			-	-	-	-	-				-
	22-Jun-15			-	1.84	-	-	288.60				-
	23-Jun-15			-	-	-	-	-				-
	6-Aug-15			-	1.98	-	-	288.46				-
	22-Oct-15			-	1.83	-	-	288.61				-
	13-Oct-16			-	1.79	-	-	288.65				-
	18-May-17			-	1.18	-	-	289.26				-
	25-Oct-17			-	1.18	-	-	289.26				-
	2-May-18			-	0.95	-	-	289.49				-
	17-Oct-18			-	1.41	-	-	289.03				-
	11-Jun-19			0.99	1.10	4.61	0.11	289.34				-
	25-Sep-19			0.93	1.42	4.62	0.49	289.02				-
	2-Jun-20			1.00	1.33	4.70	0.33	289.11				Purged dry.
	1-Oct-20			0.81	1.27	4.60	0.46	289.17				-
	12-May-21			0.80	1.3	4.64	0.5	289.14				-
	7-Oct-21			0.80	1.12	4.67	0.32	289.32				Purged dry.
	4-May-22			1.00	1.1	4.63	0.1	289.34				-
	18-Oct-22			0.90	1.31	4.61	0.41	289.13				-
	10-May-23			0.96	0.98	4.68	0.02	289.46				-
	28-Sep-23			0.96	1.9	4.69	0.94	288.54				Orange, no odour, good well condition.
	24-Apr-24			0.87	0.99	4.68	0.12	289.45				Orange, no odour.
	2-Oct-24			0.96	1.68	4.73	0.72	288.76				Clear, no odour. Purged dry, moderate recovery.

TABLE 1
Groundwater Monitoring Location Data
Croft Waste Disposal Site
Magnetawan , Ontario

Well ID Number	Date (dd/mm/yyyy)	Ground Surface Elevation (masl)	TOC Elevation (masl)	Height of TOC from Ground Surface (m)	Water Level Measurement from TOC (m)	Total Well Depth from TOC (m)	Depth to Groundwater (mbgs)	Calculated Water Level Elevation (masl)	UTM Coordinates			Comments
									Zone	Northing (m)	Easting (m)	
BH10	8-May-14	290.87	291.83	-	-	-	-	-	17T	5058444	593731	-
	30-Oct-14			-	-	-	-	-				-
	9-Jun-15			-	-	-	-	-				-
	22-Jun-15			-	-	-	-	-				-
	23-Jun-15			-	1.13	-	-	290.70				-
	6-Aug-15			-	1.74	-	-	290.09				-
	22-Oct-15			-	2.22	-	-	289.61				-
	13-Oct-16			-	1.23	-	-	290.60				-
	18-May-17			-	0.86	-	-	290.97				-
	25-Oct-17			-	0.80	-	-	291.03				-
	2-May-18			-	0.79	-	-	291.04				-
	17-Oct-18			-	0.95	-	-	290.88				-
	11-Jun-19			0.86	0.93	4.92	0.07	290.90				-
	25-Sep-19			0.83	1.19	4.83	0.36	290.64				-
	2-Jun-20			0.83	1.00	4.91	0.17	290.83				-
	1-Oct-20			0.92	0.88	4.87	-0.04	290.95				-
	12-May-21			0.92	1	4.88	0.08	290.83				-
	7-Oct-21			0.92	0.9	4.87	-0.02	290.93				-
	4-May-22			0.92	0.88	4.90	-0.04	290.95				-
	18-Oct-22			0.94	0.96	4.88	0.02	290.87				-
	10-May-23			0.91	0.89	4.90	-0.02	290.94				-
	28-Sep-23			0.91	1.54	4.88	0.63	290.29				Clear, no odour, good well condition.
	24-Apr-24			0.93	0.87	4.89	-0.06	290.96				Clear, no odour.
	3-Oct-24			0.89	1.49	4.89	0.6	290.34				Clear, no odour.
BH11	8-May-14	290.74	292.61	-	-	-	-	-	17T	5059507	593713	-
	30-Oct-14			-	-	-	-	-				-
	9-Jun-15			-	-	-	-	-				-
	22-Jun-15			-	-	-	-	-				-
	23-Jun-15			-	-	-	-	-				-
	6-Aug-15			-	2.41	-	-	290.20				-
	22-Oct-15			-	2.46	-	-	290.15				-
	13-Oct-16			-	1.95	-	-	290.66				-
	18-May-17			-	1.23	-	-	291.38				-
	25-Oct-17			-	1.01	-	-	291.60				-
	2-May-18			-	0.91	-	-	291.70				-
	17-Oct-18			-	1.10	-	-	291.51				-
	11-Jun-19			0.74	1.07	4.81	0.33	291.54				-
	25-Sep-19			0.66	1.19	4.72	0.53	291.42				-
	2-Jun-20			0.66	1.50	4.72	0.84	291.11				-
	1-Oct-20			0.75	1.08	4.82	0.33	291.53				-
	12-May-21			0.75	1.38	4.82	0.63	291.23				-
	7-Oct-21			0.75	1.25	4.82	0.50	291.36				-
	4-May-22			0.75	1.27	4.81	0.52	291.34				-
	18-Oct-22			0.75	1.04	4.66	0.29	291.57				-
	10-May-23			0.75	1.28	4.76	0.53	291.33				-
	28-Sep-23			0.75	1.80	5.66	1.05	290.81				Clear, odour, well lid detached, no PVC cap.
	24-Apr-24			0.73	1.1	4.53	0.37	291.51				Clear, sulphur-like odour.
	3-Oct-24			0.75	1.33	4.72	0.58	291.28				Yellow tint, odour. New well cap installed. Fibrous black particulates in sample.
DP7	8-May-14	289.30	289.77	-	-	-	-	-	17T	5058495	593597	-
	30-Oct-14			-	-	-	-	-				-
	9-Jun-15			-	1.22	-	-	288.55				-
	22-Jun-15			-	-	-	-	-				-
	23-Jun-15			-	-	-	-	-				-
	6-Aug-15			-	1.88	-	-	287.89				-
	22-Oct-15			DRY								-
	13-Oct-16			DRY								-
	18-May-17			-	1.73	-	-	288.04				-
	25-Oct-17			-	1.64	-	-	288.13				-
	2-May-18			DRY								-
	17-Oct-18			-	1.51	-	-	288.26				-
	11-Jun-19			1.21	1.28	1.93	0.07	288.49				-
	25-Sep-19			1.13	1.36	1.81	0.23	288.41				-
	2-Jun-20			NA								-
	1-Oct-20			1.19	1.30	1.60	0.11	288.47				Insufficient volume to sample. No cap.
	12-May-21			1.21	1.48	1.59	0.27	288.29				Insufficient volume to sample.
	7-Oct-21			1.19	1.34	1.55	0.15	288.43				Insufficient volume to sample.
	4-May-22			1.19	1.46	1.58	0.27	288.31				Insufficient volume to sample.
	18-Oct-22			1.23	1.40	1.59	0.17	288.37				Insufficient volume to sample.
	10-May-23			1.20	1.30	1.59	0.10	288.47				Insufficient volume to sample.
	28-Sep-23			1.20	1.55	1.58	0.35	288.22				Water level only.
	24-Apr-24			1.2	1.28	1.6	0.08	288.49				Water level only.
	2-Oct-24			1.21	1.78	2.11	0.57	287.99				Water level only. No cap. Tubing pulled for measurements.

TABLE 1
Groundwater Monitoring Location Data
Croft Waste Disposal Site
Magnetawan , Ontario

Well ID Number	Date (dd/mm/yyyy)	Ground Surface Elevation (masl)	TOC Elevation (masl)	Height of TOC from Ground Surface (m)	Water Level Measurement from TOC (m)	Total Well Depth from TOC (m)	Depth to Groundwater (mbgs)	Calculated Water Level Elevation (masl)	UTM Coordinates			Comments
									Zone	Northing (m)	Easting (m)	
DP8	8-May-14	290.54	291.06	-	-	-	-	-	17T	5058510	593752	-
	30-Oct-14			-	-	-	-	-				-
	9-Jun-15			-	1.59	-	-	289.47				-
	22-Jun-15			-	-	-	-	-				-
	23-Jun-15			-	-	-	-	-				-
	6-Aug-15			-	1.89	-	-	289.17				-
	22-Oct-15			-	1.96	-	-	289.10				-
	13-Oct-16			-	1.70	-	-	289.36				-
	18-May-17			DRY								-
	25-Oct-17			-	2.06	-	-	289.00				-
	2-May-18			-	1.35	-	-	289.71				-
	17-Oct-18			-	2.04	-	-	289.02				-
	11-Jun-19			DRY								-
	25-Sep-19			1.23	1.44	2.13	0.21	289.62				-
	2-Jun-20			NA								-
	1-Oct-20			1.28	1.48	1.60	0.20	289.58				Insufficient volume to sample. No cap.
	12-May-21			1.29	1.48	1.58	0.19	289.58				Insufficient volume to sample.
	7-Oct-21			1.28	1.48	1.60	0.20	289.58				Insufficient volume to sample.
	4-May-22			1.28	1.46	1.59	0.18	289.60				Insufficient volume to sample.
	18-Oct-22			1.29	1.48	1.59	0.19	289.58				Insufficient volume to sample.
	10-May-23			1.29	1.52	1.59	0.23	289.54				Insufficient volume to sample.
	28-Sep-23			1.29	1.58	1.60	0.29	289.48				Water level only.
	24-Apr-24			1.28	1.47	1.6	0.19	289.59				Water level only.
	3-Oct-24			1.27	1.58	2.2	0.31	289.48				Water level only. Pulled tubing for measurements.
DP9	8-May-14	289.97	290.92	-	-	-	-	-	17T	5058461	593753	-
	30-Oct-14			-	-	-	-	-				-
	9-Jun-15			-	1.28	-	-	289.64				-
	22-Jun-15			-	-	-	-	-				-
	23-Jun-15			-	-	-	-	-				-
	6-Aug-15			-	1.58	-	-	289.34				-
	22-Oct-15			DRY								-
	13-Oct-16			-	1.33	-	-	289.59				-
	18-May-17			-	1.11	-	-	289.81				-
	25-Oct-17			-	1.18	-	-	289.74				-
	2-May-18			-	1.08	-	-	289.84				-
	17-Oct-18			-	1.22	-	-	289.70				-
	11-Jun-19			Could not locate								-
	25-Sep-19											-
	2-Jun-20											-
	1-Oct-20			0.95	1.06	1.57	0.11	289.86				Insufficient volume to sample. No cap.
	12-May-21			0.95	1.02	1.58	0.07	289.90				Insufficient volume to sample.
	7-Oct-21			0.95	1.00	1.56	0.05	289.92				Insufficient volume to sample.
	4-May-22			0.95	1.00	1.54	0.05	289.92				-
	18-Oct-22			0.94	1.01	1.58	0.07	289.91				insufficient volume to sample.
	10-May-23			0.93	0.98	1.55	0.05	289.94				insufficient volume to sample.
	28-Sep-23			-	-	-	-	-				No water level; bear in area.
	24-Apr-24			0.87	0.99	4.68	0.12	290.80				Water level only.
	3-Oct-24			0.92	1.42	2.2	0.5	290.42				Water level only. Tubing pulled for measurements.
BH12	12-May-21	288.90	289.87	0.89	1.34	7.24	0.45	288.53	17T	5058569	593600	-
	7-Oct-21			0.89	1.26	7.40	0.37	288.61				-
	4-May-22			0.89	1.30	7.30	0.41	288.57				-
	18-Oct-22			0.88	1.34	7.32	0.46	288.53				-
	10-May-23			0.87	1.23	7.30	0.36	288.64				-
	28-Sep-23			0.87	1.89	7.30	1.02	287.98				-
	24-Apr-24			0.95	1.21	7.37	0.26	288.66				Grey, sulphur-like odour. Casing loose at base.
	2-Oct-24			DAMAGED - repaired in November 2024.								Casing was fallen over, PVC snapped at base of casing.
BH13	12-May-21	290.82	291.57	1.29	1.48	1.58	0.19	290.09	17T	5058461	593735	-
	7-Oct-21			0.85	2.79	7.79	1.94	288.78				-
	4-May-22			0.85	2.79	7.20	1.94	288.78				-
	18-Oct-22			0.85	6.52	7.20	5.67	285.05				-
	10-May-23			0.85	2.84	7.21	1.99	288.73				-
	28-Sep-23			0.85	3.25	7.20	2.40	288.32				Cloudy, no odour, good well condition.
	24-Apr-24			0.86	2.92	6.61	2.06	288.65				Brown, no odour.
	3-Oct-24			0.85	2.98	7.30	2.13	288.59				Clear, odour.
BH14	12-May-21	289.42	290.26	0.70	1.35	7.13	0.65	288.91	17T	5058554	593760	-
	7-Oct-21			0.70	1.35	7.11	0.65	288.91				Purged dry.
	4-May-22			0.70	1.30	7.13	0.60	288.96				-
	18-Oct-22			0.70	1.33	7.15	0.63	288.93				-
	10-May-23			0.70	1.33	7.14	0.63	288.93				-
	28-Sep-23			0.70	1.52	7.03	0.82	288.74				Cloudy, no odour, good well condition.
	24-Apr-24			0.74	1.31	7.04	0.57	288.95				Brown, no odour.
	3-Oct-24			0.77	1.36	7.30	0.59	288.90				Clear, odour.

Notes:

mbgs	Meters below ground surface
masl	Meters above sea level
TOC	Top of casing
NA	No data available

TABLE 2

Surface Water Monitoring Location Data

Croft Waste Disposal Site

Magnetawan, Ontario

Surface Water Monitoring Location	*UTM Coordinates*			*Comments*
	Zone	*Easting (m)*	*Northing (m)*	
SW-1	17T	593867	5058308	Culvert
SW-2	17T	593556	5059083	Lake
SW-3	17T	593592	5058498	Ponded Water

TABLE 3
Groundwater Quality Results - BH1
Croft Waste Disposal Site
Magnetawan, Ontario

Parameter	Units	Sample Designation																		ODWQS
		Sample Collection Date (mm/dd/yyyy)																		
		BH1																		
		6-Aug-15	22-Oct-15	13-Oct-16	18-May-17	25-Oct-17	2-May-18	17-Oct-18	11-Jun-19	25-Sep-19	2-Jun-20	1-Oct-20	12-May-21	7-Oct-21	4-May-22	18-Oct-22	10-May-23	28-Sep-23	24-Apr-24	3-Oct-24	
pH Lab	pH Units	6.55	NA	**6**	**6.3**	**6.2**	**6.2**	**6.1**	6.67	6.54	6.64	**6.33**	**6.41**	7.10	6.88	7.00	7.04	6.74	7.25	**6.46**	6.5-8.5
Conductivity	uS/cm	92	-	596	96	97	68	134	57	146	101	189	89	192	123	433	161	472	165	453	-
Hardness	mg/L	**34**	**-**	**185**	**16**	**25**	**19**	**33**	**17.2**	**32**	**20.7**	**59**	**30.5**	**50.1**	**43.7**	84.1	**55.2**	**173**	**76.0**	**157**	80-100
Total Dissolved Solids	mg/L	126	-	416	114	78	46	128	76	90	76	120	94	240	66	271	143	397	160	394	500
Alkalinity	mg/L	32	**-**	55	**26**	38	**25**	38	**24**	39	36	74	38	59	49	99	66	82	83	93	30-500
Chloride	mg/L	7.9	-	54	5	5	5	7	1.9	5.34	2.8	12.7	3.0	11.0	7	16.0	6.0	36.0	5	35.0	250
Sodium	mg/L	1.2	-	30	5.61	6.32	3.33	5.23	3.9	7.55	4.7	7.3	5.8	9.1	6.78	10.3	7.1	17.7	6.36	12.8	200
Calcium	mg/L	9.9	-	63.1	5.42	8.24	6.11	10.5	5.5	9.62	6.4	18.1	9.8	15.3	13.3	25.2	16.0	52.4	21.5	44.9	-
Magnesium	mg/L	2.3	-	6.75	0.699	1.12	0.859	1.62	0.86	1.84	1.13	3.36	1.48	2.88	2.56	5.12	3.69	10.10	5.43	10.90	-
Potassium	mg/L	1.4	-	2.95	1.16	1.79	1.09	1.5	1.2	1.82	1.3	2.2	1.5	2.1	2.02	2.9	3.8	6.2	7.07	8.6	-
Sulphate	mg/L	<1	-	154	5	154	1	19	2.1	10.2	2.4	18.0	4.0	<20	5	24.0	6.0	94.0	7.07	85.0	500
Ammonia	mg/L	<0.05	-	0.09	0.12	0.23	0.08	0.08	0.4	0.21	0.2	0.1	0.1	0.1	0.08	0.1	0.1	0.2	0.22	0.2	-
Nitrate as N	mg/L	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	< 0.03	0.53	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	10
Nitrite as N	mg/L	<0.01	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.06	<0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	1
Total Kjeldahl Nitrogen	mg/L	0.47	-	0.7	1.8	1.1	0.4	1.4	0.77	0.68	0.53	0.72	0.40	0.42	0.49	0.43	0.63	0.73	0.86	0.80	-
Phenolics	mg/L	<0.001	-	<0.001	<0.001	0.004	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	< 0.002	<0.002	< 0.002	0.008	0.002	< 0.002	0.003	0.002	-
Dissolved Organic Carbon	mg/L	**7.2**	-	**13.3**	**16.1**	**15.8**	**8.2**	**17.5**	**10.6**	**8.5**	**10.0**	**15.6**	**12.0**	**13.0**	**18**	**17.0**	**20.0**	**12.0**	**20**	**18.0**	5
Chemical Oxygen Demand	mg/L	76	-	62	108	63	27	74	28	31	32	<5	27	33	40	51	49	44	59	55	-
Iron	mg/L	**8.5**	-	**16.7**	**1.49**	**4.94**	**2.29**	**8.76**	**4.35**	**7.32**	**5.48**	**13.9**	**5.18**	**10.4**	**6.76**	**17.1**	**7.99**	**40.5**	**10.8**	**39.1**	0.3
Manganese	mg/L	**1.5**	-	**4.1**	**0.579**	**0.611**	**0.45**	**0.819**	**0.46**	**0.86**	**0.53**	**1.40**	**0.95**	**1.17**	**1.24**	**2.20**	**1.59**	**3.69**	**1.67**	**3.35**	0.05
Phosphorus	mg/L	0.7	-	0.1	0.8	0.29	0.06	0.27	0.22	0.06	0.02	0.06	0.06	<0.03	< 0.03	< 0.03	0.07	0.03	< 0.03	< 0.03	-
Orthophosphate	mg/L	-	-	-	-	-	-	-	-	-	<0.10	-	-	-	0.03	-	< 0.03	< 0.03	< 0.03	< 0.03	-
Turbidity	NTU	**60**	-	**94.1**	**507**	**158**	**22.9**	**118**	**58.4**	**44.2**	**22.4**	**8.1**	**5.5**	3.3	4.35	3.2	**26.0**	**21.0**	**8.9**	**8.5**	5
Total Suspended Solids	mg/L	140	-	142	822	422	56	181	150	61	37	27	133	40	35	23	88	85	160	26	-
BOD	mg/L	<2	-	2	<20	6	<2	3	<5	<5	<5	3	< 4	<4	< 4	< 4	< 4	< 4	< 4	5	-
Anion Sum	-	0.869	-	5.84	0.74	0.96	0.66	1.35	-	-	-	-	-	-	-	-	-	-	-	-	-
Cation Sum	-	1.13	-	5.09	0.6	0.82	0.55	0.92	-	-	-	-	-	-	-	-	-	-	-	-	-
Ion Balance	%	-	-	-6.9	-	-	-9.6	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver	mg/L	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.002	<0.002	<0.0001	<0.0001	< 0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	-
Aluminum	mg/L	**0.53**	-	**0.199**	**0.253**	**0.321**	**0.311**	**0.883**	**0.537**	**0.44**	**0.50**	**0.83**	**0.40**	**0.46**	**0.473**	**0.25**	**0.35**	**0.20**	**0.303**	**0.18**	0.1
Antimony	mg/L	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.003	<0.003	<0.001	<0.001	< 0.0009	<0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	0.006
Arsenic	mg/L	<0.001	-	<0.001	<0.001	0.001	0.001	0.004	<0.003	<0.003	<0.001	0.007	0.0014	0.0021	0.0014	0.0025	0.0014	0.0024	0.0019	0.0022	0.01
Barium	mg/L	0.033	-	0.192	0.025	0.032	0.013	0.045	0.024	0.04	0.023	0.059	0.033	0.051	0.0466	0.085	0.056	0.161	0.0792	0.176	1
Beryllium	mg/L	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	0.000069	0.000124	0.000139	0.000105	0.000083	0.000065	0.000055	0.000063	-
Bismuth	mg/L	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	0.00002	0.00003	< 0.00001	0.00001	0.00001	< 0.00001	< 0.00001	< 0.00001	-
Boron	mg/L	<0.01	-	0.202	0.014	0.015	0.025	0.026	0.017	0.03	0.014	0.045	0.024	0.059	0.046	0.101	0.044	0.152	0.048	0.134	5
Cadmium	mg/L	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.0001	<0.0001	< 0.000003	0.000009	0.000061	0.000007	0.000028	< 0.000003	0.000007	0.000003	0.005
Chromium	mg/L	<0.005	-	0.003	<0.001	0.001	<0.001	0.002	<0.003	<0.003	<0.002	0.003	0.00161	0.00166	0.00132	0.00178	0.00142	0.0016	0.00159	0.00149	0.05
Cobalt	mg/L	0.031	-	0.0686	0.0071	0.0087	0.0044	0.0105	0.005	0.01	0.005	0.016	0.008	0.012	0.0107	0.019	0.012	0.037	0.0118	0.029	-
Copper	mg/L	0.0087	-	0.0016	0.0027	0.0031	0.0023	0.0059	0.007	0.01	0.003	0.005	0.003	0.003	0.0053	0.001	0.002	0.002	0.002	< 0.001	1
Molybdenum	mg/L	0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.002	<0.002	<0.002	<0.002	0.00019	0.00034	0.00026	0.0004	0.00039	0.0007	0.0007	0.0007	-
Nickel	mg/L	0.0019	-	0.004	<0.001	0.001	<0.001	0.003	<0.003	<0.003	<0.003	<0.003	0.0012	0.0011	0.0017	0.0016	0.0013	0.0037	0.0016	0.0029	-
Phosphate	mg/L	-	-	<0.0002	<0.2	<0.2	<0.2	<0.0002	<0.10	<0.10	-	<0.10	< 0.03	-	-	-	-	-	-		-
Lead	mg/L	0.00094	-	0.0002	0.0005	0.0005	0.0002	0.0016	0.001	0.002	0.0008	0.002	0.00062	0.00089	0.00035	0.0002	0.00025	0.00015	0.00015	< 0.00009	0.01
Selenium	mg/L	<0.002	-	<0.001	<0.0001	0.002	0.002	0.006	<0.004	<0.004	<0.001	0.001	0.00019	0.00026	0.0002	0.00028	0.00038	0.00083	0.00080	0.00057	0.05
Sillicon	mg/L	7.4	-	5.05	3.13	4.05	2.52	3.6	3.22	5.90	3.43	4.96	3.76	5	3.98	6.86	4.08	6.98	4.54	7.02	-
Tin	mg/L	<0.001	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	0.05	<0.002	<0.002	< 0.00006	<0.00006	0.00013	< 0.00006	0.00011	0.0001	0.00006	< 0.00006	-
Strontium	mg/L	0.06	-	0.068	0.019	0.048	0.035	0.06	0.031	<0.002	0.033	0.092	0.056	0.077	0.0649	0.133	0.084	0.278	0.105	0.227	-
Titanium	mg/L	0.14	-	0.009	0.027	0.034	0.025	0.072	0.056	0.08	0.035	0.125	0.0434	0.0572	0.0347	0.0235	0.0216	0.012	0.0148	0.0076	-
Uranium	mg/L	0.002	-	0.0012	0.0008	0.0007	0.0005	0.0014	<0.002	<0.002	0.001	0.002	0.001	0.001	0.000712	0.001	0.001	0.002	0.000787	0.002	0.02
Vanadium	mg/L	0.0057	-	0.0071	0.0023	0.0027	0.0023	0.0077	0.004	0.01	0.004	0.007	0.00384	0.00452	0.00433	0.00563	0.00425	0.00554	0.00494	0.00602	-
Zinc	mg/L	<0.005	-	<0.005	<0.005	<0.005	<0.005	0.02	<0.005	0.03	<0.005	<0.005	< 0.002	0.006	0.006	0.002	< 0.002	0.003	< 0.002	< 0.002	5
Field Measurements																					
Temperature	oC	4.91	-	5.22	6.37	6.24	8.08	6.45	10.3	13.1	9.2	11.62	6.42	12.1	-	10.1	12.3	11.9	5.3	11.8	-
pH	pH Units	-	-	-	-	-	-	-	6.4	5.4	5.4	5.9	15.9	6.7	-	6.1	5.7	6.0	7.3	6.3	-
Coductivity	uS/cm	6.55	-	786	-	-	0.08	0.19	78.4	118.5	116.7	143.0	69.0	1290.0	-	225.1	129.0	443.4	142.7	396.0	-
Oxidation Reduction Potential	mV	-	-	-	-	-	-	-	145.3	176.5	170.6	98	53.5	27	-	28	77	10.9	-34.2	41.1	-
Dissolved Oxygen	mg/L	-	-	-	-	-	-	-	1.21	1.18	1.15	7.44	1.42	1.35	-	2.15	1.05	1.73	1.82	9.29	-

Notes:

ODWQS	Ontario Drinking Water Quality Standards - Ontario Regulation 169/03 "Ontario Drinking Water Quality Standards" under the Safe Drinking Water Act", dated 2002, and "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines", dated June 2003.
BOLD	Exceeds ODWQS
INSV	Insufficient volume to allow for sampling
-	Data not available
Units	All Units in mg/L Unless Otherwise Noted.

TABLE 4
Groundwater Quality Results - BH8
Croft Waste Disposal Site
Magnetawan, Ontario

Parameter	Units	Sample Designation																		ODWQS
		Sample Collection Date (mm/dd/yyyy)																		
		BH8																		
		6-Aug-15	22-Oct-15	13-Oct-16	18-May-17	25-Oct-17	2-May-18	17-Oct-18	11-Jun-19	25-Sep-19	2-Jun-20	1-Oct-20	12-May-21	7-Oct-21	4-May-22	18-Oct-22	10-May-23	28-Sep-23	24-Apr-24	2-Oct-24	
pH Lab	pH Units	7.87	7.62	7.2	6.7	7	**6.4**	6.7	6.62	6.72	6.57	**6.21**	6.59	6.93	6.55	7.02	6.77	7.14	6.97	6.88	6.5-8.5
Conductivity	uS/cm	450	200	124	88	103	68	94	35	70	51	51	39	60	28	77	31	74	28	68	-
Hardness	mg/L	**190**	**62**	**39**	**18**	**20**	**10**	**27**	**9.8**	**22.8**	**13.5**	**18.9**	**11.1**	**9.2**	**5.9**	**27.5**	**7.6**	**28.8**	**4.6**	**26.2**	80-100
Total Dissolved Solids	mg/L	298	158	118	110	80	42	58	50	68	44	32	< 30	46	40	< 30	37	91	40	86	500
Alkalinity	mg/L	180	86	48	31	34	**18**	**28**	**11**	**23**	**12**	**27**	**9**	**16**	**8**	30	**8**	**27**	**9**	**24**	30-500
Chloride	mg/L	16	3.5	1	<0.001	<0.1	<1	<1	0.5	0.4	0.5	0.4	2	<1	< 1	< 1	2	< 1	< 1	< 1	250
Sodium	mg/L	9.9	1.9	2.7	8.35	7.9	7.37	3.36	2.8	2.5	1.8	1.9	3.25	4.26	3.63	2.13	2.96	2.38	4.20	2.33	200
Calcium	mg/L	53	17	11.3	5.8	6.28	2.97	7.39	2.9	6.2	4.0	5.4	3.26	2.76	1.81	6.58	1.98	6.76	1.30	5.98	-
Magnesium	mg/L	15	5.1	2.59	0.926	1.06	0.533	2.1	0.7	1.8	0.9	1.3	0.709	0.563	0.34	2.690	0.659	2.890	0.320	2.740	-
Potassium	mg/L	12	5.6	3.14	1.42	1.65	0.888	2.02	0.8	1.70	0.8	1.32	0.735	0.556	0.371	1.790	0.545	2.010	0.273	1.800	-
Sulphate	mg/L	31	8.6	10	0.014	17	12	17	5.1	8.8	6.8	7.1	5	10	5	7	6	8	0.273	8	500
Ammonia	mg/L	0.11	<0.05	0.05	0.01	0.05	0.01	0.01	0.11	<0.02	<0.02	<0.02	< 0.04	<0.04	< 0.04	0.04	< 0.04	< 0.04	< 0.04	< 0.1	-
Nitrate as N	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	0.1	<0.05	0.06	0.07	<0.05	< 0.03	0.23	0.11	0.08	< 0.06	< 0.06	< 0.06	< 0.06	10
Nitrite as N	mg/L	0.032	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.14	<0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	1
Total Kjeldahl Nitrogen	mg/L	0.25	<0.2	0.3	0.4	0.3	0.4	0.2	0.36	0.86	0.28	0.19	0.13	0.15	0.09	0.05	0.16	0.16	0.23	< 0.5	-
Phenolics	mg/L	0.0012	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA	0.001	<0.001	< 0.002	<0.002	< 0.002	0.003	< 0.002	< 0.002	< 0.002	< 0.002	-
Dissolved Organic Carbon	mg/L	3	1.5	3.4	5	**9.7**	3.9	**58**	2.6	3.1	3.3	3.5	4	4	4	3	4	2	3	2	5
Chemical Oxygen Demand	mg/L	120	14	127	59	109	54	37	<5	12	8	<5	11	8	< 8	< 8	9	15	13	< 8	-
Iron	mg/L	<0.1	**0.39**	<0.1	<0.1	<0.1	<0.1	<0.1	0.05	<0.010	0.06	0.030	0.082	0.095	0.073	0.139	0.072	0.047	0.085	0.042	0.3
Manganese	mg/L	**0.1**	**0.12**	**0.055**	**0.926**	0.027	0.01	0.03	0.01	0.02	0.01	0.01	0.0080	0.0066	0.00278	0.0146	0.0049	0.0100	0.00206	0.0083	0.05
Phosphorus	mg/L	9.2	0.61	0.68	0.22	0.53	0.26	0.2	0.13	0.21	0.32	0.13	0.10	0.19	0.04	< 0.03	0.14	0.07	< 0.03	0.04	-
Orthophosphate	mg/L	-	-	-	-	-	-	-	-	-	<0.10	-	-	-	0.03	-	0.04	< 0.03	0.03	< 0.03	-
Turbidity	NTU	**4100**	**220**	**900**	**225**	**451**	**195**	**304**	**162**	**192**	**150**	**119**	**21.6**	**17.0**	**16.3**	**15.0**	**150.0**	**29.0**	**17**	**26.0**	5
Total Suspended Solids	mg/L	4200	1100	932	272	584	297	234	154	227	198	274	26	152	43	45	126	64	40	71	-
BOD	mg/L	2	<2	ND (20)	<2	<20	<2	<2	<5	<5	<5	<2	< 4	<4	< 4	< 4	< 4	< 4	< 4	< 4	-
Anion Sum	-	4.64	1.99	1.2	0.94	1.05	0.65	0.95	-	-	-	-	-	-	-	-	-	-	-	-	-
Cation Sum	-	4.6	1.48	0.99	0.76	0.79	0.54	0.75	-	-	-	-	-	-	-	-	-	-	-	-	-
Ion Balance	%	0.44	NC	-9.6	-	-	-9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.002	<0.002	<0.0001	<0.0001	< 0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	-
Aluminum	mg/L	0.031	0.0064	0.046	**0.142**	0.094	**0.167**	0.042	**0.101**	0.065	0.076	0.056	**0.119**	**0.163**	**0.195**	0.089	**0.126**	0.038	**0.206**	0.050	0.1
Antimony	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.003	<0.003	<0.001	<0.001	< 0.0009	<0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	0.006
Arsenic	mg/L	<0.001	0.0013	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.001	<0.001	< 0.0002	0.0004	0.0005	0.0017	0.0008	0.0005	0.0020	0.0016	0.01
Barium	mg/L	0.1	0.082	0.053	0.022	0.032	0.009	0.035	0.019	0.033	0.020	0.024	0.0161	0.0151	0.0196	0.0304	0.0092	0.0319	0.00619	0.0277	1
Beryllium	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	0.000013	0.000028	0.000025	0.000013	0.000025	0.000023	0.000013	0.000013	-
Bismuth	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	< 0.00001	<0.00001	< 0.00001	< 0.00001	< 0.00001	0.00002	< 0.00001	< 0.00001	-
Boron	mg/L	0.027	<0.01	0.012	<0.01	<0.01	0.044	<0.01	<0.010	<0.010	<0.010	<0.010	0.025	0.009	0.007	0.027	0.004	0.012	< 0.002	0.015	5
Cadmium	mg/L	<0.0001	<0.0001	0.0003	<0.0001	<0.0001	<0.0001	0.0008	<0.001	<0.001	<0.0001	<0.0001	0.000026	0.000028	0.000014	0.000055	0.000034	0.000045	0.000007	0.000038	0.005
Chromium	mg/L	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.002	<0.002	0.00037	0.00026	0.00038	0.00020	0.00045	0.00026	0.00043	0.00021	0.05
Cobalt	mg/L	<0.0005	0.00065	0.0007	0.0007	0.0012	0.0008	0.0013	<0.001	0.001	0.001	0.002	0.00092	0.00124	0.000528	0.00069	0.00042	0.00065	0.000246	0.00053	-
Copper	mg/L	<0.001	<0.001	0.0019	0.0277	0.0179	0.0222	0.00068	0.011	0.008	0.01	0.013	0.0139	0.0238	0.0156	0.0073	0.0113	0.0069	0.014	0.0060	1
Molybdenum	mg/L	0.013	0.0015	0.0011	0.0039	0.0011	0.0017	0.0005	<0.002	<0.002	<0.002	<0.002	0.00055	0.00066	0.00057	0.00037	0.00039	0.00074	0.0006	< 0.0004	-
Nickel	mg/L	0.019	0.0032	0.004	0.011	0.01	0.006	0.007	0.005	0.006	0.006	0.008	0.0044	0.0050	0.0027	0.0035	0.0020	0.0034	0.0019	0.0027	-
Phosphate	mg/L	-	-	<0.0002	<0.2	<0.2	<0.2	<0.2	<0.10	<0.10	-	<0.10	0.04	-	-	-	-	-	-		-
Lead	mg/L	<0.0005	<0.0005	<0.0001	0.0001	0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.0005	<0.0005	0.00014	0.00015	< 0.00009	0.00014	0.00011	< 0.00009	< 0.00009	< 0.00009	0.01
Selenium	mg/L	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.004	<0.004	<0.001	<0.001	0.00006	0.00008	0.00005	0.00006	0.00010	< 0.00004	0.00009	0.00004	0.05
Sillicon	mg/L	5.3	5.6	4.71	2.96	4.15	2.95	3.49	3.17	4.42	2.85	4.3	3.02	3.57	2.5	4.65	2.71	4.38	2.60	4.46	-
Tin	mg/L	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	0.026	<0.002	<0.002	0.00007	<0.00006	0.00008	< 0.00006	0.00010	0.00008	< 0.00006	< 0.00006	-
Strontium	mg/L	0.16	0.056	0.039	0.029	0.025	0.014	0.03	0.015	<0.002	0.015	0.022	0.0147	0.0151	0.01	0.0277	0.0104	0.0295	0.00748	0.0269	-
Titanium	mg/L	<0.005	<0.005	<0.005	0.007	<0.005	0.005	<0.005	0.005	0.003	0.005	<0.002	0.00466	0.00437	0.00378	0.00518	0.00350	0.00105	0.0042	0.00140	-
Uranium	mg/L	0.0022	0.00017	0.0001	0.0002	0.0002	0.0001	0.0002	<0.002	<0.002	<0.0005	<0.0005	0.000252	0.000210	0.000092	0.000132	0.000252	0.000152	0.000155	0.000162	0.02
Vanadium	mg/L	0.00074	<0.0005	0.002	0.0009	<0.0005	<0.0005	<0.0005	<0.002	<0.002	<0.002	<0.002	0.00036	0.00029	0.00046	0.00034	0.00026	0.00027	0.00036	0.00021	-
Zinc	mg/L	<0.005	0.0088	0.01	0.088	-	0.018	0.031	0.017	0.032	0.021	0.031	0.017	0.015	0.009	0.014	0.010	0.014	0.004	0.013	5
Field Measurements																					
Temperature	oC	-	-	-	-	-	-	-	11.3	Partial sample,	7	10.7	8.4	11.5	5.7	8.9	12.9	12.2	5.3	12	-
pH	pH Units	6.91	5.37	6.43	7.45	7.38	7.8	7.78	6.8	no field chem	5.42	5.8	4.91	6.62	16.25	6.81	5.12	6.64	6.84	5.55	-
Coductivity	uS/cm	368	179	114	-	-	0.1	0.11	43.3	-	42.1	38	28	34	17.8	52.5	26	57.9	24.1	54.6	-
Oxidation Reduction Potential	mV	-	-	-	-	-	-	-	111	-	105.5	353.4	194.1	64.2	101.9	-1.1	135.9	152	90.5	243	-
Dissolved Oxygen	mg/L	-	-	-	-	-	-	-	12.4	-	8.74	10.29	8.69	6.38	11.08	10.29	11.9	5.05	7.32	13.2	-

Notes:

ODWQS	Ontario Drinking Water Quality Standards - Ontario Regulation 169/03 "Ontario Drinking Water Quality Standards" under the Safe Drinking Water Act", dated 2002, and "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines", dated June 2003.
BOLD	Exceeds ODWQS
INSV	Insufficient volume to allow for sampling
-	Data not available
Units	All Units in mg/L Unless Otherwise Noted.

TABLE 5
Groundwater Quality Results - BH9
Croft Waste Disposal Site
Magnetawan, Ontario

Parameter	Units	Sample Designation																		ODWQS
		Sample Collection Date (mm/dd/yyyy)																		
		BH9																		
		6-Aug-15	22-Oct-15	13-Oct-16	18-May-17	25-Oct-17	2-May-18	17-Oct-18	11-Jun-19	25-Sep-19	2-Jun-20	1-Oct-20	12-May-21	7-Oct-21	4-May-22	18-Oct-22	10-May-23	28-Sep-23	24-Apr-24	2-Oct-24	
pH Lab	pH Units	7.56	6.78	6.9	7.2	7.1	6.5	6.7	7.27	7.04	7.10	6.73	7.00	7.64	7.50	7.51	7.43	7.55	7.56	7.04	6.5-8.5
Conductivity	uS/cm	730	750	1050	678	587	523	735	289	694	371	397	268	439	283	698	474	535	697	510	-
Hardness	mg/L	**220**	**220**	**240**	**156**	**157**	**147**	**276**	**104**	**235**	**115**	**159**	**107**	**150**	**111**	**228**	**162**	**184**	**235**	**191**	80-100
Total Dissolved Solids	mg/L	496	462	**668**	454	378	262	494	174	398	228	230	194	287	220	423	314	343	434	437	500
Alkalinity	mg/L	210	170	203	187	182	171	200	97	181	101	152	99	156	122	230	165	171	230	210	30-500
Chloride	mg/L	48	64	126	65	50	23	20	6.04	22.6	18.0	48.7	18.0	36.0	20	75.0	41.0	52.0	74	49.0	250
Sodium	mg/L	50	50	132	61.3	47.7	29.8	23.9	10.8	23.9	10.1	45.8	10.9	24.5	15.4	41.4	25.0	27.6	40.2	31.8	200
Calcium	mg/L	64	72	81.8	49.9	49.3	44.4	89.4	34.50	76.50	37.40	51.40	36.10	50.60	37.1	75.20	52.60	60.40	77.7	63.90	-
Magnesium	mg/L	13	11	8.67	7.55	8.34	8.88	12.8	4.41	10.70	5.25	7.42	4.12	5.87	4.53	9.91	7.49	7.94	9.92	7.71	-
Potassium	mg/L	17	19	24.8	11	10.7	9.75	15	6.08	9.87	4.74	7.17	4.41	6.89	5.49	15.30	10.30	11.90	15.3	11.40	-
Sulphate	mg/L	75	88	128	75.0	56.0	62.0	180	37.7	95.8	33.4	16.2	9.0	<20	16	25.0	37.0	15.0	15.3	15.0	500
Ammonia	mg/L	2.2	0.37	0.82	0.6	0.71	1.78	2.13	1.04	1.47	0.99	0.96	1.18	1.48	1.4	3.84	2.44	2.29	2.44	2.3	-
Nitrate as N	mg/L	<0.1	2.61	0.5	0.4	0.1	<0.1	0.7	<0.05	<0.10	<0.05	<0.05	< 0.03	0.51	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	10
Nitrite as N	mg/L	<0.01	0.09	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.10	<0.05	<0.05	< 0.06	<0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	1
Total Kjeldahl Nitrogen	mg/L	3.5	1.1	2.7	2.3	1.4	2.8	4.2	1.70	2.73	1.79	2.12	1.99	67.00	1.97	5.20	3.59	2.92	3.15	3.30	-
Phenolics	mg/L	<0.001	<0.001	0.007	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	0.002	<0.001	< 0.002	<0.002	< 0.002	0.007	< 0.002	< 0.002	< 0.002	< 0.002	-
Dissolved Organic Carbon	mg/L	**20**	**14**	**40**	**23**	**16.4**	**33.2**	**20**	**16.7**	**24.1**	**14.5**	**28.0**	**19.0**	**22.0**	**19**	**29.0**	**19.0**	**19.0**	**16**	**28.0**	5
Chemical Oxygen Demand	mg/L	380	81	159	155	16.4	160	169	36	69	68	53	63	67	< 8	81	64	67	60	68	-
Iron	mg/L	**1.9**	**0.71**	<0.1	0.263	**11.4**	**18.7**	**17.7**	**11.1**	**25.1**	**15.6**	**15.9**	**13.6**	**16.5**	**15.9**	**21**	**24.9**	**23.9**	**19.2**	**22.3**	0.3
Manganese	mg/L	**1.6**	**1.1**	**1.03**	**1.11**	**1.38**	**2.79**	**5.65**	**1.64**	**4.16**	**1.62**	**1.86**	**1.27**	**1.62**	**1.43**	**3.94**	**3.34**	**2.56**	**3.28**	**2.58**	0.05
Phosphorus	mg/L	12	1.3	0.41	0.58	0.18	0.8	0.72	0.1	0.32	0.1	0.1	0.1	0.2	< 0.03	< 0.03	0.0	0.1	< 0.03	< 0.03	-
Orthophosphate	mg/L	-	-	-	-	-	-	-	-	-	<0.10	-	-	-	0.03	-	< 0.03	0.0	0.04	< 0.03	-
Turbidity	NTU	**38000**	**510**	**758**	**1130**	**281**	**1900**	**2010**	**151**	**196**	**282**	**72.8**	**54.7**	**69**	**117**	**70**	**210**	**350**	**75**	**60**	5
Total Suspended Solids	mg/L	55000	1600	1750	1600	394	1660	2770	212	100	283	108	244	157	185	66	89	447	434	71	-
BOD	mg/L	<2	<2	ND (30)	12	3	20	<20	<5	<5	<5	9	4	<4	< 4	< 4	< 4	< 4	< 4	< 4	-
Anion Sum	-	7.18	7.18	10.3	7.18	6.23	5.37	8.37	-	-	-	-	-	-	-	-	-	-	-	-	-
Cation Sum	-	7.17	7.16	11.2	6.06	5.5	4.49	6.94	-	-	-	-	-	-	-	-	-	-	-	-	-
Ion Balance	%	0.1	0.1	3.9	-8.4	-6.3	-8.9	-9.3	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.002	<0.002	<0.0001	<0.0001	< 0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	-
Aluminum	mg/L	0.1	0.027	0.08	0.057	0.065	0.1	0.095	**0.109**	**0.161**	**0.110**	**0.147**	**0.136**	**0.159**	**0.15**	**0.141**	**0.169**	**0.141**	**0.138**	**0.135**	0.1
Antimony	mg/L	<0.0005	<0.0005	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.003	<0.003	<0.001	<0.001	< 0.0009	<0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	0.006
Arsenic	mg/L	0.0011	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	0.002	0.002	0.0009	0.0014	0.0012	0.0013	0.0011	0.0015	0.0011	0.0019	0.01
Barium	mg/L	0.13	0.12	0.178	0.095	0.111	0.062	0.18	0.054	0.114	0.047	0.059	0.047	0.072	0.0497	0.113	0.072	0.088	0.0804	0.085	1
Beryllium	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	0.00002	0.00004	0.00003	0.000046	0.000034	0.000033	0.000020	0.00003	-
Bismuth	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	< 0.00001	<0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	-
Boron	mg/L	0.62	0.68	1.07	0.394	0.31	0.264	0.527	0.259	0.489	0.217	0.384	0.226	0.460	0.3	1.170	0.547	0.584	0.585	0.626	5
Cadmium	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.0001	<0.0001	0.000016	0.000042	0.000064	0.000028	0.00005	0.000029	0.000017	0.000024	0.005
Chromium	mg/L	<0.005	<0.005	0.019	0.001	0.001	0.002	0.002	<0.003	<0.003	<0.002	<0.002	0.00166	0.00197	0.00147	0.00213	0.00184	0.00223	0.00181	0.00193	0.05
Cobalt	mg/L	0.0015	0.0071	0.0033	0.002	0.0038	0.0044	0.0203	0.011	0.027	0.0118	0.009	0.0098	0.0105	0.00782	0.0158	0.0118	0.012	0.00890	0.011	-
Copper	mg/L	0.0024	0.014	0.0547	0.0271	0.0068	0.0034	0.0051	<0.003	0.004	0.007	0.003	0.0009	0.0028	0.0031	0.0025	0.0017	0.0023	< 0.001	0.001	1
Molybdenum	mg/L	0.0094	0.0076	0.0048	0.0036	0.0027	0.001	0.0014	<0.002	<0.002	<0.002	<0.002	0.001	0.001	0.0008	0.002	0.001	0.001	0.0018	0.002	-
Nickel	mg/L	0.025	0.052	0.037	0.015	0.011	0.01	0.01	<0.003	0.008	0.01	0.004	0.0017	0.0028	0.0019	0.0031	0.0023	0.0024	0.0021	0.0024	-
Phosphate	mg/L	-	-	<0.0002	<0.2	<0.2	<0.2	<0.2	<0.10	<0.20	-	<0.10	0.07	-	-	-	-	-	-		-
Lead	mg/L	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.0005	<0.0005	0.00009	<0.00009	< 0.00009	0.00012	0.00011	0.00013	< 0.00009	< 0.00009	0.01
Selenium	mg/L	<0.002	<0.002	0.002	<0.001	<0.001	<0.001	<0.001	<0.004	<0.004	<0.001	<0.001	0.00019	0.00027	0.00017	0.00035	0.00034	0.0003	0.00029	0.00029	0.05
Sillicon	mg/L	6.1	2.6	3.28	3.53	4.95	3.44	3.77	3.57	5.21	3.06	3.84	2.9	4.85	3.19	4.21	3.18	4.34	3.37	4.42	-
Tin	mg/L	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	0.267	<0.002	<0.002	< 0.00006	<0.00006	0.00018	0.00011	0.00019	0.00013	< 0.00006	0.00008	-
Strontium	mg/L	0.3	0.24	0.253	0.183	0.235	0.166	0.347	0.121	<0.002	0.110	0.099	0.128	0.173	0.119	0.283	0.197	0.219	0.265	0.230	-
Titanium	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	0.004	<0.002	0.005	0.00312	0.00288	0.00316	0.00297	0.00309	0.00262	0.0027	0.0024	-
Uranium	mg/L	0.0025	0.00053	0.0017	0.0029	0.0024	0.0012	0.0024	<0.002	<0.002	<0.0005	<0.0005	0.000392	0.000535	0.00033	0.000904	0.000615	0.000669	0.00114	0.000546	0.02
Vanadium	mg/L	0.00088	<0.0005	0.0049	0.0009	0.0009	0.0011	0.0018	<0.002	0.002	<0.002	<0.002	0.00219	0.00304	0.00264	0.003	0.00369	0.0037	0.00340	0.00416	-
Zinc	mg/L	0.0063	0.033	0.027	0.023	0.027	0.034	0.04	0.016	0.047	0.008	0.006	0.005	0.007	0.01	0.005	0.005	0.004	< 0.002	0.005	5
Field Measurements																					
Temperature	oC	-	-	-	-	-	-	-	10.9	15	9.1	12.69	8.52	12.3	6.3	10.3	8.9	13.4	5.9	13.2	-
pH	pH Units	6.33	6.52	5.68	6.62	6.65	7.23	7.04	6.82	6.15	5.96	6.39	7.04	6.38	15.62	6.63	5.78	6.45	7.7	5.97	-
Coductivity	uS/cm	652	562	1014	-	-	0.55	0.87	339.2	591	34.9	388	209	392	207	540	397.5	530	480	464.7	-
Oxidation Reduction Potential	mV	-	-	-	-	-	-	-	143.4	46.6	71.6	89.2	18.1	5.3	19.3	-16.8	91.1	-22.4	-18.4	281.5	-
Dissolved Oxygen	mg/L	-	-	-	-	-	-	-	6.32	6.05	5.02	10.84	7.9	4.73	5.37	6.66	6.64	9.16	4.31	7.01	-

Notes:

ODWQS	Ontario Drinking Water Quality Standards - Ontario Regulation 169/03 "Ontario Drinking Water Quality Standards" under the Safe Drinking Water Act", dated 2002, and "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines", dated June 2003.
BOLD	Exceeds ODWQS
INSV	Insufficient volume to allow for sampling
-	Data not available
Units	All Units in mg/L Unless Otherwise Noted.

TABLE 6
Groundwater Quality Results - BH10
Croft Waste Disposal Site
Magnetawan, Ontario

Parameter	Units	Sample Designation																		ODWQS
		Sample Collection Date (mm/dd/yyyy)																		
		BH10																		
		6-Aug-15	22-Oct-15	13-Oct-16	18-May-17	25-Oct-17	2-May-18	17-Oct-18	11-Jun-19	25-Sep-19	2-Jun-20	1-Oct-20	12-May-21	7-Oct-21	4-May-22	18-Oct-22	10-May-23	28-Sep-23	24-Apr-24	3-Oct-24	
pH Lab	pH Units	7.47	7.46	7.4	7.2	7.5	7.1	7.3	7.81	7.6	7.67	7.62	7.2	7.92	7.88	7.82	7.84	7.72	7.80	7.21	6.5-8.5
Conductivity	uS/cm	1900	2100	1980	1.48	2010	1440	1210	1790	2680	2430	1880	2190	2300	1640	2100	1790	2670	1480	2390	-
Hardness	mg/L	**550**	**610**	**607**	**513**	**627**	**426**	**328**	**507**	**630**	**563**	**531**	**659**	**553**	**419**	**512**	**504**	**584**	**344**	**557**	80-100
Total Dissolved Solids	mg/L	**1090**	**1130**	**1170**	**970**	**1190**	**730**	**656**	**954**	**1540**	**1280**	**1240**	**1440**	**1420**	**946**	**1220**	**991**	**1550**	**811**	**1470**	500
Alkalinity	mg/L	**670**	**640**	**573**	487	**695**	**522**	496	**508**	372	**527**	**559**	448	383	413	461	341	445	347	456	30-500
Chloride	mg/L	170	180	219	185	**289**	143	104	246	**462**	**381**	**395**	**400**	**480**	**340**	**420**	**410**	**560**	**280**	**510**	250
Sodium	mg/L	120	120	164	84.8	107	66.5	71.8	129	182.0	144	159	156	191	147	175	186	**271**	135	**214**	200
Calcium	mg/L	170	190	192	177	200	136	107	169	214.0	178	170	216	181	134	166	158	186	109	177	-
Magnesium	mg/L	30	33	30.8	17.2	31.1	21.3	14.5	20.6	23.30	28.7	25.9	29.1	24.3	20.5	23.4	26.7	29	17.4	27.6	-
Potassium	mg/L	85	93	78.2	54.7	76.7	49.7	39.8	46.2	50.9	57.2	57.1	57	52.3	42.4	47.6	48.4	51.7	31.7	47.3	-
Sulphate	mg/L	49	45	82	67	46	37	42	68.6	53	27.6	24.5	20	25	24	27	27	20	31.7	16	500
Ammonia	mg/L	24	24	8.69	8	23.5	17.3	7.43	11.7	7.82	16.3	13.4	16.7	11.2	12.2	13.4	10.8	10.1	9.86	15.5	-
Nitrate as N	mg/L	0.97	**14.9**	**15.2**	0.7	1.1	<0.1	0.2	<0.5	**22.6**	1.8	<0.5	< 0.03	1.31	0.29	1.57	0.82	5.73	< 0.06	2.32	10
Nitrite as N	mg/L	0.08	0.406	**1.44**	<0.05	<0.05	<0.05	0.33	<0.5	<1.0	<1.0	<0.5	0.91	<0.3	< 0.03	< 0.03	< 0.3	< 0.3	< 0.03	< 0.3	1
Total Kjeldahl Nitrogen	mg/L	28	25	11.8	10	25.5	16.2	8.8	12.6	8.2	18.1	15.4	19.6	12.3	12.2	14.3	11.2	9.63	10.4	16.2	-
Phenolics	mg/L	<0.001	<0.001	0.009	<0.001	0.009	<0.001	<0.001	0.001	0.002	0.003	0.003	< 0.002	0.005	0.002	0.012	0.002	< 0.002	< 0.002	0.002	-
Dissolved Organic Carbon	mg/L	**32**	**34**	**33.3**	**18.1**	**32**	**21.3**	**19.5**	**20.4**	**16**	**22.4**	**25.4**	**18**	**18**	**17**	**17**	**17**	**15**	**12**	**18**	5
Chemical Oxygen Demand	mg/L	670	91	145	67	95	81	87	51	49	61	45	48	52	48	50	42	33	36	43	-
Iron	mg/L	**7.1**	0.27	<0.1	<0.1	<0.1	<0.1	<0.1	0.064	<0.010	0.031	0.049	0.023	0.019	0.02	0.044	0.037	0.021	0.066	0.11	0.3
Manganese	mg/L	**3.1**	**2.5**	**0.973**	**0.922**	**5.72**	**6.12**	**4.02**	**2.88**	**4.34**	**2.14**	**2.02**	**3.10**	**2.34**	**1.63**	**2.26**	**2.36**	**1.80**	**1.12**	**1.86**	0.05
Phosphorus	mg/L	4.4	0.12	0.2	0.05	0.05	0.09	0.14	0.08	0.36	<0.02	0.06	0.08	<0.03	0.04	< 0.03	0.05	< 0.03	< 0.03	< 0.03	-
Orthophosphate	mg/L	-	-	-	-	-	-	-	-	-	<2.0	-	-	-	< 0.03	-	< 0.03	< 0.03	< 0.03	< 0.03	-
Turbidity	NTU	**1600**	**28**	**147**	**22.9**	**34.6**	**101**	**175**	**6.6**	**31.0**	**60.8**	**9.1**	1.5	1.84	**10.5**	**5.1**	**25**	4.3	**8.8**	2.2	5
Total Suspended Solids	mg/L	5800	380	516	123	90	228	312	328	132	115	43	47	53	175	71	204	313	811	191	-
BOD	mg/L	<2	<2	23	<2	3	4	4	<5	<5	<5	<2	4	<4	< 4	< 4	< 4	10	< 4	< 4	-
Anion Sum	-	19.4	20	20.4	16.4	23.1	15.2	13.8	-	-	-	-	-	-	-	-	-	-	-	-	-
Cation Sum	-	20.1	21.7	21.2	15.3	19.1	12.7	10.7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ion Balance	%	1.7	4.09	1.9	-3.3	-9.4	-9.2	-12.5	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.002	<0.002	<0.0001	<0.0001	< 0.00005	<0.00005	< 0.00005	< 0.00005	0.00005	< 0.00005	< 0.00005	< 0.00005	-
Aluminum	mg/L	0.071	0.046	0.038	0.024	0.033	0.031	0.045	0.04	0.032	0.048	0.036	0.028	0.026	0.032	0.035	0.029	0.031	0.027	0.027	0.1
Antimony	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.003	<0.003	<0.001	<0.001	< 0.0009	<0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	0.006
Arsenic	mg/L	<0.001	<0.001	0.002	0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.001	<0.001	0.0008	0.0025	0.0003	0.0015	0.0006	0.0006	0.0002	0.0003	0.01
Barium	mg/L	0.3	0.33	0.276	0.183	0.262	0.122	0.146	0.225	0.279	0.276	0.236	0.29	0.243	0.21	0.254	0.226	0.299	0.142	0.295	1
Beryllium	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	0.00001	0.000015	0.000017	0.000014	0.000024	0.000013	0.000009	0.000018	-
Bismuth	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	< 0.00001	<0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	-
Boron	mg/L	1.8	2.1	2.05	1.09	1.4	0.577	1.2	1.16	1.28	1.29	1.47	1.05	1.11	0.966	1.29	1.01	1.19	0.700	1.1	5
Cadmium	mg/L	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.0001	<0.0001	0.000075	0.000061	0.000039	0.000066	0.000072	0.000074	0.000031	0.00007	0.005
Chromium	mg/L	<0.005	<0.005	0.049	0.003	0.002	0.001	0.002	<0.003	<0.003	<0.002	<0.002	0.00146	0.00125	0.00136	0.00134	0.00123	0.00169	0.00109	0.00144	0.05
Cobalt	mg/L	0.0096	0.0064	0.0032	0.0021	0.0044	0.0031	0.0028	0.004	0.0040	0.0025	0.0023	0.0033	0.00283	0.00256	0.00303	0.00282	0.00299	0.00202	0.00298	-
Copper	mg/L	0.0056	0.08	0.0366	0.0148	0.0179	0.0141	0.0168	0.007	0.0100	0.01	0.007	0.0077	0.0076	0.0092	0.0098	0.0124	0.009	0.006	0.008	1
Molybdenum	mg/L	0.0061	0.0065	0.0019	0.0012	0.0017	0.0014	0.0019	<0.002	<0.002	<0.002	<0.002	0.0012	0.00116	0.00097	0.00169	0.00175	0.00108	0.0010	0.0013	-
Nickel	mg/L	0.012	0.043	0.012	0.007	0.005	0.004	0.004	<0.003	0.006	0.003	<0.003	0.0024	0.0021	0.0019	0.0022	0.0029	0.0026	0.0015	0.0018	-
Phosphate	mg/L	-	-	<0.0002	<0.2	<0.2	<0.2	<0.0002	<1.0	<2.0	-	<1.0	< 0.03	-	-	-	-	-	-		-
Lead	mg/L	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.001	<0.001	<0.0005	<0.0005	< 0.00009	<0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	0.01
Selenium	mg/L	<0.002	<0.002	0.004	0.003	<0.001	<0.001	<0.001	<0.004	0.006	<0.001	0.001	0.00026	0.00024	0.00022	0.00033	0.00029	0.00025	0.00015	0.00034	0.05
Sillicon	mg/L	5.3	4.7	4.37	3.92	4.7	3.89	3.24	4.44	4.66	3.67	3.89	5.11	4.95	4.12	5.06	3.55	4.84	3.51	5.35	-
Tin	mg/L	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	1.06	<0.002	<0.002	0.00011	0.00009	0.00031	0.00009	0.00033	0.00016	< 0.00006	0.0001	-
Strontium	mg/L	0.8	0.85	0.943	0.628	0.95	0.614	0.503	0.793	<0.002	0.783	0.601	1.01	0.8	0.592	0.794	0.753	0.901	0.490	0.861	-
Titanium	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	0.002	<0.002	0.005	0.00127	0.00077	0.001	0.0009	0.00097	0.0009	0.0008	0.0008	-
Uranium	mg/L	0.0081	0.011	0.0083	0.0057	0.0072	0.0043	0.0046	0.007	0.0050	0.005	0.004	0.00487	0.00347	0.00291	0.0052	0.00551	0.00423	0.00344	0.00434	0.02
Vanadium	mg/L	<0.0005	0.0005	0.0131	0.0012	0.0005	<0.0005	<0.0005	<0.002	<0.002	<0.002	<0.002	0.00041	0.00041	0.00056	0.00043	0.0004	0.00051	0.00038	0.00054	-
Zinc	mg/L	0.012	0.036	0.021	0.023	0.012	0.008	0.013	<0.005	0.006	<0.005	<0.005	0.003	0.005	0.009	0.003	0.005	0.003	< 0.002	0.003	5
Field Measurements																					
Temperature	oC	-	-	-	-	-	-	-	11.7	13.5	8.3	11.83	8.83	13.2	6.4	10.3	6.3	12.9	4.7	12.2	-
pH	pH Units	6.25	6.43	5.71	6.88	6.86	7.18	7.28	6.49	6.58	6.88	6.61	6.46	6.47	16.22	6.73	5.89	6.6	7.02	6.23	-
Coductivity	uS/cm	1715	1481	1913	-	-	1.52	1.24	1935	2120	2184	1521	1456	1850	1073	1512	1290	2061	908	1883	-
Oxidation Reduction Potential	mV	-	-	-	-	-	-	-	129.1	134.9	50.7	126	64.3	109.7	74	107.3	145	100.3	86.5	77.5	-
Dissolved Oxygen	mg/L	-	-	-	-	-	-	-	1.61	4.25	5.44	7.29	17.77	0.87	1.5	3.12	3.39	5.56	0.71	1.09	-

Notes:

ODWQS	Ontario Drinking Water Quality Standards - Ontario Regulation 169/03 "Ontario Drinking Water Quality Standards" under the Safe Drinking Water Act", dated 2002, and "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines", dated June 2003.
BOLD	Exceeds ODWQS
INSV	Insufficient volume to allow for sampling
-	Data not available
Units	All Units in mg/L Unless Otherwise Noted.

TABLE 7
Groundwater Quality Results - BH11
Croft Waste Disposal Site
Magnetawan, Ontario

Parameter	Units	Sample Designation																		ODWQS
		Sample Collection Date (mm/dd/yyyy)																		
		BH11																		
		6-Aug-15	22-Oct-15	13-Oct-16	18-May-17	25-Oct-17	2-May-18	17-Oct-18	11-Jun-19	25-Sep-19	2-Jun-20	1-Oct-20	12-May-21	7-Oct-21	4-May-22	18-Oct-22	10-May-23	28-Sep-23	24-Apr-24	3-Oct-24	
pH Lab	pH Units	6.81	6.97	**5**	**5.2**	**6.2**	**6.3**	**6.4**	7.32	7.32	7.36	7.41	7.75	7.81	7.68	7.40	7.48	7.28	7.18	7.00	6.5-8.5
Conductivity	uS/cm	550	600	1590	1130	1500	1880	825	1730	1620	2530	1420	2540	1390	944	305	345	227	244	171	-
Hardness	mg/L	**140**	**190**	**171**	**77**	**211**	**250**	**140**	**245**	**225**	**411**	**237**	**367**	**210**	**152**	**49.1**	**55.4**	**39.4**	**49.7**	**25.8**	80-100
Total Dissolved Solids	mg/L	340	330	**928**	**700**	**926**	**1010**	466	**1000**	**828**	**1300**	**836**	**1400**	**627**	**580**	163	226	171	183	166	500
Alkalinity	mg/L	50	82	**7**	**18**	79	498	58	439	294	**542**	484	**872**	380	321	54	75	48	45	43	30-500
Chloride	mg/L	63	67	**286**	242	**275**	168	67	200	123	237	178	230	150	79	43	42	25	35	14	250
Sodium	mg/L	41	30	**215**	160	192	187	63.4	184	136	**209**	150	**233**	147	96.5	23	33	25	27.6	20	200
Calcium	mg/L	40	58	52.4	22.9	33.1	59.7	32.6	65.3	64.6	119.0	68.5	104.0	61.5	44.1	14.7	16.8	12.2	15.2	8.0	-
Magnesium	mg/L	8.8	11	9.75	4.93	31.3	24.6	14.3	19.90	15.5	27.70	15.90	26.40	13.80	10.3	3.03	3.28	2.15	2.86	1.39	-
Potassium	mg/L	5.6	4.9	39	22.2	79.4	59.7	29.1	67.90	56.5	82.30	55.20	91.90	61.00	40.5	11.80	13.60	10.30	10.2	8.39	-
Sulphate	mg/L	86	91	258	165	243	213	194	115	83.7	118	85	68	59	65	28	41	25	10.2	24	500
Ammonia	mg/L	<0.05	0.06	6.37	4.55	17.5	48	3.58	32.30	28.40	29.90	26.20	53.10	34.10	18.8	3.74	2.98	1.14	0.97	0.70	-
Nitrate as N	mg/L	4.58	2.06	**18.5**	1.6	3.2	0.1	8.7	<0.5	**42.0**	**36.6**	<0.25	< 0.3	**12.1**	**0.56**	0.9	0.3	0.1	0.10	0.4	10
Nitrite as N	mg/L	0.031	0.019	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.25	<1.0	<0.25	< 0.06	0.24	0.04	< 0.03	< 0.03	< 0.03	0.03	< 0.03	1
Total Kjeldahl Nitrogen	mg/L	0.85	0.6	8.4	6.7	22.8	44.9	5	41.5	32.80	38.4	30.3	70	37.1	21	4.62	3.84	1.9	1.40	1.6	-
Phenolics	mg/L	<0.001	<0.001	0.013	<0.001	0.011	0.011	<0.001	0.005	0.006	0.009	0.004	0.006	0.002	0.004	0.006	0.004	< 0.002	< 0.002	< 0.002	-
Dissolved Organic Carbon	mg/L	4.8	3.8	**23.1**	**20.8**	**40.6**	**90.2**	**8.5**	**78.3**	**58.8**	**75.2**	**109.0**	**108.0**	**54.0**	**51**	**15.0**	**17.0**	**16.0**	**10**	**20.0**	5
Chemical Oxygen Demand	mg/L	32	23	98	114	129	266	54	224	152	192	200	244	139	128	39	55	49	29	49	-
Iron	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	**0.78**	<0.1	**1.42**	0.079	0.126	**0.719**	**5.68**	0.231	0.229	0.141	**0.33**	**0.834**	0.072	0.119	0.3
Manganese	mg/L	**0.39**	**0.38**	**6.1**	**2.1**	**5.68**	**5.03**	**2.09**	**3.23**	**1.88**	**3.74**	**2.11**	**4.69**	**1.81**	**1.24**	**0.40**	**0.47**	**0.33**	**0.289**	**0.19**	0.05
Phosphorus	mg/L	0.98	1	0.2	0.19	0.08	0.21	0.02	0.10	0.07	0.03	0.14	0.06	0.04	< 0.03	0.06	0.29	0.07	0.03	0.33	-
Orthophosphate	mg/L	-	-	-	-	-	-	-	-	-	<2.0	-	-	-	0.03	-	0.04	< 0.03	< 0.03	0.09	-
Turbidity	NTU	**1100**	**270**	**713**	**64.4**	**139**	**119**	**29.1**	**88.4**	**41.7**	**18.4**	**44.6**	**30.3**	**8.7**	**8.54**	**7.2**	**40.0**	**16.0**	**7.2**	**55.0**	5
Total Suspended Solids	mg/L	600	1600	846	170	216	345	50	164	103	62	65	40	53	29	77	28	25	183	50	-
BOD	mg/L	<2	<2	ND (12)	<20	<20	<20	<2	<5	<5	<5	3	20	<4	< 4	6	< 4	8	< 4	< 4	-
Anion Sum	-	4.9	5.58	14.9	10.7	14.6	19.1	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Cation Sum	-	4.69	5.24	13.8	9.07	14.6	14.7	6.3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ion Balance	%	2.15	3.1	-3.8	-8.3	<0.1	-13.1	-9.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.002	<0.002	<0.0001	<0.0001	0.00009	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	-
Aluminum	mg/L	**0.13**	0.1	**1.9**	**2.07**	0.036	**0.563**	**0.18**	**0.459**	**0.236**	**0.226**	**0.754**	**0.451**	**0.236**	**0.358**	**0.159**	**0.298**	**0.262**	**0.170**	**0.270**	0.1
Antimony	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.003	<0.003	<0.001	<0.001	< 0.0009	<0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	0.006
Arsenic	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.003	<0.003	<0.001	<0.001	0.0019	0.0009	0.0009	0.0003	0.0004	0.0007	0.0003	0.0005	0.01
Barium	mg/L	0.12	0.11	0.093	**207**	0.269	0.053	0.034	0.106	0.067	0.129	0.154	0.158	0.074	0.0597	0.023	0.031	0.036	0.0428	0.037	1
Beryllium	mg/L	<0.0005	<0.0005	0.0008	0.0006	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	0.000074	0.000043	0.000043	0.000023	0.000046	0.000031	0.000025	0.000035	-
Bismuth	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	< 0.00001	<0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	-
Boron	mg/L	0.48	0.37	2.32	1.1	1.44	1.63	1.71	3.15	2.41	2.72	2.63	2.65	1.88	1.25	0.49	0.52	0.44	0.296	0.38	5
Cadmium	mg/L	0.00031	0.00018	0.0005	0.0009	<0.001	0.0004	0.0002	<0.001	<0.001	0.0002	0.0003	0.000279	0.000111	0.000097	0.000031	0.000041	0.000041	0.000038	0.000072	0.005
Chromium	mg/L	<0.005	<0.005	0.016	0.003	0.002	0.004	0.001	0.005	0.004	0.003	0.004	0.00528	0.00283	0.0026	0.00089	0.00134	0.00114	0.00062	0.00112	0.05
Cobalt	mg/L	0.00062	<0.0005	0.0444	0.0167	0.0044	0.0374	0.0039	0.021	0.006	0.0096	0.0069	0.0318	0.00727	0.00594	0.000988	0.00173	0.00203	0.000745	0.000614	-
Copper	mg/L	0.0041	0.0044	0.0137	0.0064	0.0174	0.0114	0.004	0.012	0.024	0.011	0.018	0.006	0.013	0.0093	0.004	0.005	0.004	0.002	0.005	1
Molybdenum	mg/L	0.001	0.0032	<0.0005	<0.0005	0.0017	0.0016	0.0005	<0.002	0.004	0.003	0.004	0.00419	0.00527	0.00225	0.00101	0.00086	0.001	0.0006	0.001	-
Nickel	mg/L	0.0056	0.0021	0.012	0.011	0.005	0.011	0.003	0.007	0.007	0.008	0.007	0.0124	0.0066	0.0051	0.0013	0.0018	0.0019	0.0009	0.0011	-
Phosphate	mg/L	-	-	<0.0002	<0.2	<0.2	<0.2	<0.2	<1.0	<0.50	-	<0.50	< 0.03	-	-	-	-	-	-		-
Lead	mg/L	<0.0005	<0.0005	0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.0005	<0.0005	0.00013	<0.00009	< 0.00009	< 0.00009	< 0.00009	0.0001	< 0.00009	< 0.00009	0.01
Selenium	mg/L	<0.002	<0.002	0.001	<0.001	<0.001	0.004	0.002	<0.004	<0.004	<0.001	0.003	0.00172	0.00107	0.00078	0.00024	0.00047	0.00037	0.00018	0.00034	0.05
Sillicon	mg/L	5.3	5.7	4.42	3.42	4.76	1.32	1.24	2	1	2	2	2	1	1.54	2	1	2	1.12	1	-
Tin	mg/L	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	0.127	<0.002	<0.002	0.00024	0.00014	0.00013	< 0.00006	0.00013	0.0001	< 0.00006	< 0.00006	-
Strontium	mg/L	0.16	0.21	0.057	0.089	0.956	0.136	0.084	0.177	<0.002	0.272	0.175	0.268	0.140	0.109	0.037	0.053	0.041	0.0506	0.025	-
Titanium	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	0.008	<0.005	0.006	0.005	<0.002	0.021	0.01066	0.00447	0.00423	0.00148	0.00469	0.0024	0.0010	0.0022	-
Uranium	mg/L	0.0015	0.0034	0.0024	0.0012	0.0072	0.0034	0.0006	0.006	0.003	0.0075	0.0052	0.00783	0.00448	0.00222	0.000358	0.000588	0.000598	0.000267	0.000506	0.02
Vanadium	mg/L	<0.0005	<0.0005	0.0038	0.0015	0.0005	0.0009	<0.0005	<0.002	<0.002	<0.002	<0.002	0.00283	0.00058	0.00085	0.00017	0.00047	0.00073	0.00016	0.00032	-
Zinc	mg/L	0.0059	0.0076	0.022	0.062	0.007	0.024	0.009	0.010	0.012	0.005	0.008	0.010	0.004	0.004	< 0.002	< 0.002	0.003	< 0.002	< 0.002	5
Field Measurements																					
Temperature	oC	-	-	-	-	-	-	-	11.1	15	10.9	13.07	8.27	14.4	7.9	10.9	8	15.1	5.8	15.1	-
pH	pH Units	6.01	5.22	5.43	5.09	5.85	6.8	8.06	6.6	6.3	6.6	6.5	6.3	6.4	16.2	6.5	6.0	6.1	8.3	5.8	-
Coductivity	uS/cm	473	233	1475	-	-	1.35	0.85	1972	1305	2289	1139	1650	1170	684	225	235	189	184	148	-
Oxidation Reduction Potential	mV	-	-	-	-	-	-	-	129.2	83.7	120.7	172	38.7	97.4	85.6	93	88.2	90.7	-147.8	56.8	-
Dissolved Oxygen	mg/L	-	-	-	-	-	-	-	1.96	1.26	1.8	6.47	2.96	0.9	1.79	1.16	4	1.13	1.84	2.77	-

Notes:

ODWQS	Ontario Drinking Water Quality Standards - Ontario Regulation 169/03 "Ontario Drinking Water Quality Standards" under the Safe Drinking Water Act", dated 2002, and "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines", dated June 2003.
BOLD	Exceeds ODWQS
INSV	Insufficient volume to allow for sampling
-	Data not available
Units	All Units in mg/L Unless Otherwise Noted.

TABLE 8
Groundwater Quality Results - DP7
Croft Waste Disposal Site
Magnetawan, Ontario

Parameter	Units	Sample Designation											ODWQS
		Sample Collection Date (mm/dd/yyyy)											
		DP7											
		6-Aug-15	22-Oct-15	13-Oct-16	18-May-17	25-Oct-17	11-Jun-19	25-Sep-19	2-Jun-20	1-Oct-20	12-May-21	7-Oct-21	
pH Lab	pH Units	DRY	DRY	DRY	DRY	DRY	**6.49**	6.71	INSV	INSV	INSV	Water	6.5-8.5
Conductivity	uS/cm	-	-	-	-	-	41	122	-	-	-	level	-
Hardness	mg/L	-	-	-	-	-	**15.2**	**48**	-	-	-	only	80-100
Total Dissolved Solids	mg/L	-	-	-	-	-	114	78	-	-	-	-	500
Alkalinity	mg/L	-	-	-	-	-	**9**	36	-	-	-	-	30-500
Chloride	mg/L	-	-	-	-	-	2.06	0.6	-	-	-	-	250
Sodium	mg/L	-	-	-	-	-	1.68	2.8	-	-	-	-	200
Calcium	mg/L	-	-	-	-	-	4.6	13.5	-	-	-	-	-
Magnesium	mg/L	-	-	-	-	-	0.90	3.47	-	-	-	-	-
Potassium	mg/L	-	-	-	-	-	0.16	0.27	-	-	-	-	-
Sulphate	mg/L	-	-	-	-	-	7.5	15.9	-	-	-	-	500
Ammonia	mg/L	-	-	-	-	-	0.48	<0.02	-	-	-	-	-
Nitrate as N	mg/L	-	-	-	-	-	0.06	0.07	-	-	-	-	10
Nitrite as N	mg/L	-	-	-	-	-	<0.05	<0.05	-	-	-	-	1
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	1.14	1.69	-	-	-	-	-
Phenolics	mg/L	-	-	-	-	-	0.004	0.001	-	-	-	-	-
Dissolved Organic Carbon	mg/L	-	-	-	-	-	**8.5**	**5.3**	-	-	-	-	5
Chemical Oxygen Demand	mg/L	-	-	-	-	-	33	156	-	-	-	-	-
Iron	mg/L	-	-	-	-	-	**7.26**	**0.342**	-	-	-	-	0.3
Manganese	mg/L	-	-	-	-	-	**0.549**	**0.082**	-	-	-	-	0.05
Phosphorus	mg/L	-	-	-	-	-	0.54	3.78	-	-	-	-	-
Orthophosphate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	**1100**	**6240**	-	-	-	-	5
Total Suspended Solids	mg/L	-	-	-	-	-	7060	3780	-	-	-	-	-
BOD	mg/L	-	-	-	-	-	7	<5	-	-	-	-	-
Anion Sum	-	-	-	-	-	-	-	-	-	-	-	-	-
Cation Sum	-	-	-	-	-	-	-	-	-	-	-	-	-
Ion Balance	%	-	-	-	-	-	-	-	-	-	-	-	-
Silver	mg/L	-	-	-	-	-	<0.002	<0.002	-	-	-	-	-
Aluminum	mg/L	-	-	-	-	-	**0.325**	**0.392**	-	-	-	-	0.1
Antimony	mg/L	-	-	-	-	-	<0.003	<0.003	-	-	-	-	0.006
Arsenic	mg/L	-	-	-	-	-	<0.003	<0.003	-	-	-	-	0.01
Barium	mg/L	-	-	-	-	-	0.011	0.010	-	-	-	-	1
Beryllium	mg/L	-	-	-	-	-	<0.001	<0.001	-	-	-	-	-
Bismuth	mg/L	-	-	-	-	-	<0.002	<0.002	-	-	-	-	-
Boron	mg/L	-	-	-	-	-	0.129	0.086	-	-	-	-	5
Cadmium	mg/L	-	-	-	-	-	<0.001	<0.001	-	-	-	-	0.005
Chromium	mg/L	-	-	-	-	-	<0.003	<0.003	-	-	-	-	0.05
Cobalt	mg/L	-	-	-	-	-	0.004	<0.001	-	-	-	-	-
Copper	mg/L	-	-	-	-	-	<0.003	<0.003	-	-	-	-	1
Molybdenum	mg/L	-	-	-	-	-	<0.002	<0.002	-	-	-	-	-
Nickel	mg/L	-	-	-	-	-	0.004	<0.003	-	-	-	-	-
Phosphate	mg/L	-	-	-	-	-	<0.10	<0.10	-	-	-	-	-
Lead	mg/L	-	-	-	-	-	<0.001	<0.001	-	-	-	-	0.01
Selenium	mg/L	-	-	-	-	-	<0.004	<0.004	-	-	-	-	0.05
Sillicon	mg/L	-	-	-	-	-	4.36	5.43	-	-	-	-	-
Tin	mg/L	-	-	-	-	-	<0.002	0.056	-	-	-	-	-
Strontium	mg/L	-	-	-	-	-	0.031	<0.002	-	-	-	-	-
Titanium	mg/L	-	-	-	-	-	0.004	0.014	-	-	-	-	-
Uranium	mg/L	-	-	-	-	-	<0.002	<0.002	-	-	-	-	0.02
Vanadium	mg/L	-	-	-	-	-	0.004	0.004	-	-	-	-	-
Zinc	mg/L	-	-	-	-	-	0.013	0.008	-	-	-	-	5
Field Measurements													
Temperature	oC	-	-	-	-	-	13.1	14.8	-	-	-	-	-
pH	pH Units	-	-	-	-	-	6.48	6.33	-	-	-	-	-
Coductivity	uS/cm	-	-	-	-	-	82.9	76.7	-	-	-	-	-
Oxidation Reduction Potential	mV	-	-	-	-	-	149.3	113.5	-	-	-	-	-
Dissolved Oxygen	mg/L	-	-	-	-	-	7.75	7.31	-	-	-	-	-

Notes:

ODWQS	Ontario Drinking Water Quality Standards - Ontario Regulation 169/03 “Ontario Drinking Water Quality Standards” under the Safe Drinking Water Act”, dated 2002, and "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines”, dated June 2003.
BOLD	Exceeds ODWQS
INSV	Insufficient volume to allow for sampling
-	Data not available
Units	All Units in mg/L Unless Otherwise Noted.

TABLE 9
Groundwater Quality Results - BH12
Croft Waste Disposal Site
Magnetawan, Ontario

Parameter	Units	Sample Designation										ODWQS
		Sample Collection Date (mm/dd/yyyy)										
		BH12										
		2-Jun-20	1-Oct-20	12-May-21	7-Oct-21	4-May-22	18-Oct-22	10-May-23	28-Sep-23	24-Apr-24	2-Oct-24	
pH Lab	pH Units	7.09	6.70	7.35	7.65	7.6	7.50	7.55	7.38	6.97	DAMAGED	6.5-8.5
Conductivity	uS/cm	266	205	152	182	158	153	136	162	128	-	-
Hardness	mg/L	91.9	80.9	**61.9**	**78.5**	**67.6**	**68.9**	**54.1**	**64**	**56.6**	-	80-100
Total Dissolved Solids	mg/L	134	116	97	147	131	100	91	109	91	-	500
Alkalinity	mg/L	92	97	56	70	67	64	51	61	50	-	30-500
Chloride	mg/L	6	9	4	9	5	5	5	6	5	-	250
Sodium	mg/L	15	12	5	6	6.12	5	4	6	4.52	-	200
Calcium	mg/L	30.9	27.6	20.9	27.3	23.4	24.1	18.1	22.2	19.0	-	-
Magnesium	mg/L	3.59	2.92	2.36	2.50	2.21	2.13	2.13	2.11	2.23	-	-
Potassium	mg/L	7.87	3.00	1.30	1.60	1.15	1.27	1.03	1.26	1.02	-	-
Sulphate	mg/L	12	17	8	9	12	9	14	10	1.02	-	500
Ammonia	mg/L	0.25	0.11	0.08	0.08	0.06	0.08	0.04	0.06	0.05	-	-
Nitrate as N	mg/L	<0.05	0.1	< 0.03	0.1	< 0.06	< 0.06	0.2	< 0.06	< 0.06	-	10
Nitrite as N	mg/L	<0.05	<0.05	< 0.06	<0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	-	1
Total Kjeldahl Nitrogen	mg/L	0.45	0.3	0.17	0.1	0.12	0.08	0.18	0.18	0.26	-	-
Phenolics	mg/L	0.001	<0.001	< 0.002	<0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	-	-
Dissolved Organic Carbon	mg/L	4.7	4.9	4.0	4.0	4	4.0	3.0	3.0	2	-	5
Chemical Oxygen Demand	mg/L	10	<5	10	9	9	10	< 8	9	< 8	-	-
Iron	mg/L	**1.91**	**3.8**	**1.56**	**1.19**	**1.49**	**1.25**	**0.609**	**1.37**	**1.04**	-	0.3
Manganese	mg/L	**1.18**	**0.42**	**0.38**	**0.38**	**0.369**	**0.37**	**0.28**	**0.32**	**0.297**	-	0.05
Phosphorus	mg/L	0.43	0.80	0.24	0.06	0.1	0.08	0.27	0.31	0.32	-	-
Orthophosphate	mg/L	<0.10	-	-	-	0.03	-	< 0.03	0.06	0.08	-	-
Turbidity	NTU	**406**	**550**	**107**	**11**	**5.55**	**60**	**223**	**160**	**380**	-	5
Total Suspended Solids	mg/L	316	1500	931	153	239	271	717	805	91	-	-
BOD	mg/L	<5	<2	< 10	<4	< 4	< 4	< 4	< 4	< 4	-	-
Anion Sum	-	-	-	-	-	-	-	-	-	-	-	-
Cation Sum	-	-	-	-	-	-	-	-	-	-	-	-
Ion Balance	%	-	-	-	-	-	-	-	-	-	-	-
Silver	mg/L	<0.0001	<0.0001	< 0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	-	-
Aluminum	mg/L	**0.117**	**1.340**	0.054	0.038	0.05	0.041	0.049	0.046	0.053	-	0.1
Antimony	mg/L	<0.001	<0.001	< 0.0009	<0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	-	0.006
Arsenic	mg/L	<0.001	0.002	0.0007	0.0009	0.0006	0.0011	0.0003	0.0012	0.0003	-	0.01
Barium	mg/L	0.067	0.057	0.044	0.048	0.0525	0.045	0.037	0.046	0.0360	-	1
Beryllium	mg/L	<0.0005	<0.0005	4.3E-05	4.5E-05	3.4E-05	4.2E-05	4.8E-05	3.3E-05	0.000037	-	-
Bismuth	mg/L	<0.002	<0.002	< 0.00001	<0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	-	-
Boron	mg/L	0.16	0.07	0.05	0.08	0.117	0.09	0.07	0.10	0.062	-	5
Cadmium	mg/L	<0.0001	<0.0001	6E-06	1.4E-05	7E-06	4E-06	2.5E-05	7E-06	0.000003	-	0.005
Chromium	mg/L	<0.002	<0.002	0.00029	0.00023	0.0003	0.00027	0.00025	0.00037	0.00024	-	0.05
Cobalt	mg/L	0.0008	<0.0005	0.00009	0.00011	0.00019	0.00016	9.7E-05	0.00023	0.000127	-	-
Copper	mg/L	<0.001	0.002	< 0.0002	0.001	0.0019	0.000	0.001	0.002	< 0.001	-	1
Molybdenum	mg/L	0.005	<0.002	0.00088	0.00104	0.00075	0.00096	0.0008	0.00139	0.0006	-	-
Nickel	mg/L	<0.003	<0.003	0.0003	0.0003	0.0005	0.0002	0.0002	0.0006	0.0002	-	-
Phosphate	mg/L	-	<0.10	0.11	-	-	-	-	-	-	-	-
Lead	mg/L	<0.0005	0.0008	< 0.00009	<0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	-	0.01
Selenium	mg/L	<0.001	<0.001	< 0.00004	<0.00004	< 0.00004	0.00004	0.00014	0.00005	0.00008	-	0.05
Sillicon	mg/L	5	8	6	6	4.69	6	4	5	4.80	-	-
Tin	mg/L	<0.002	<0.002	< 0.00006	<0.00006	0.00014	< 0.00006	0.00012	0.00011	< 0.00006	-	-
Strontium	mg/L	0.089	0.096	0.105	0.124	0.113	0.117	0.078	0.094	0.0755	-	-
Titanium	mg/L	0.004	0.144	0.00083	0.00011	0.00069	0.00074	0.00079	0.00058	0.0007	-	-
Uranium	mg/L	0.0012	0.0007	0.00019	0.00019	0.0002	0.0002	0.00017	0.00031	0.000170	-	0.02
Vanadium	mg/L	<0.002	<0.002	0.00037	0.00034	0.00042	0.00039	0.0003	0.00052	0.00032	-	-
Zinc	mg/L	<0.005	0.012	< 0.002	0.003	0.004	< 0.002	< 0.002	0.003	< 0.002	-	5
Field Measurements												
Temperature	oC	7.8	11.3	6.65	13.4	6.4	9.4	7.6	11.8	4.1	-	-
pH	pH Units	6.7	6.6	6.1	6.3	16.2	6.6	6.1	6.4	8.4	-	-
Coductivity	uS/cm	272	158	76	154	107	114	103	119	84	-	-
Oxidation Reduction Potential	mV	108.7	61.1	86	29.4	-0.7	59.4	66.5	92.6	-124.8	-	-
Dissolved Oxygen	mg/L	1.15	7.55	5.05	1.06	1.19	5.2	2.23	0.78	0.87	-	-

Notes:

ODWQS	Ontario Drinking Water Quality Standards - Ontario Regulation 169/03 “Ontario Drinking Water Quality Standards” under the Safe Drinking Water Act”, dated 2002, and "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines”, dated June 2003.
BOLD	Exceeds ODWQS
INSV	Insufficient volume to allow for sampling
-	Data not available
Units	All Units in mg/L Unless Otherwise Noted.

TABLE 10
Groundwater Quality Results - BH13
Croft Waste Disposal Site
Magnetawan, Ontario

Parameter	Units	Sample Designation										ODWQS
		Sample Collection Date (mm/dd/yyyy)										
		BH13										
		2-Jun-20	1-Oct-20	12-May-21	7-Oct-21	4-May-22	18-Oct-22	10-May-23	28-Sep-23	24-Apr-24	3-Oct-24	
pH Lab	pH Units	7.32	6.74	7.42	7.41	7.22	7.09	7.10	7.47	7.14	6.88	6.5-8.5
Conductivity	uS/cm	291	206	90	130	88	152	59	207	50	106	-
Hardness	mg/L	**103**	**108**	**43**	**50.5**	**36.6**	**41.6**	**24.8**	85.9	**24.1**	**48.4**	80-100
Total Dissolved Solids	mg/L	178	114	60	120	83	60	54	120	46	103	500
Alkalinity	mg/L	106	116	35	55	32	53	**22**	76	**22**	47	30-500
Chloride	mg/L	14	7	3	6	5	12	4	15	1	5	250
Sodium	mg/L	9	3	1	2	1.65	3	2	6	1.86	3	200
Calcium	mg/L	32.9	36.3	14.5	16.9	12.2	14.0	8.3	28.6	8.05	16.1	-
Magnesium	mg/L	5.17	4.21	1.65	2.00	1.48	1.62	0.98	3.52	0.964	2.00	-
Potassium	mg/L	5.82	2.45	0.95	1.47	0.721	0.77	0.58	1.26	0.501	1.05	-
Sulphate	mg/L	2	3	4	4	5	4	4	4	0.501	3	500
Ammonia	mg/L	0.08	0.48	0.04	0.37	< 0.04	0.30	< 0.04	0.09	< 0.04	< 0.1	-
Nitrate as N	mg/L	<0.05	<0.05	< 0.03	<0.06	< 0.06	0.1	< 0.06	< 0.06	< 0.06	0.3	10
Nitrite as N	mg/L	<0.05	<0.05	< 0.06	<0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	1
Total Kjeldahl Nitrogen	mg/L	2.52	0.92	0.17	0.56	0.08	0.65	0.22	0.38	0.41	< 0.5	-
Phenolics	mg/L	0.006	0.002	< 0.002	<0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	-
Dissolved Organic Carbon	mg/L	**27.8**	**5.6**	4.0	5.0	3	**6.0**	4.0	5.0	4	**6.0**	5
Chemical Oxygen Demand	mg/L	221	18	11	19	< 8	24	9	11	16	15	-
Iron	mg/L	**7.29**	**2.26**	0.245	**1.48**	**0.144**	**0.341**	0.146	**0.416**	0.138	0.286	0.3
Manganese	mg/L	**0.695**	**0.515**	**0.184**	**0.212**	**0.129**	**0.192**	**0.062**	**0.412**	**0.0720**	**0.171**	0.05
Phosphorus	mg/L	31.90	8.74	0.90	3.46	0.17	3.73	0.28	0.06	1.36	0.16	-
Orthophosphate	mg/L	<0.10	-	-	-	0.03	-	< 0.03	< 0.03	0.12	< 0.03	-
Turbidity	NTU	**28700**	**23200**	**42**	**43**	**28.6**	**2100**	**110**	**55**	**550**	**15**	5
Total Suspended Solids	mg/L	39600	18600	1360	10300	590	7370	58	284	46	357	-
BOD	mg/L	35	2	< 10	<4	< 4	< 4	< 4	< 4	< 4	< 4	-
Anion Sum	-	-	-	-	-	-	-	-	-	-	-	-
Cation Sum	-	-	-	-	-	-	-	-	-	-	-	-
Ion Balance	%	-	-	-	-	-	-	-	-	-	-	-
Silver	mg/L	<0.0001	<0.0001	< 0.00005	0.00024	0.00006	< 0.00005	0.00011	< 0.00005	0.00007	< 0.00005	-
Aluminum	mg/L	**0.134**	0.070	0.084	**0.502**	**0.117**	0.092	**0.128**	0.051	**0.116**	**0.173**	0.1
Antimony	mg/L	<0.001	<0.001	< 0.0009	<0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	0.006
Arsenic	mg/L	<0.001	<0.001	0.0008	0.0011	0.0003	0.0004	0.0003	0.0003	0.0002	0.0004	0.01
Barium	mg/L	0.041	0.054	0.037	0.048	0.0389	0.035	0.020	0.055	0.0153	0.037	1
Beryllium	mg/L	<0.0005	<0.0005	0.000043	0.000145	0.000056	0.000088	0.000072	0.000044	0.000042	0.000067	-
Bismuth	mg/L	<0.002	<0.002	< 0.00001	<0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	-
Boron	mg/L	0.05	0.03	0.01	0.04	0.015	0.08	0.02	0.07	0.020	0.06	5
Cadmium	mg/L	<0.0001	<0.0001	0.00005	0.000042	0.000056	0.000049	0.000078	0.000056	0.000034	0.000052	0.005
Chromium	mg/L	<0.002	<0.002	0.00033	0.00047	0.0004	0.00037	0.00044	0.00032	0.00032	0.00035	0.05
Cobalt	mg/L	0.0009	<0.0005	0.00026	0.000362	0.000232	0.000167	0.00014	0.000261	0.000098	0.000176	-
Copper	mg/L	<0.001	<0.001	0.003	0.005	0.009	0.005	0.008	0.007	0.004	0.010	1
Molybdenum	mg/L	0.006	<0.002	0.00041	0.0003	0.00023	0.00019	0.00008	0.00021	< 0.0004	< 0.0004	-
Nickel	mg/L	<0.003	<0.003	0.0009	0.0008	0.001	0.0006	0.0005	0.0011	0.0006	0.0006	-
Phosphate	mg/L	-	<0.10	0.19	-	-	-	-	-	-		-
Lead	mg/L	<0.0005	<0.0005	< 0.00009	0.00045	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	0.01
Selenium	mg/L	<0.001	<0.001	0.00008	0.00011	0.00008	0.00014	0.00015	0.00015	0.00012	0.00014	0.05
Sillicon	mg/L	5.6	5.6	3.6	4.4	2.75	3.2	2.3	3.6	2.23	3.7	-
Tin	mg/L	<0.002	<0.002	< 0.00006	0.00006	0.00023	< 0.00006	0.00008	0.00006	< 0.00006	0.00031	-
Strontium	mg/L	0.087	0.062	0.034	0.035	0.0248	0.028	0.020	0.056	0.0161	0.034	-
Titanium	mg/L	<0.002	0.002	0.00153	0.0448	0.0019	0.00078	0.00194	0.00043	0.0011	0.0017	-
Uranium	mg/L	0.002	0.0013	0.00365	0.00296	0.00253	0.00324	0.00279	0.00605	0.00164	0.00434	0.02
Vanadium	mg/L	<0.002	<0.002	0.0006	0.00171	0.00055	0.00045	0.00044	0.00043	0.00029	0.00037	-
Zinc	mg/L	<0.005	<0.005	0.006	0.008	0.012	0.004	0.006	0.005	0.004	0.005	5
Field Measurements												
Temperature	oC	7.9	11.93	8.5	15	6.9	10.5	11.5	11.3	6.7	11.6	-
pH	pH Units	6.3	6.8	5.8	6.0	16.2	6.5	6.0	6.2	7.3	5.7	-
Coductivity	uS/cm	287	171	63	102	55	81	54	155	40	88	-
Oxidation Reduction Potential	mV	259	83.1	111.4	83	61	61.8	100.4	88.6	110.4	39.8	-
Dissolved Oxygen	mg/L	3.43	7.45	2.89	14.7	3.01	1.68	4.55	0.51	7.24	2.46	-

Notes:

ODWQS	Ontario Drinking Water Quality Standards - Ontario Regulation 169/03 “Ontario Drinking Water Quality Standards” under the Safe Drinking Water Act”, dated 2002, and "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines”, dated June 2003.
BOLD	Exceeds ODWQS
INSV	Insufficient volume to allow for sampling
-	Data not available
Units	All Units in mg/L Unless Otherwise Noted.

Pinchin File Number: 225335.008

TABLE 11
Groundwater Quality Results - BH14
Croft Waste Disposal Site
Magnetawan, Ontario

Parameter	Units	Sample Designation										ODWQS
		Sample Collection Date (mm/dd/yyyy)										
		BH14										
		2-Jun-20	1-Oct-20	12-May-21	7-Oct-21	4-May-22	18-Oct-22	10-May-23	28-Sep-23	24-Apr-24	3-Oct-24	
pH Lab	pH Units	7.01	6.69	7.67	7.63	7.67	7.61	7.61	7.60	7.71	7.37	6.5-8.5
Conductivity	uS/cm	472	408	406	305	409	234	389	229	337	205	-
Hardness	mg/L	**106**	**130**	**135**	**106**	**160**	93.1	**157**	94	**165**	100	80-100
Total Dissolved Solids	mg/L	288	256	306	207	143	143	260	226	231	140	500
Alkalinity	mg/L	67	118	86	84	90	81	80	78	82	81	30-500
Chloride	mg/L	87	73	56	41	66	21	67	21	59	12	250
Sodium	mg/L	31	27	14	11	11.3	6	9	6	9.72	9	200
Calcium	mg/L	31.3	39.8	41.0	33.4	51.1	29.7	49.2	29.6	52.0	32.2	-
Magnesium	mg/L	6.84	7.49	7.88	5.42	7.99	4.59	8.25	4.90	8.47	4.79	-
Potassium	mg/L	8.35	6.14	3.66	3.50	3.45	2.52	2.79	2.36	2.52	3.38	-
Sulphate	mg/L	4	7	19	17	29	12	25	8	2.52	8	500
Ammonia	mg/L	0.02	0.29	0.36	0.29	0.09	0.15	0.07	0.06	0.08	< 0.1	-
Nitrate as N	mg/L	<0.05	<0.05	< 0.03	<0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	10
Nitrite as N	mg/L	<0.05	<0.05	< 0.06	<0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	1
Total Kjeldahl Nitrogen	mg/L	0.98	0.96	0.5	0.46	0.16	0.29	0.19	0.15	0.07	< 0.5	-
Phenolics	mg/L	0.003	<0.001	< 0.002	<0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	-
Dissolved Organic Carbon	mg/L	**24.8**	**23.4**	**16.0**	4.0	4	2.0	3.0	2.0	2	2.0	5
Chemical Oxygen Demand	mg/L	75	35	42	22	11	< 8	< 8	< 8	< 8	< 8	-
Iron	mg/L	**3.77**	**4.35**	**4.52**	**2.87**	**4.6**	**1.67**	**3.46**	**1.5**	**3.28**	**1.25**	0.3
Manganese	mg/L	**1.19**	**1.12**	**1.31**	**0.75**	**1.16**	**0.54**	**0.95**	**0.49**	**0.924**	**0.67**	0.05
Phosphorus	mg/L	4.98	7.38	5.69	1.73	0.43	1.81	0.61	0.07	0.12	0.83	-
Orthophosphate	mg/L	<0.10	-	-	-	0.04	-	< 0.03	< 0.03	0.04	0.04	-
Turbidity	NTU	**5920**	**6190**	**226**	**180**	**1010**	**750**	**200**	**80**	**70**	**120**	5
Total Suspended Solids	mg/L	8970	4150	11400	710	1400	2850	545	684	231	1200	-
BOD	mg/L	32	8	5	<4	< 4	< 4	< 4	< 4	< 4	< 4	-
Anion Sum	-	-	-	-	-	-	-	-	-	-	-	-
Cation Sum	-	-	-	-	-	-	-	-	-	-	-	-
Ion Balance	%	-	-	-	-	-	-	-	-	-	-	-
Silver	mg/L	<0.0001	<0.0001	< 0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	-
Aluminum	mg/L	**0.144**	0.083	**0.207**	0.051	0.087	0.051	0.021	0.006	0.012	0.017	0.1
Antimony	mg/L	<0.001	<0.001	< 0.0009	<0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	0.006
Arsenic	mg/L	0.002	0.002	0.0006	0.0005	0.0004	0.0003	0.0003	0.0003	0.0003	0.0003	0.01
Barium	mg/L	0.103	0.109	0.093	0.061	0.0874	0.043	0.073	0.040	0.0661	0.036	1
Beryllium	mg/L	<0.0005	<0.0005	0.000091	0.000056	0.000058	0.000031	0.000052	0.000023	0.000029	0.000025	-
Bismuth	mg/L	<0.002	<0.002	< 0.00001	<0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	-
Boron	mg/L	0.22	0.17	0.08	0.11	0.08	0.05	0.07	0.05	0.058	0.12	5
Cadmium	mg/L	<0.0001	<0.0001	<0.000003	<0.000003	<0.000003	0.000004	0.000009	<0.000003	<0.000003	<0.000003	0.005
Chromium	mg/L	<0.002	<0.002	0.00043	0.00019	0.00024	0.00018	0.00025	0.00014	0.00018	0.00027	0.05
Cobalt	mg/L	0.0019	0.0016	0.00104	0.000525	0.000687	0.000283	0.000515	0.000293	0.000463	0.00104	-
Copper	mg/L	<0.001	0.001	0.001	0.000	0.0018	< 0.0002	0.000	0.001	< 0.001	0.002	1
Molybdenum	mg/L	<0.002	<0.002	0.00015	0.00044	0.00026	0.00056	0.00028	0.00046	< 0.0004	0.0007	-
Nickel	mg/L	0.007	<0.003	0.0008	0.0004	0.0005	0.0001	0.0002	0.0004	0.0003	0.0002	-
Phosphate	mg/L	-	<0.10	0.42	-	-	-	-	-	-		-
Lead	mg/L	<0.0005	<0.0005	< 0.00009	<0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	0.01
Selenium	mg/L	<0.001	0.012	0.00012	0.00006	0.00005	< 0.00004	0.00008	< 0.00004	0.00005	0.00005	0.05
Sillicon	mg/L	4	8	11	9	10.6	11	9	10	9.68	9	-
Tin	mg/L	<0.002	<0.002	0.00007	<0.00006	0.00013	< 0.00006	0.00007	< 0.00006	< 0.00006	0.00006	-
Strontium	mg/L	0.161	0.154	0.209	0.144	0.208	0.124	0.235	0.128	0.239	0.131	-
Titanium	mg/L	<0.002	<0.002	0.00745	0.00156	0.00196	0.00112	0.00126	0.00022	0.0003	0.0005	-
Uranium	mg/L	0.0006	<0.0005	0.000581	0.000499	0.000153	0.000321	0.000428	0.000292	0.000390	0.000321	0.02
Vanadium	mg/L	<0.002	<0.002	0.00141	0.0007	0.00085	0.0003	0.00035	0.0002	0.00028	0.00037	-
Zinc	mg/L	<0.005	<0.005	0.002	0.003	0.003	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	5
Field Measurements												
Temperature	oC	7.7	12.7	7.03	15.2	6.1	10.2	6.4	11.6	6.6	12.2	-
pH	pH Units	6.4	6.3	16.1	6.6	16.2	6.9	5.4	6.6	7.5	6.5	-
Coductivity	uS/cm	442	332	243	270	263	168	271	176	277	160	-
Oxidation Reduction Potential	mV	46.2	55.3	27.9	-25.2	-14.7	-18.8	120.9	92.3	81.5	44.5	-
Dissolved Oxygen	mg/L	1.12	6.95	3.84	0.69	1.04	1.02	2.21	0.5	1.71	0.72	-

Notes:

ODWQS	Ontario Drinking Water Quality Standards - Ontario Regulation 169/03 “Ontario Drinking Water Quality Standards” under the Safe Drinking Water Act”, dated 2002, and "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines”, dated June 2003.
BOLD	Exceeds ODWQS
INSV	Insufficient volume to allow for sampling
CNL	Could Not Locate
LS	Limited Sample
Units	All Units in mg/L Unless Otherwise Noted.

TABLE 12
Guideline B-7 Calculations - Spring 2024
Croft Waste Disposal Site
Magnetawan, Ontario

Parameter	Units	Sample Designation							ODWQS	Guideline B-7 Calculation Cm = Cb + x (Cr - Cb)			
		Sample Collection Date (dd-mmm-yy)											
		BH8	BH9	BH10	BH11	BH12	BH13	BH14		Cb	x	Cr	Cm
		24-Apr-24	24-Apr-24	24-Apr-24	24-Apr-24	24-Apr-24	24-Apr-24	24-Apr-24					
Chloride	mg/L	< 1	74	**280**	35	5	1	59	250	7.16	0.5	250	129
Sulphate	mg/L	3	11	18	42	10	3	20	500	9.05	0.5	500	255
Sodium	mg/L	4.20	40.2	**135**	27.6	4.52	1.86	9.72	200	6.4	0.5	200	103
Boron	mg/L	< 0.002	0.585	0.700	0.296	0.062	0.020	0.058	5	0.032	0.25	5	1.27
Nitrate	mg/L	< 0.06	< 0.06	< 0.06	0.10	< 0.06	< 0.06	< 0.06	10	0.038	0.25	10	2.53
Alkalinity	mg/L	**9**	230	**347**	45	50	**22**	82	30-500	46	0.5	30-500	37.8 - 272.8
Dissolved Organic Carbon	mg/L	3	**16**	12	10	2	4	2	5	13.2	0.5	5	13.2*
Total Dissolved Solids	mg/L	40	**434**	**811**	183	91	46	231	500	123	0.5	500	311
Iron	mg/L	0.085	**19.2**	0.066	0.072	1.04	0.138	3.28	0.3	7.53	0.5	0.3	7.53*
Manganese	mg/L	0.00206	**3.28**	1.12	0.289	0.297	0.0720	0.924	0.05	1.12	0.5	0.10	1.12*

Notes:

ODWQS	Ontario Drinking Water Quality Standards - Ontario Regulation 169/03 “Ontario Drinking Water Quality Standards” under the Safe Drinking Water Act”, dated 2002, and "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines”, dated June 2003.
BOLD	Exceeds Cm value.
*	Not Calculated due to the background concentration being in exceedance of the ODWQS. Cm set equal to the background concentration.
Units	All Units in mg/L Unless Otherwise Noted.
Cb	Background Concentration - average of valid sampling rounds at BH1
Cr	Maximum Acceptable Contaminant Concentration
x	Reduction Constant
Cm	Maximum Off-Site Acceptable Contaminant Concentration

TABLE 13
Guideline B-7 Calculations - Fall 2024
Croft Waste Disposal Site
Magnetawan, Ontario

Parameter	Units	Sample Designation							ODWQS	Guideline B-7 Calculation Cm = Cb + x (Cr - Cb)			
		Sample Collection Date (dd-mmm-yy)											
		BH8	BH9	BH10	BH11	BH12	BH13	BH14		Cb	x	Cr	Cm
		2-Oct-24	2-Oct-24	3-Oct-24	3-Oct-24	2-Oct-24	3-Oct-24	3-Oct-24					
Chloride	mg/L	< 1	49	**510**	14	DAMAGED	5	12	250	7.86	0.5	250	129
Sulphate	mg/L	8	15	16	24	-	3	8	500	10.3	0.5	500	255
Sodium	mg/L	2	32	**214**	20	-	3	9	200	6.63	0.5	200	103
Boron	mg/L	0.015	0.63	1.10	0.38	-	0.06	0.12	5	0.035	0.25	5	1.28
Nitrate	mg/L	< 0.06	< 0.06	2.32	0.4	-	0.33	< 0.06	10	0.038	0.25	10	2.53
Alkalinity	mg/L	**24**	210	**456**	43	-	47	81	30-500	47.5	0.5	30-500	38.7 - 273.7
Dissolved Organic Carbon	mg/L	2	**28**	**18**	**20**	-	6	2	5	13.5	0.5	5	13.5*
Total Dissolved Solids	mg/L	86	**437**	**1470**	166	-	103	140	500	131	0.5	500	316
Iron	mg/L	0.042	**22.3**	0.11	0.119	-	0.29	1.25	0.3	8.29	0.5	0.3	8.29*
Manganese	mg/L	0.00832	**2.58**	**1.86**	0.19	-	0.171	0.673	0.05	1.19	0.5	0.10	1.19*

Notes:

ODWQS	Ontario Drinking Water Quality Standards - Ontario Regulation 169/03 “Ontario Drinking Water Quality Standards” under the Safe Drinking Water Act”, dated 2002, and "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines”, dated June 2003.
BOLD	Exceeds Cm value.
*	Not Calculated due to the background concentration being in exceedance of the ODWQS. Cm set equal to the background concentration.
Units	All Units in mg/L Unless Otherwise Noted.
Cb	Background Concentration - average of valid sampling rounds at BH1
Cr	Maximum Acceptable Contaminant Concentration
x	Reduction Constant
Cm	Maximum Off-Site Acceptable Contaminant Concentration

TABLE 14
Surface Water Quality Results - SW-1
Croft Waste Disposal Site
Magnetawan, Ontario

Parameter	Units	Sample Designation																		PWQO	CWQG
		Sample Collection Date (mm/dd/yyyy)																			
		SW-1																			
		13-May-15	22-Oct-15	13-Oct-16	18-May-17	25-Oct-17	2-May-18	17-Oct-18	11-Jun-19	25-Sep-19	2-Jun-20	1-Oct-20	12-May-21	7-Oct-21	4-May-22	18-Oct-22	10-May-23	28-Sep-23	24-Apr-24	2-Oct-24	
pH Lab	pH units	**6.01**	**6.44**	**6.3**	**6.2**	**6.1**	**5.8**	**5.4**	**4**	**5**	DRY	**5**	**4**	**4**	**6.29**	**5**	**4**	DRY	DRY	DRY	6.5-8.5	6.5-9.0
Conductivity	uS/cm	27	400	186	27	45	20	72	478	89	-	676	780	635	699	490	502	-	-	-	-	-
Hardness	mg/L	11	150	56	12	22	7	27	80	22	-	158	221	213	248	148	151	-	-	-	-	-
Total Dissolved Solids	mg/L	48	270	184	154	84	24	84	432	80	-	418	449	480	383	250	320	-	-	-	-	-
Alkalinity	mg/L	3.8	7.8	12	7	10	6	7	<5	<5	-	<5	< 2	<2	7	< 2	< 2	-	-	-	-	-
Chloride	mg/L	3	100	41	2	5	1	10	149	17	-	231	260	240	240	160	190	-	-	-	-	120
Sodium	mg/L	0.9	6.6	3.7	1.44	0.885	0.781	1.18	14	3	-	23	27	33	25.6	18	19	-	-	-	-	-
Calcium	mg/L	3	32	14.9	3.96	6.41	2.1	7.99	32	5	-	38	58	52	70.1	41	42	-	-	-	-	-
Magnesium	mg/L	0.47	13	4.53	0.58	1.33	0.394	1.76	14	2	-	15	19	20	17.8	11	11	-	-	-	-	-
Potassium	mg/L	0.38	6.5	1.23	0.34	1.47	0.468	1.37	2	1	-	2	3	2	4.04	3	3	-	-	-	-	-
Sulphate	mg/L	<1	15	2	1	<1	2	6	4	3	-	3	< 2	<2	2	3	< 2	-	-	-	-	-
Ammonia	mg/L	<0.05	0.058	0.06	0.01	<0.01	0.02	0.05	0.18	0.15	-	<0.02	< 0.04	<0.04	< 0.04	< 0.04	< 0.04	-	-	-	-	-
Nitrate as N	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	-	<0.10	< 0.06	0	< 0.06	< 0.06	< 0.06	-	-	-	-	13
Nitrite as N	mg/L	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.10	< 0.03	<0.03	< 0.03	< 0.03	< 0.03	-	-	-	-	0.06
Total Kjeldahl Nitrogen	mg/L	0.49	0.67	0.8	0.6	0.9	0.3	1	0.41	2	-	0.45	0.14	0.35	0.19	0.21	0.67	-	-	-	-	-
Phenolics	mg/L	<0.001	<0.001	**0.009**	<0.001	**0.006**	<0.001	<0.001	0.001	**0.01**	-	**0.003**	**0.002**	**0.004**	**0.003**	**0.004**	**0.003**	-	-	-	0.001	0.004
Dissolved Organic Carbon	mg/L	16	14	24.1	16.3	27.5	7.6	44.8	4	12	-	10	2	4	3	10	3	-	-	-	-	-
Chemical Oxygen Demand	mg/L	47	38	81	55	77	28	85	8	37	-	20	13	30	19	14	24	-	-	-	-	-
Iron	mg/L	0.15	**0.65**	**0.981**	0.167	**0.888**	0.2	**0.794**	**2**	**0.42**	-	**6**	**5**	**10**	0.208	**1**	**6**	-	-	-	0.3	0.3
Manganese	mg/L	0.019	0.23	0.038	0.072	0.152	0.022	0.079	1	0.10	-	1	1	2	0.894	1	1	-	-	-	-	-
Phosphorus	mg/L	0.008	0.026	<0.01	<0.01	0.03	<0.01	**0.04**	**0.04**	**0.05**	-	0.02	< 0.03	**0.04**	**< 0.003**	0.03	**0.04**	-	-	-	0.03	-
Orthophosphate	mg/L	<0.01	<0.01	-	-	-	-	-	<0.10	-	-	-	-	-	< 0.03	-	< 0.03	-	-	-	-	-
Turbidity	NTU	0.4	2.5	1.5	0.7	1.4	2.1	0.9	6	3	-	5	-	-	-	-	-	-	-	-	-	-
Total Suspended Solids	mg/L	<1	<10	4	<2	4	2	<2	38	<10	-	10	8	63	12	4	16	-	-	-	-	-
BOD	mg/L	<2	<2	<12	-	-	<2	<2	<5	<5	-	<5	< 4	<4	< 4	< 4	< 4	-	-	-	-	-
Anion Sum	-	0.175	3.28	1.41	0.23	0.35	0.19	0.54	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cation Sum	-	0.339	3.58	1.31	0.32	0.51	0.18	0.63	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ion Balance	%	NC	4.34	-3.9	-	-	-1.5	8.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver	mg/L	<0.0001	<0.0001	<0.0005	<0.0001	<0.0001	<0.0001	**1.18**	<0.0001	<0.0001	-	<0.0001	< 0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	-	-	-	0.0001	0.00025
Aluminum	mg/L	**0.26**	**0.22**	**0.167**	**0.228**	**0.265**	**0.133**	**0.375**	**0.72**	**0.28**	-	**1.42**	**1.20**	**0.53**	**0.239**	**0.37**	**0.33**	-	-	-	0.075	0.1
Antimony	mg/L	<0.0005	<0.0005	<0.0025	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	-	<0.001	< 0.0009	<0.0009	< 0.0009	< 0.0009	< 0.0009	-	-	-	0.02	-
Arsenic	mg/L	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	-	<0.003	< 0.0002	0.0003	< 0.0002	0.0004	0.0003	-	-	-	0.1	0.005
Barium	mg/L	0.012	0.17	0.055	0.017	0.02	0.005	0.028	0.088	0.023	-	0.106	0.152	0.133	0.126	0.098	0.087	-	-	-	-	-
Beryllium	mg/L	<0.0005	<0.0005	<0.0025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	<0.0005	0.000173	0.000086	0.000033	0.00009	0.00006	-	-	-	1.1	-
Bismuth	mg/L	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	-	<0.002	< 0.00001	0.00002	< 0.00001	< 0.00001	< 0.00001	-	-	-	-	-
Boron	mg/L	<0.01	0.015	<0.05	0.049	<0.01	0.011	<0.01	<0.010	0.093	-	0.023	0.010	0.009	0.015	0.010	0.018	-	-	-	0.2	1.5
Cadmium	mg/L	<0.0001	<0.0001	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.0001	-	0.0002	0.0002	0.0004	**0.000209**	**0.0005**	0.0001	-	-	-	0.0002	0.00026
Chromium	mg/L	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	0.001	<0.003	<0.003	-	<0.003	0.0004	0.0006	< 0.00008	0.0003	0.0004	-	-	-	0.0089	0.001
Cobalt	mg/L	<0.0005	**0.0023**	<0.0025	**0.0013**	**0.0022**	<0.0005	**0.0013**	**0.007**	0.001	-	**0.013**	**0.011**	**0.012**	**0.00642**	**0.006**	**0.007**	-	-	-	0.0009	-
Copper	mg/L	0.0012	0.0017	<0.0025	0.0016	<0.0005	0.0009	0.0025	0.001	0.003	-	0.002	0.001	0.001	0.0004	0.003	0.001	-	-	-	0.005	0.004
Molybdenum	mg/L	<0.0005	<0.0005	<0.0025	<0.0005	<0.0005	<0.0005	<0.0005	<0.002	<0.002	-	<0.002	< 0.00004	0.00005	< 0.00004	0.0002	< 0.00004	-	-	-	0.04	0.073
Nickel	mg/L	0.002	0.0025	<0.005	0.002	0.002	<0.001	0.004	0.003	<0.003	-	0.006	0.006	0.005	0.0034	0.003	0.003	-	-	-	0.025	0.15
Phosphate	mg/L	-	-	<0.0002	<0.2	<0.0002	<0.0002	<0.2	-	<0.10	-	<0.20	0.0150	-	-	-	-	-	-	-	-	-
Lead	mg/L	0.00071	<0.0005	<0.0005	0.0007	0.0005	0.0001	0.0008	<0.001	<0.001	-	<0.001	0.00056	0.00049	< 0.00009	0.0006	0.0001	-	-	-	0.005	0.01
Selenium	mg/L	<0.002	<0.002	<0.005	<0.001	<0.001	<0.001	<0.001	<0.004	<0.004	-	<0.004	< 0.00004	<0.00004	0.00006	0.0001	< 0.00004	-	-	-	0.1	0.001
Sillicon	mg/L	0.94	1.7	1.54	0.856	3.27	1.99	1.8	2	2	-	4	3	4	3.16	3	3	-	-	-	-	-
Tin	mg/L	<0.001	<0.001	<0.025	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	-	<0.002	< 0.00006	0.00033	< 0.00006	< 0.00006	0.0001	-	-	-	-	-
Strontium	mg/L	0.016	0.24	0.124	0.014	0.045	0.013	0.059	0.31	0.07	-	0.38	0.69	0.60	0.86	0.47	0.49	-	-	-	-	-
Titanium	mg/L	<0.005	0.017	<0.025	<0.005	0.006	<0.005	0.006	0.00	0.01	-	0.00	0.01	0.01	< 0.00005	0.00236	0.00521	-	-	-	-	-
Uranium	mg/L	<0.0001	0.00012	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.002	<0.002	-	<0.002	0.000028	0.000047	0.000009	0.000048	0.00002	-	-	-	0.005	0.02
Vanadium	mg/L	<0.0005	0.00058	<0.0025	0.0005	<0.0005	<0.0005	0.0007	<0.002	<0.002	-	<0.002	0.0003	0.0009	0.00008	0.00042	0.00036	-	-	-	0.006	-
Zinc	mg/L	0.0066	0.02	<0.025	0.012	0.013	0.009	0.021	**0.12**	**0.05**	-	**0.09**	**0.16**	**0.06**	**0.254**	**0.114**	**0.099**	-	-	-	0.03	0.093
Field Measurements																						
Temperature	oC	-	-	-	-	-	-	-	14.7	15.6	-	12.66	10.92	15.9	8.9	8	14.2	-	-	-	-	-
pH	pH Units	6.53	6.25	6.45	5.81	-	7.37	6.64	6.9	4.5	-	4.5	16.2	5.2	16.1	5.1	5.4	-	-	-	-	-
Coductivity	uS/cm	19.2	303	1975	-	-	0.03	0.08	772	83	-	550	683	800	603	167	416	-	-	-	-	-
Oxidation Reduction Potential	mV	-	-	-	-	-	-	-	174.9	226.3	-	276.5	172.7	191	88.3	153.6	124.2	-	-	-	-	-
Dissolved Oxygen	mg/L	-	-	-	-	-	-	-	1.26	3.6	-	9.62	8.37	1.57	7	3.91	1.62	-	-	-	-	-

Notes:

PWQO	Provincial Water Quality Objective
APV	Aquatic Protection Values
CWQG	Canadian Water Quality Guidelines
BOLD	Exceeds PWQO
UNDERLINED	Exceeds CWQG
SHADED ONLY	RDL exceeds the standard
INSV	Insufficient volume to allow for sampling
-	No data available
Units	All Units in mg/L Unless Otherwise Noted.

TABLE 15
Surface Water Quality Results - SW-2
Croft Waste Disposal Site
Magnetawan, Ontario

Parameter	Units	Sample Designation																		PWQO	CWQG
		Sample Collection Date (mm/dd/yyyy)																			
		SW-2																			
		13-May-15	22-Oct-15	13-Oct-16	18-May-17	25-Oct-17	2-May-18	17-Oct-18	11-Jun-19	25-Sep-19	2-Jun-20	1-Oct-20	12-May-21	7-Oct-21	4-May-22	18-Oct-22	10-May-23	28-Sep-23	24-Apr-24	2-Oct-24		
pH Lab	pH units	**5.88**	6.6	6.6	**4.1**	**5.6**	**5.9**	**6**	**5.82**	**5.16**	6.98	6.66	6.80	**5.82**	**6.34**	**5.81**	**6.46**	7	**6.12**	7	6.5-8.5	6.5-9.0
Conductivity	uS/cm	15	32	27	45	16	13	19	21	33	32	23	25	17	14	22	18	22	9	26	-	-
Hardness	mg/L	5	13	7	5	5	3	7	4	11.3	8.1	9.5	8.4	7	4.4	8	6	8	3.9	9	-	-
Total Dissolved Solids	mg/L	<10	26	34	132	16	14	20	42	94	36	<20	< 30	<30	43	< 30	< 30	46	31	31	-	-
Alkalinity	mg/L	1.8	9.3	9	<5	<5	<5	6	<5	<5	5	13	7	3	4	2	4	7	< 2	6	-	-
Chloride	mg/L	1	<1	1	<1	<1	1	<1	2.05	0.6	0.86	0.9	2.0	<1	< 1	< 1	< 1	< 1	< 1	1	-	120
Sodium	mg/L	0.89	0.85	1	0.711	0.706	0.811	0.701	1.7	1.1	1.1	1.0	1.1	4.4	0.63	1	1	1	0.65	1	-	-
Calcium	mg/L	1.3	3.2	2.74	1.51	1.36	0.798	2.03	1.6	3.0	2.4	2.8	2.6	2.1	1.33	2	2	2	1.09	3	-	-
Magnesium	mg/L	0.34	1.1	<1	0.085	0.368	0.211	0.442	0.40	0.93	0.50	0.59	0.49	0.44	0.273	1	0.372	0.476	0.289	0.536	-	-
Potassium	mg/L	0.39	0.88	<0.5	0.357	0.521	0.398	0.309	0.33	0.71	0.62	0.58	0.49	0.86	0.284	1	0.343	0.289	0.142	0.377	-	-
Sulphate	mg/L	<1	<1	3	3	<1	1	2	0.7	3.9	2.9	1.9	< 2	<2	< 2	< 2	< 2	< 2	< 2	< 2	-	-
Ammonia	mg/L	<0.05	<0.05	0.04	0.02	0.02	0.03	0.03	0.14	0.18	<0.02	0.03	< 0.04	<0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.1	-	-
Nitrate as N	mg/L	<0.1	<0.1	<0.1	1.8	<0.1	<0.1	<0.1	<0.05	0.10	<0.05	<0.05	< 0.06	0.40	< 0.06	0	0.35	< 0.06	< 0.06	< 0.06	-	13
Nitrite as N	mg/L	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.03	<0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	-	0.06
Total Kjeldahl Nitrogen	mg/L	0.44	<0.5	0.3	0.9	0.5	0.4	0.5	1.07	1.67	0.45	0.62	0.27	0.37	0.26	0.45	0.34	0.40	0.31	< 0.5	-	-
Phenolics	mg/L	-	<0.001	**0.002**	<0.001	**0.004**	<0.001	<0.001	**0.002**	**0.012**	**0.002**	<0.001	< 0.001	<0.001	< 0.001	**0.003**	< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.004
Dissolved Organic Carbon	mg/L	11	10	6.4	14.7	12.7	4.5	16.6	11.8	38.3	6.7	11.0	7.0	13.0	8	13	8	8	6	8	-	-
Chemical Oxygen Demand	mg/L	26	28	36	63	30	19	21	44	125	21	7	25	33	22	37	27	< 8	20	20	-	-
Iron	mg/L	**1**	**2.5**	**0.738**	**0.632**	**1.09**	**0.364**	**0.596**	**1.31**	**2.73**	**0.451**	**1.25**	**0.711**	**1.11**	0.25	**1**	**1**	**1**	**0.420**	**1**	0.3	0.3
Manganese	mg/L	0.049	0.31	0.032	0.085	0.055	0.035	0.041	0.122	0.305	0.077	0.076	0.052	0.056	0.0286	0	0.05	0.06	0.0265	0.06	-	-
Phosphorus	mg/L	0.017	0.027	<0.01	**0.05**	**0.04**	0.01	0.02	**0.07**	**0.15**	<0.02	<0.02	< 0.03	0.02	0.004	0.03	**0.03**	0.02	0.008	0.01	0.03	-
Orthophosphate	mg/L	<0.01	<0.01	-	-	-	-	-	<0.10	-	<0.10	-	-	-	< 0.03	-	< 0.03	< 0.03	< 0.03	< 0.03	-	-
Turbidity	NTU	1.2	5	1.1	8.6	2.4	2.2	1.9	8.1	9.2	1.0	1.5	-	-	-	-	-	-	-		-	-
Total Suspended Solids	mg/L	1	<10	3	15	2	7	<2	26	<10	<10	<10	3	5	4	2	9	9	2	3	-	-
BOD	mg/L	<2	<2	<2	-	-	<2	<2	<5	<5	<5	13	< 4	<4	< 4	< 4	< 4	< 4	< 4	< 4	-	-
Anion Sum	-	0.077	0.186	0.28	0.21	0.13	0.14	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cation Sum	-	0.191	0.379	0.21	0.14	0.14	0.1	0.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ion Balance	%	NC	NC	-13.6	-	-	-	-6.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver	mg/L	<0.0001	<0.0001	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**0.0004**	< 0.00005	<0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.0001	0.00025
Aluminum	mg/L	**0.25**	**0.13**	0.037	**0.192**	**0.216**	0.005	**0.135**	**0.176**	**0.577**	0.063	**0.087**	0.067	**0.303**	**0.139**	**0.15**	**0.14**	0.04	**0.160**	0.04	0.075	0.1
Antimony	mg/L	<0.0005	<0.0005	<0.0025	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	< 0.0009	<0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	0.02	-
Arsenic	mg/L	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.003	<0.003	< 0.0002	<0.0002	0.0003	0.0005	0.0002	0.0003	< 0.0002	0.0003	0.1	0.01
Barium	mg/L	0.0087	0.01	0.008	0.012	0.009	0.003	0.009	0.012	0.030	0.008	0.012	0.008	0.011	0.00643	0.014	0.009	0.010	0.00686	0.009	-	-
Beryllium	mg/L	<0.0005	<0.0005	<0.0025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.000015	0.000028	0.000024	0.000027	0.000029	0.000017	0.000027	0.000016	1.1	-
Bismuth	mg/L	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	< 0.00001	0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	-	-
Boron	mg/L	<0.01	<0.01	<0.05	0.023	<0.01	0.011	<0.01	0.012	<0.010	<0.010	0.019	0.010	0.008	0.009	0.007	0.016	0.009	0.004	0.010	0.2	1.5
Cadmium	mg/L	<0.0001	<0.0001	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	**0.0004**	0.000025	0.00003	0.000015	0.000041	0.000025	0.000004	0.000025	0.000003	0.0002	0.00026
Chromium	mg/L	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.003	<0.003	0.00034	0.0004	0.00047	0.00038	0.00037	0.00026	0.00029	0.00035	0.0089	0.001
Cobalt	mg/L	<0.0005	**0.0011**	<0.0025	0.0007	0.0005	<0.0005	<0.0005	0.0009	**0.0028**	<0.0005	<0.0005	0.000241	0.000357	0.000144	0.001	0.0003	0.0002	0.000231	0.0002	0.0009	-
Copper	mg/L	<0.001	<0.001	**0.0143**	0.0008	<0.0005	<0.0005	0.0008	<0.001	0.003	<0.001	0.002	0.001	0.001	0.0005	0.001	0.001	0.001	< 0.001	< 0.001	0.005	0.004
Molybdenum	mg/L	<0.0005	<0.0005	<0.0025	<0.0005	<0.0005	<0.0005	<0.0005	<0.002	<0.002	<0.002	<0.002	0.00026	<0.00004	0.00007	0	< 0.00004	< 0.00004	< 0.0004	< 0.0004	0.04	0.073
Nickel	mg/L	<0.001	<0.001	<0.005	0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.003	<0.003	0.001	0.001	0.0006	0.001	0.001	0.001	0.0006	0.001	0.025	0.15
Phosphate	mg/L	-	-	<0.0002	<0.0002	<0.0002	<0.2	<0.2	-	<0.10	-	<0.10	0.012	-	-	-	-	-	-	-	-	-
Lead	mg/L	<0.0005	<0.0005	0.0008	0.0003	0.0002	0.0001	0.0002	<0.001	0.001	<0.001	<0.001	0.00024	0.00036	0.00012	0.00036	0.00023	0.00022	0.00022	0.00016	0.005	0.01
Selenium	mg/L	<0.002	<0.002	<0.005	<0.001	<0.0001	<0.001	<0.001	<0.004	<0.004	<0.004	<0.004	0.00007	0.00007	0.00009	0.00007	< 0.00004	0.00005	0.00007	0.00005	0.1	0.001
Sillicon	mg/L	0.59	3.1	<0.05	0.306	2.15	1.14	1.27	0.45	4.6	0.91	2.02	1.04	1.75	0.66	1.65	1.09	0.68	0.93	0.50	-	-
Tin	mg/L	<0.001	<0.001	<0.025	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	0.00013	0.0003	< 0.00006	0.00007	< 0.00006	0.00007	0.00006	0.00010	-	-
Strontium	mg/L	0.0092	0.022	<0.05	0.014	0.014	<0.01	0.016	0.011	0.025	0.015	0.019	0.016	0.016	0.0108	0.0175	0.0112	0.0153	0.0101	0.0178	-	-
Titanium	mg/L	<0.005	<0.005	<0.025	<0.005	<0.005	<0.005	<0.005	0.003	0.008	<0.002	0.002	0.00183	0.00423	0.00117	0.00374	0.00703	0.00114	0.0024	0.001	-	-
Uranium	mg/L	<0.0001	<0.0001	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.002	<0.002	<0.002	<0.002	0.000036	0.000063	0.000048	0.000057	0.00005	0.000031	0.000056	0.000025	0.005	0.02
Vanadium	mg/L	0.00058	0.00082	<0.0025	0.0005	<0.0005	<0.0005	<0.0005	<0.002	0.002	<0.002	<0.002	0.00029	0.0006	0.00033	0.00064	0.00049	0.0003	0.00033	0.00033	0.006	-
Zinc	mg/L	0.0069	<0.005	<0.025	0.022	0.008	0.007	0.01	0.012	0.021	<0.005	0.008	0.010	0.008	0.006	0.006	0.005	0.003	0.004	0.003	0.03	0.09
Field Measurements																						
Temperature	oC	13.1	7.69	17.6	21.4	-	-	7.3	17.8	14.4	17.6	14.76	13.63	16.9	15.1	8.5	15.9	11.6	8.8	20.6	-	-
pH	pH Units	9.26	6.68	7.03	6.03	-	6.52	7.1	6.8	4.5	7.1	6.2	16.2	6.9	15.9	5.9	5.1	6.6	6.9	6.1	-	-
Coductivity	uS/cm	13	46	6.6	4.1	5.6	5.9	6	251	30.1	28	22.0	16.0	23.0	11.3	19	14	176	10	21	-	-
Oxidation Reduction Potential	mV	-	-	-	-	-	-	-	139.5	205.9	141.8	129.6	119	34.4	83.6	106	177.3	92.3	87.4	292.4	-	-
Dissolved Oxygen	mg/L	8.17	7.36	-	-	-	-	-	2.73	1.57	6.27	9.62	8.98	5.31	7.49	7.36	8.54	0.5	6.9	8.76	-	-

Notes:

PWQO	Provincial Water Quality Objective
APV	Aquatic Protection Values
CWQG	Canadian Water Quality Guidelines
BOLD	Exceeds PWQO
UNDERLINED	Exceeds CWQG
SHADED ONLY	RDL exceeds the standard
INSV	Insufficient volume to allow for sampling
-	No data available
Units	All Units in mg/L Unless Otherwise Noted.

TABLE 16
Surface Water Quality Results - SW-3
Croft Waste Disposal Site
Magnetawan, Ontario

Parameter	Units	Sample Designation																	PWQO	CWQG
		Sample Collection Date (mm/dd/yyyy)																		
		SW-3																		
		13-May-15	22-Oct-15	13-Oct-16	18-May-17	25-Oct-17	11-Jun-19	25-Sep-19	2-Jun-20	1-Oct-20	12-May-21	7-Oct-21	4-May-22	18-Oct-22	10-May-23	28-Sep-23	24-Apr-24	2-Oct-24		
pH Lab	pH units	**6.38**	7.59	7.9	DRY	DRY	7.54	7.41	No Sample	8.15	8.12	7.47	8.18	DRY	8	DRY	7.56	DRY	6.5-8.5	6.5-9.0
Conductivity	uS/cm	210	1400	2060	-	-	193	241	-	901	617.00	687.00	317	-	386	-	132	-	-	-
Hardness	mg/L	77	410	460	-	-	64.7	56.7	-	309.0	208.00	273.00	147	-	140	-	79.9	-	-	-
Total Dissolved Solids	mg/L	158	820	1380	-	-	112	124	-	536	403.00	420.00	209	-	229	-	117	-	-	-
Alkalinity	mg/L	17	190	657	-	-	78	69	-	444	204.00	267.00	115	-	133	-	53	-	-	-
Chloride	mg/L	9	160	242	-	-	6.38	14.20	-	61.50	50.00	53.00	34	-	36	-	5	-	-	120
Sodium	mg/L	8	99	227	-	-	7.49	14.90	-	62.32	47.30	58.20	16.6	-	17	-	6.83	-	-	-
Calcium	mg/L	22	120	146	-	-	25.90	18.90	-	101.58	67.70	88.80	51.6	-	48	-	27.9	-	-	-
Magnesium	mg/L	3.3	17	23.1	-	-	2.69	2.31	-	13.45	9.56	12.50	4.51	-	5	-	2.51	-	-	-
Potassium	mg/L	3.3	33	66.7	-	-	4.77	9.13	-	29.6	23.70	28.30	10.3	-	10	-	4.86	-	-	-
Sulphate	mg/L	58	160	159	-	-	6.96	6.96	-	17.00	18.00	27.00	24	-	26	-	17	-	-	-
Ammonia	mg/L	0.48	0.1	4.54	-	-	0.05	0.66	-	14.30	0.60	1.95	0.08	-	1.55	-	0.08	-	-	-
Nitrate as N	mg/L	0.31	11.3	3.7	-	-	0.10	0.40	-	1.40	9.12	9.73	4.86	-	0.42	-	0.07	-	-	13
Nitrite as N	mg/L	<0.01	0.12	<0.05	-	-	<0.05	0.08	-	<0.25	0.46	0.62	< 0.03	-	< 0.03	-	< 0.03	-	-	0.06
Total Kjeldahl Nitrogen	mg/L	0.93	1.6	9	-	-	1.22	1.52	-	17.40	1.74	2.52	0.62	-	2.23	-	0.52	-	-	-
Phenolics	mg/L	<0.001	**0.0017**	**0.029**	-	-	**0.003**	**0.008**	-	**0.003**	**0.003**	**0.002**	< 0.001	-	**0.002**	-	**0.002**	-	0.001	0.004
Dissolved Organic Carbon	mg/L	7.1	30	90.2	-	-	13.7	11.2	-	40.4	25.00	27.00	14	-	13	-	7	-	-	-
Chemical Oxygen Demand	mg/L	16	80	270	-	-	44	53	-	75	85.00	62.00	32	-	42	-	24	-	-	-
Iron	mg/L	0.21	0.16	**0.854**	-	-	**1.35**	**1.65**	-	**1.04**	**0.56**	**0.79**	0.015	-	**0.44**	-	**0.526**	-	0.3	0.3
Manganese	mg/L	0.042	0.25	1.07	-	-	0.351	0.138	-	0.479	0.00	0.09	0.00033	-	0.29	-	0.647	-	-	-
Phosphorus	mg/L	0.014	**0.045**	**0.17**	-	-	**0.06**	**0.21**	-	**0.04**	< 0.03	**0.05**	0.005	-	**0.03**	-	0.007	-	0.03	-
Orthophosphate	mg/L	<0.01	<0.01	-	-	-	<0.10	-	-	-	-	-	< 0.03	-	< 0.03	-	< 0.03	-	-	-
Turbidity	NTU	0.6	2.4	8.1	-	-	15.7	71	-	7.2	-	-	-	-	-	-	-	-	-	-
Total Suspended Solids	mg/L	1	<10	19	-	-	16	52	-	<10	16.00	8.00	6	-	5	-	5	-	-	-
BOD	mg/L	<2	<2	32	-	-	<5	<5	-	444	< 4	4.00	< 4	-	< 4	-	< 4	-	-	-
Anion Sum	-	1.83	12.6	23.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cation Sum	-	2.1	13.9	20.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ion Balance	%	NC	4.85	-6.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver	mg/L	<0.0001	<0.0001	<0.0005	-	-	<0.0001	<0.0001	-	<0.0001	< 0.00005	<0.00005	< 0.00005	-	< 0.00005	-	< 0.00005	-	0.0001	0.00025
Aluminum	mg/L	**0.087**	0.073	0.038	-	-	0.032	0.062	-	0.035	0.05	0.02	0.035	-	0.05	-	0.053	-	0.075	0.1
Antimony	mg/L	<0.0005	<0.0005	<0.0025	-	-	<0.001	<0.001	-	<0.001	< 0.0009	<0.0009	< 0.0009	-	< 0.0009	-	< 0.0009	-	0.02	-
Arsenic	mg/L	<0.001	<0.001	<0.005	-	-	<0.003	<0.003	-	<0.003	0.0008	0.0012	0.0004	-	0.0005	-	0.0004	-	0.1	0.01
Barium	mg/L	0.052	0.11	0.119	-	-	0.026	0.029	-	0.040	0.03	0.05	0.02101	-	0.032	-	0.0281	-	-	-
Beryllium	mg/L	<0.0005	<0.0005	<0.0025	-	-	<0.0005	<0.0005	-	<0.0005	0.000013	0.000032	< 0.000007	-	0.00002	-	0.000008	-	1.1	-
Bismuth	mg/L	<0.001	<0.001	<0.005	-	-	<0.002	<0.002	-	<0.002	0.000050	0.000010	< 0.00001	-	< 0.00001	-	< 0.00001	-	-	-
Boron	mg/L	0.15	**1**	**2.29**	-	-	**0.219**	**0.471**	-	**1.42**	**1.27**	**1.16**	**0.458**	-	**0.33**	-	0.138	-	0.2	1.5
Cadmium	mg/L	<0.0001	0.0002	<0.0005	-	-	<0.0001	<0.0001	-	<0.0001	0.00002	0.00006	0.000006	-	0.000036	-	0.000053	-	0.0002	0.00026
Chromium	mg/L	<0.005	<0.005	<0.005	-	-	<0.003	<0.003	-	<0.003	0.001	0.003	0.00057	-	0.00083	-	0.00049	-	0.0089	0.001
Cobalt	mg/L	<0.0005	**0.0016**	**0.005**	-	-	**0.0012**	**0.001**	-	**0.001**	**0.001**	**0.001**	0.000236	-	0.000708	-	**0.000971**	-	0.0009	-
Copper	mg/L	<0.001	**0.0062**	**0.008**	-	-	0.004	**0.008**	-	0.005	0.004	**0.01**	0.0026	-	0.003	-	0.002	-	0.005	0.004
Molybdenum	mg/L	<0.0005	0.0014	0.0035	-	-	<0.002	<0.002	-	<0.002	0.001	0.0004	0.00033	-	0.0007	-	< 0.0004	-	0.04	0.073
Nickel	mg/L	<0.001	0.0025	0.01	-	-	<0.003	<0.003	-	<0.003	0.002	0.0022	0.0006	-	0.001	-	0.0007	-	0.025	0.15
Phosphate	mg/L	-	-	<0.0002	-	-	-	<0.10	-	<0.50	0.06	-	-	-	-	-	-	-	-	-
Lead	mg/L	<0.0005	<0.0005	0.0005	-	-	0.001	0.003	-	<0.001	0.00038	0.00227	0.00012	-	0.00012	-	0.00013	-	0.005	0.01
Selenium	mg/L	<0.002	<0.002	<0.005	-	-	<0.004	<0.004	-	<0.004	0.00019	0.00017	0.00009	-	< 0.00004	-	0.00012	-	0.1	0.001
Sillicon	mg/L	2.2	1.4	1.04	-	-	0.99	1.01	-	2.48	0.36	2.36	0.66	-	2	-	1.54	-	-	-
Tin	mg/L	<0.001	<0.001	<0.025	-	-	<0.002	<0.002	-	<0.002	0.00	0.00	< 0.00006	-	0.00012	-	0.00007	-	-	-
Strontium	mg/L	0.084	0.38	0.523	-	-	0.095	0.076	-	0.317	0.28	0.36	0.0108	-	0.16	-	0.0987	-	-	-
Titanium	mg/L	<0.005	<0.005	<0.025	-	-	0.013	0.038	-	0.008	0.01	0.04	0.00117	-	0.00931	-	0.0030	-	-	-
Uranium	mg/L	0.00011	0.0018	**0.0059**	-	-	<0.002	<0.002	-	<0.002	0.000541	0.000559	0.000048	-	0.0004	-	0.000041	-	0.005	0.02
Vanadium	mg/L	<0.0005	0.00068	<0.0025	-	-	<0.002	0.002	-	<0.002	0.000510	0.001540	0.00033	-	0.00061	-	0.00036	-	0.006	-
Zinc	mg/L	<0.005	0.009	**0.055**	-	-	0.009	0.013	-	<0.005	0.004000	0.012000	0.006	-	0.003	-	0.005	-	0.03	0.09
Field Measurements																				
Temperature	oC	14.1	8.2	18.9	-	-	19.2	16.5	-	11.68	18.78	15.80	12.40	-	-	-	4.7	-	-	-
pH	pH Units	6.43	5.33	6.73	-	-	7.1	7.33	-	7.86	8.15	7.26	16.04	-	6.1	-	7.6	-	-	-
Coductivity	uS/cm	490	860	179	-	-	215.1	6.25	-	772	512.00	154.00	321.80	-	21	-	114	-	-	-
Oxidation Reduction Potential	mV	-	-	-	-	-	116.3	112.6	-	297.7	126.10	29.40	-7.10	-	127	-	43.1	-	-	-
Dissolved Oxygen	mg/L	6.56	4.98	-	-	-	6.05	6.43	-	17.01	11.28	1.06	7.70	-	1.75	-	3.03	-	-	-

Notes:

PWQO	Provincial Water Quality Objective
APV	Aquatic Protection Values
CWQG	Canadian Water Quality Guidelines
BOLD	Exceeds PWQO
UNDERLINED	Exceeds CWQG
SHADED ONLY	RDL exceeds the standard
INSV	Insufficient volume to allow for sampling
-	No data available
Units	All Units in mg/L Unless Otherwise Noted.

TABLE 17
Groundwater Duplicate Data
Croft Waste Disposal Site
Magnetawan, Ontario

Parameter	Units	RDL	PQL	24-Apr-24			3-Oct-24		
				BH13	GW DUP	Relative Percent Difference (%)	BH1	GW DUP	Relative Percent Difference (%)
pH Lab	pH Units	0.05	0.25	7.14	7.18	0.56	6.46	6.56	1.54
Conductivity	uS/cm	2	10	50	54	7.69	453	479	5.58
Hardness	mg/L	0.05	0.25	24.1	24.2	0.41	157	161	2.52
Total Dissolved Solids	mg/L	30	150	46	63	NC	394	366	7.37
Alkalinity	mg/L	2	10	22	26	16.67	93	112	18.54
Chloride	mg/L	1	5	1	2	NC	35	36	2.82
Sodium	mg/L	0.01	0.05	1.86	1.90	2.13	13	13.4	4.58
Calcium	mg/L	0.01	0.05	8.05	8.06	0.12	44.9	45.6	1.55
Magnesium	mg/L	0.001	0.005	0.964	0.981	1.75	10.9	11.5	5.36
Potassium	mg/L	0.009	0.045	0.501	0.499	0.40	8.58	8.94	4.11
Sulphate	mg/L	2	10	3	2	NC	85	82	3.59
Ammonia	mg/L	0.04	0.2	< 0.04	0.04	NC	0.2	0.2	0.00
Nitrate as N	mg/L	0.06	0.3	< 0.06	< 0.06	NC	< 0.06	< 0.06	NC
Nitrite as N	mg/L	0.03	0.15	< 0.03	< 0.03	NC	< 0.03	< 0.03	NC
Total Kjeldahl Nitrogen	mg/L	0.05	0.25	0.41	0.46	11.49	0.8	0.8	0.00
Phenolics	mg/L	0.002	0.01	< 0.002	< 0.002	NC	0.002	0.002	NC
Dissolved Organic Carbon	mg/L	1	5	4	4	NC	18	17	5.71
Chemical Oxygen Demand	mg/L	8	40	16	14	NC	55	57	3.57
Iron	mg/L	0.007	0.035	0.138	0.129	6.74	39.1	41.2	5.23
Manganese	mg/L	0.00001	0.00005	0.0720	0.0725	0.69	3.35	3.45	2.94
Phosphorus	mg/L	0.03	0.15	1.36	1.46	7.09	< 0.03	< 0.03	NC
Turbidity	NTU	0.1	0.5	550	500	9.52	9	7.9	7.32
Total Suspended Solids	mg/L	2	10	2030	2710	28.69	26	42	47.06
BOD	mg/L	2	10	< 4	< 4	NC	5	5	NC
Silver	mg/L	0.00005	0.00025	0.00007	0.00011	NC	< 0.00005	< 0.00005	NC
Aluminum	mg/L	0.001	0.005	0.116	0.120	3.39	0.175	0.184	5.01
Antimony	mg/L	0.0009	0.0045	< 0.0009	< 0.0009	NC	< 0.0009	< 0.0009	NC
Arsenic	mg/L	0.0002	0.001	0.0002	0.0003	NC	0.0022	0.0024	8.70
Barium	mg/L	0.00008	0.0004	0.0153	0.0150	1.98	0.176	0.183	3.90
Beryllium	mg/L	0.000007	0.000035	0.000042	0.000043	2.35	0.000063	0.000069	9.09
Bismuth	mg/L	0.00001	0.00005	< 0.00001	< 0.00001	NC	< 0.00001	< 0.00001	NC
Boron	mg/L	0.002	0.01	0.020	0.016	22.22	0.13	0.143	6.50
Cadmium	mg/L	0.000003	0.000015	0.000034	0.000042	21.05	0.000003	0.000004	NC
Chromium	mg/L	0.00008	0.0004	0.00032	0.00034	NC	0.00149	0.00154	3.30
Cobalt	mg/L	0.000004	0.00002	0.000098	0.000094	NC	0.0285	0.0291	2.08
Copper	mg/L	0.0002	0.001	0.004	0.004	0.00	< 0.001	< 0.001	NC
Molybdenum	mg/L	0.00004	0.0002	< 0.0004	< 0.0004	NC	0.0007	0.0007	0.00
Nickel	mg/L	0.0001	0.0005	0.0006	0.0005	18.18	0.0029	0.0028	3.51
Phosphate	mg/L	-	-	-	-	NC	-	-	NC
Lead	mg/L	0.00009	0.00045	< 0.00009	< 0.00009	NC	< 0.00009	< 0.00009	NC
Selenium	mg/L	0.00004	0.0002	0.00012	0.00012	NC	0.00057	0.00066	NC
Sillicon	mg/L	0.02	0.1	2.23	2.33	4.39	7	7.38	5.00
Tin	mg/L	0.00006	0.0003	< 0.00006	< 0.00006	NC	< 0.00006	< 0.00006	NC
Strontium	mg/L	0.00008	0.0004	0.0161	0.0162	0.62	0.227	0.236	3.89
Titanium	mg/L	0.00007	0.00035	0.0011	0.0013	16.67	0.0076	0.0079	3.87
Uranium	mg/L	0.000002	0.00001	0.00164	0.00171	4.18	0.00156	0.00171	9.17
Vanadium	mg/L	0.00001	0.00005	0.00029	0.00031	6.67	0.00602	0.00619	2.78
Zinc	mg/L	0.002	0.01	0.004	0.005	NC	< 0.002	< 0.002	NC

Notes:

NC — Not calculable due to one or more of the concentrations being quantified over the reasonable detection limit (RDL) or the practical quantification limit (PQL).

BOLD — Bolded and shaded entries indicates that the relative percent difference (RPD) exceeds the industry standard of 50%.

TABLE 18
Surface Water Duplicate Data
Croft Waste Disposal Site
Magnetawan, Ontario

Parameter	Units	RDL	PQL	24-Apr-24			2-Oct-24		
				SW-2	SW DUP	Relative Percent Difference (%)	SW-2	SW DUP	Relative Percent Difference (%)
pH Lab	pH units	0.05	0.25	6.12	6.07	0.82	6.69	6.81	1.78
Conductivity	uS/cm	2	10	9	9	NC	26	25	3.92
Hardness	mg/L	0.05	0.25	3.9	3.9	0.00	8.6	8.40	2.35
Total Dissolved Solids	mg/L	30	150	31	37	NC	31	31	NC
Alkalinity	mg/L	2	10	< 2	< 2	NC	6	6	NC
Chloride	mg/L	1	5	< 1	< 1	NC	1	< 1	NC
Sodium	mg/L	0.01	0.05	0.65	0.65	0.00	1.1	1.13	2.69
Calcium	mg/L	0.01	0.05	1.09	1.09	0.00	2.6	2.5	2.37
Magnesium	mg/L	0.001	0.005	0.289	0.294	1.72	0.54	0.536	0.00
Potassium	mg/L	0.009	0.045	0.142	0.142	0.00	0.38	0.399	5.67
Sulphate	mg/L	2	10	< 2	< 2	NC	< 2	< 2	NC
Ammonia	mg/L	0.04	0.2	< 0.04	< 0.04	NC	< 0.1	< 0.1	NC
Nitrate as N	mg/L	0.06	0.3	< 0.06	< 0.06	NC	< 0.06	< 0.06	NC
Nitrite as N	mg/L	0.03	0.15	< 0.03	< 0.03	NC	< 0.03	< 0.03	NC
Total Kjeldahl Nitrogen	mg/L	0.05	0.25	0.31	0.32	3.17	< 0.5	< 0.5	NC
Phenolics	mg/L	0.001	0.005	< 0.001	< 0.001	NC	< 0.001	< 0.001	NC
Dissolved Organic Carbon	mg/L	1	5	6	6	0.00	8	7	13.33
Chemical Oxygen Demand	mg/L	8	40	20	16	NC	20	24	NC
Iron	mg/L	0.007	0.035	0.420	0.438	4.20	0.895	0.758	16.58
Manganese	mg/L	0.00001	0.00005	0.0265	0.0269	1.50	0.059	0.0547	7.90
Phosphorus	mg/L	0.003	0.015	0.008	0.006	NC	0.013	0.012	NC
Orthophosphate	mg/L	0.03	0.15	< 0.03	< 0.03	NC	< 0.03	< 0.03	NC
Turbidity	NTU	-	-	-	-	NC	-	-	NC
Total Suspended Solids	mg/L	2	10	2	3	NC	3	< 2	NC
BOD	mg/L	2	10	< 4	< 4	NC	< 4	< 4	NC
Silver	mg/L	0.00005	0.00025	< 0.00005	< 0.00005	NC	< 0.00005	< 0.00005	NC
Aluminum	mg/L	0.001	0.005	0.160	0.158	1.26	0.044	0.047	6.59
Antimony	mg/L	0.0009	0.0045	< 0.0009	< 0.0009	NC	< 0.0009	< 0.0009	NC
Arsenic	mg/L	0.0002	0.001	< 0.0002	< 0.0002	NC	0.0003	0.0003	NC
Barium	mg/L	0.00008	0.0004	0.00686	0.00696	1.45	0.009	0.00898	4.68
Beryllium	mg/L	0.000007	0.000035	0.000027	0.000025	7.69	0.000016	0.000012	NC
Bismuth	mg/L	0.00001	0.00005	< 0.00001	< 0.00001	NC	< 0.00001	< 0.00001	NC
Boron	mg/L	0.002	0.01	0.004	0.005	22.22	0.01	0.01	0.00
Cadmium	mg/L	0.000003	0.000015	0.000025	0.000020	22.22	0.000003	0.000004	28.57
Chromium	mg/L	0.00008	0.0004	0.00029	0.00036	21.54	0.00035	0.00036	2.82
Cobalt	mg/L	0.000004	0.00002	0.000231	0.000233	0.86	0.000225	0.000209	7.37
Copper	mg/L	0.0002	0.001	< 0.001	< 0.001	NC	< 0.001	< 0.001	NC
Molybdenum	mg/L	0.00004	0.0002	< 0.0004	< 0.0004	NC	< 0.0004	< 0.0004	NC
Nickel	mg/L	0.0001	0.0005	0.0006	0.0005	18.18	0.001	0.0005	18.18
Lead	mg/L	0.00009	0.00045	0.00022	0.00023	NC	0.00016	0.00016	0.00
Selenium	mg/L	0.00004	0.0002	0.00007	0.00007	NC	0.00005	0.00007	NC
Sillicon	mg/L	0.02	0.1	0.93	0.93	0.00	0.5	0.5	0.00
Tin	mg/L	0.00006	0.0003	0.00006	0.00007	NC	0.0001	< 0.00006	NC
Strontium	mg/L	0.00008	0.0004	0.0101	0.0101	0.00	0.018	0.0179	0.56
Titanium	mg/L	0.00007	0.00035	0.0024	0.0028	15.38	0.001	0.0009	10.53
Uranium	mg/L	0.000002	0.00001	0.000056	0.000060	6.90	0.000025	0.000022	12.77
Vanadium	mg/L	0.00001	0.00005	0.00033	0.00035	5.88	0.00033	0.00027	20.00
Zinc	mg/L	0.002	0.01	0.004	0.004	0.00	0.003	0.004	NC

Notes:

NC — Not calculable due to one or more of the concentrations being quantified over the reasonable detection limit (RDL) or the practical quantification limit (PQL).

BOLD — Bolded and shaded entries indicates that the relative percent difference (RPD) exceeds the industry standard of 50%.

APPENDIX V

Photographic Log

		**BH1 (October 2024)**
		**BH1 (October 2024)**

		**BH8 (October 2024)**
		**BH8 (October 2024)**

		**BH9 (October 2024)**
		**BH9 (October 2024)**

		**BH10 (October 2024)**
		**BH10 (October 2024)**

		**BH11 (October 2024)**
		**BH11 (October 2024)**

		**BH12 (Repaired - November 2024)**
		**BH12 (Repaired- November 2024)**

		**BH13 (October 2024)**
		**BH13 (October 2024)**

		**BH14 (October 2024)**
		**BH14 (October 2024)**

		**DP7 (October 2024)**
		**DP7 (October 2024)**

		**DP8 (October 2024)**
		**DP8 (October 2024)**

		**DP9 (October 2024)**
		**DP9 (October 2024)**

		**SW-1 (October 2024)**
		**SW-1 (October 2024)**

		**SW-2 (October 2024)**
		**SW-2 (October 2024)**

		**SW-3 (October 2024)**
		**SW-3 (October 2024)**

APPENDIX VI

Laboratory Certificates of Analysis

FINAL REPORT

CA15759-APR24 R

225335.008, Croft Landfill SW

Prepared for

Pinchin Ltd

FINAL REPORT

CA15759-APR24 R

First Page

CLIENT DETAILS		LABORATORY DETAILS	
Client	Pinchin Ltd	Project Specialist	Maarit Wolfe, Hon.B.Sc
		Laboratory	SGS Canada Inc.
Address	662 Falconbridge Road, Unit 3, Sudbury Canada, P3A 4S4 Phone: 705-521-0560. Fax:	Address	185 Concession St., Lakefield ON, K0L 2H0
Contact	Alana Valle	Telephone	705-652-2000
Telephone	705-521-0560	Facsimile	705-652-6365
Facsimile		Email	Maarit.Wolfe@sgs.com
Email	avalle@Pinchin.com	SGS Reference	CA15759-APR24
Project	225335.008, Croft Landfill SW	Received	04/25/2024
Order Number		Approved	05/03/2024
Samples	Surface Water (3)	Report Number	CA15759-APR24 R
		Date Reported	05/03/2024

COMMENTS

Temperature of Sample upon Receipt: 6 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Chain of Custody Number: n/a

SIGNATORIES

Maarit Wolfe, Hon.B.Sc

TABLE OF CONTENTS

Client: Pinchin Ltd
Project: 225335.008, Croft Landfill SW
Project Manager: Alana Valle
Samplers: Katie

MATRIX: WATER

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

Sample Number	6	7	8
Sample Name	SW2	SW3	SW DUP
Sample Matrix	Surface Water	Surface Water	Surface Water
Sample Date	24/04/2024	24/04/2024	24/04/2024

Parameter	Units	RL	L1	Result	Result	Result
General Chemistry						
Biochemical Oxygen Demand (BOD5)	mg/L	2		< 4↑	< 4↑	< 4↑
Prep BOD	Prep	no		45408	45408	45408
Total Suspended Solids	mg/L	2		2	5	3
Alkalinity	mg/L as CaCO3	2		< 2	53	< 2
Conductivity	uS/cm	2		9	132	9
Total Dissolved Solids	mg/L	30		31	117	37
Chemical Oxygen Demand	mg/L	8		20	24	16
Colour	TCU	3		62	31	66
Total Kjeldahl Nitrogen (N)	as N mg/L	0.05		0.31	0.52	0.32
Ammonia+Ammonium (N)	as N mg/L	0.04		< 0.04	0.08	< 0.04
Total Reactive Phosphorous (o-phosphate as P)	mg/L	0.03		< 0.03	< 0.03	< 0.03
Dissolved Organic Carbon	mg/L	1		6	7	6
Metals and Inorganics						
Sulphate	mg/L	2		< 2	17	< 2
Nitrite (as N)	as N mg/L	0.03		< 0.03	< 0.03	< 0.03
Nitrate (as N)	as N mg/L	0.06		< 0.06	0.07	< 0.06
Hardness	mg/L as CaCO3	0.05		3.9	79.9	3.9
Silver (total)	mg/L	0.00005	0.0001	< 0.00005	< 0.00005	< 0.00005
Aluminum (0.2µm)	mg/L	0.001	0.015 0.075	0.160	0.053	0.158
Arsenic (total)	mg/L	0.0002	0.005	< 0.0002	0.0004	< 0.0002

Client: Pinchin Ltd
Project: 225335.008, Croft Landfill SW
Project Manager: Alana Valle
Samplers: Katie

MATRIX: WATER

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

	Sample Number			6	7	8	
	Sample Name			SW2	SW3	SW DUP	
	Sample Matrix			Surface Water	Surface Water	Surface Water	
	Sample Date			24/04/2024	24/04/2024	24/04/2024	
Parameter	**Units**	**RL**	**L1**	**Result**	**Result**	**Result**	
Metals and Inorganics (continued)							
Barium (total)	mg/L	0.00008		0.00686	0.0281	0.00696	
Beryllium (total)	mg/L	0.000007	0.011 1.1	0.000027	0.000008	0.000025	
Bismuth (total)	mg/L	0.00001		< 0.00001	< 0.00001	< 0.00001	
Boron (total)	mg/L	0.002	0.2	0.004	0.138	0.005	
Calcium (total)	mg/L	0.01		1.09	27.9	1.09	
Cadmium (total)	mg/L	0.000003	0.0001	0.000025	0.000053	0.000020	
Cobalt (total)	mg/L	0.000004	0.0009	0.000231	0.000971	0.000233	
Chromium (total)	mg/L	0.00008	0.1	0.00029	0.00049	0.00036	
Copper (total)	mg/L	0.001	0.001 0.005	< 0.001	0.002	< 0.001	
Iron (total)	mg/L	0.007	0.3	0.420	0.526	0.438	
Potassium (total)	mg/L	0.009		0.142	4.86	0.142	
Magnesium (total)	mg/L	0.001		0.289	2.51	0.294	
Manganese (total)	mg/L	0.00001		0.0265	0.647	0.0269	
Molybdenum (total)	mg/L	0.0004	0.04	< 0.0004	< 0.0004	< 0.0004	
Sodium (total)	mg/L	0.01		0.65	6.83	0.65	
Nickel (total)	mg/L	0.0001	0.025	0.0006	0.0007	0.0005	
Lead (total)	mg/L	0.00009	0.005 0.02	0.00022	0.00013	0.00023	
Phosphorus (total)	mg/L	0.003	0.01	0.008	0.007	0.006	
Antimony (total)	mg/L	0.0009	0.02	< 0.0009	< 0.0009	< 0.0009	
Selenium (total)	mg/L	0.00004	0.1	0.00007	0.00012	0.00007	

Client: Pinchin Ltd
Project: 225335.008, Croft Landfill SW
Project Manager: Alana Valle
Samplers: Katie

MATRIX: WATER

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

Sample Number				6	7	8
Sample Name				SW2	SW3	SW DUP
Sample Matrix				Surface Water	Surface Water	Surface Water
Sample Date				24/04/2024	24/04/2024	24/04/2024
Parameter	**Units**	**RL**	**L1**	**Result**	**Result**	**Result**
Metals and Inorganics (continued)						
Silicon (total)	mg/L	0.02		0.93	1.54	0.93
Tin (total)	mg/L	0.00006		0.00006	0.00007	0.00007
Strontium (total)	mg/L	0.00008		0.0101	0.0987	0.0101
Titanium (total)	mg/L	0.0001		0.0024	0.0030	0.0028
Uranium (total)	mg/L	0.000002	0.005	0.000056	0.000041	0.000060
Vanadium (total)	mg/L	0.00001	0.006	0.00033	0.00036	0.00035
Zinc (total)	mg/L	0.002	0.02	0.004	0.005	0.004
Other (ORP)						
pH	No unit	0.05	0.1 8.6	6.12	7.56	6.07
Chloride	mg/L	1		< 1	5	< 1
Phenols						
4AAP-Phenolics	mg/L	0.001	0.001	< 0.001	0.002	< 0.001

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	PWQO_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E L1
SW2				
Aluminum (dissolved)	SM 3030/EPA 200.8	mg/L	0.160	0.015
Iron	SM 3030/EPA 200.8	mg/L	0.420	0.3
pH	SM 4500	No unit	6.12	0.1
SW3				
Cobalt	SM 3030/EPA 200.8	mg/L	0.000971	0.0009
Iron	SM 3030/EPA 200.8	mg/L	0.526	0.3
4AAP-Phenolics	SM 5530B-D	mg/L	0.002	0.001
SW DUP				
Aluminum (dissolved)	SM 3030/EPA 200.8	mg/L	0.158	0.015
Iron	SM 3030/EPA 200.8	mg/L	0.438	0.3
pH	SM 4500	No unit	6.07	0.1

QC SUMMARY

Alkalinity

Method: SM 2320 I Internal ref.: ME-CA-IENVIEWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Alkalinity	EWL0646-APR24	mg/L as CaCO3	2	< 2	3	20	102	80	120	NA		

Ammonia by SFA

Method: SM 4500 I Internal ref.: ME-CA-IENVISFA-LAK-AN-007

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Ammonia+Ammonium (N)	SKA0268-APR24	mg/L	0.04	<0.04	1	10	105	90	110	97	75	125

QC SUMMARY

Anions by discrete analyzer

Method: US EPA 325.2 | Internal ref.: ME-CA-[ENVIEWL-LAK-AN-026

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Chloride	DIO8007-MAY24	mg/L	1	<1	1	20	100	80	120	102	75	125
Sulphate	DIO8007-MAY24	mg/L	2	<2	ND	20	105	80	120	113	75	125

Anions by IC

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Nitrite (as N)	DIO0628-APR24	mg/L	0.03	<0.03	ND	20	97	90	110	99	75	125
Nitrate (as N)	DIO0628-APR24	mg/L	0.06	<0.06	ND	20	98	90	110	100	75	125
Nitrite (as N)	DIO0629-APR24	mg/L	0.03	<0.03	ND	20	98	90	110	102	75	125
Nitrate (as N)	DIO0629-APR24	mg/L	0.06	<0.06	ND	20	99	90	110	102	75	125

QC SUMMARY

Biochemical Oxygen Demand

Method: SM 5210 I Internal ref.: ME-CA-IENVIEWL-LAK-AN-007

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Biochemical Oxygen Demand (BOD5)	BOD0053-APR24	mg/L	2	< 2	8	30	101	70	130	97	70	130

Carbon by SFA

Method: SM 5310 I Internal ref.: ME-CA-IENVISFA-LAK-AN-009

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Dissolved Organic Carbon	SKA0278-APR24	mg/L	1	<1	0	20	98	90	110	103	75	125

Chemical Oxygen Demand

Method: HACH 8000 I Internal ref.: ME-CA-IENVIEWL-LAK-AN-009

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Chemical Oxygen Demand	EWL0638-APR24	mg/L	8	<8	0	20	100	80	120	95	75	125
Chemical Oxygen Demand	EWL0674-APR24	mg/L	8	<8	ND	20	108	80	120	99	75	125

QC SUMMARY

Colour

Method: SM 2120 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-002

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Colour	EWL0640-APR24	TCU	3	< 3	0	10	100	80	120	NA		

Conductivity

Method: SM 2510 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Conductivity	EWL0646-APR24	uS/cm	2	< 2	0	20	100	90	110	NA		

QC SUMMARY

Metals in aqueous samples - ICP-MS

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Silver (total)	EMS0264-APR24	mg/L	0.00005	<0.00005	ND	20	103	90	110	70	70	130
Aluminum (0.2µm)	EMS0264-APR24	mg/L	0.001	<0.001	7	20	104	90	110	105	70	130
Arsenic (total)	EMS0264-APR24	mg/L	0.0002	<0.0002	6	20	102	90	110	101	70	130
Barium (total)	EMS0264-APR24	mg/L	0.00008	<0.00008	5	20	98	90	110	103	70	130
Beryllium (total)	EMS0264-APR24	mg/L	0.000007	<0.000007	ND	20	101	90	110	106	70	130
Boron (total)	EMS0264-APR24	mg/L	0.002	<0.002	6	20	95	90	110	93	70	130
Bismuth (total)	EMS0264-APR24	mg/L	0.00001	<0.00001	ND	20	99	90	110	97	70	130
Calcium (total)	EMS0264-APR24	mg/L	0.01	<0.01	1	20	104	90	110	122	70	130
Cadmium (total)	EMS0264-APR24	mg/L	0.000003	<0.000003	6	20	102	90	110	97	70	130
Cobalt (total)	EMS0264-APR24	mg/L	0.000004	<0.000004	2	20	103	90	110	99	70	130
Chromium (total)	EMS0264-APR24	mg/L	0.00008	<0.00008	1	20	106	90	110	112	70	130
Copper (total)	EMS0264-APR24	mg/L	0.001	<0.001	1	20	102	90	110	97	70	130
Iron (total)	EMS0264-APR24	mg/L	0.007	<0.007	2	20	105	90	110	100	70	130
Potassium (total)	EMS0264-APR24	mg/L	0.009	<0.009	1	20	104	90	110	120	70	130
Magnesium (total)	EMS0264-APR24	mg/L	0.001	<0.001	2	20	100	90	110	109	70	130
Manganese (total)	EMS0264-APR24	mg/L	0.00001	<0.00001	2	20	102	90	110	97	70	130
Molybdenum (total)	EMS0264-APR24	mg/L	0.0004	<0.0004	1	20	100	90	110	100	70	130
Sodium (total)	EMS0264-APR24	mg/L	0.01	<0.01	3	20	104	90	110	106	70	130
Nickel (total)	EMS0264-APR24	mg/L	0.0001	<0.0001	0	20	103	90	110	99	70	130
Lead (total)	EMS0264-APR24	mg/L	0.00009	<0.00009	4	20	101	90	110	101	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS (continued)

Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-[ENV]SPE-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Phosphorus (total)	EMS0264-APR24	mg/L	0.003	<0.003	7	20	104	90	110	NV	70	130
Antimony (total)	EMS0264-APR24	mg/L	0.0009	<0.0009	ND	20	108	90	110	103	70	130
Selenium (total)	EMS0264-APR24	mg/L	0.00004	<0.00004	10	20	102	90	110	105	70	130
Silicon (total)	EMS0264-APR24	mg/L	0.02	<0.02	7	20	97	90	110	NV	70	130
Tin (total)	EMS0264-APR24	mg/L	0.00006	<0.00006	ND	20	98	90	110	NV	70	130
Strontium (total)	EMS0264-APR24	mg/L	0.00008	<0.00008	1	20	99	90	110	119	70	130
Titanium (total)	EMS0264-APR24	mg/L	0.0001	<0.0001	3	20	101	90	110	NV	70	130
Uranium (total)	EMS0264-APR24	mg/L	0.000002	<0.000002	4	20	98	90	110	111	70	130
Vanadium (total)	EMS0264-APR24	mg/L	0.00001	<0.00001	4	20	103	90	110	96	70	130
Zinc (total)	EMS0264-APR24	mg/L	0.002	<0.002	0	20	100	90	110	99	70	130

pH

Method: SM 4500 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
pH	EWL0646-APR24	No unit	0.05	NA	0		101			NA		

QC SUMMARY

Phenols by SFA

Method: SM 5530B-D | Internal ref.: ME-CA-[ENVISFA-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
4AAP-Phenolics	SKA0274-APR24	mg/L	0.001	<0.001	4	10	102	80	120	88	75	125

Reactive Phosphorus by SFA

Method: SM 4500-P F | Internal ref.: ME-CA-[ENVISFA-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Reactive Phosphorous (o-phosphate as P)	SKA0272-APR24	mg/L	0.03	<0.03	ND	10	102	90	110	85	75	125

Solids Analysis

Method: SM 2540C | Internal ref.: ME-CA-[ENVIEWL-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Dissolved Solids	EWL0626-APR24	mg/L	30	<30	3	20	96	80	120	NA		

QC SUMMARY

Suspended Solids

Method: SM 2540D | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Suspended Solids	EWL0651-APR24	mg/L	2	< 2	1	10	98	90	110	NA		
Total Suspended Solids	EWL0653-APR24	mg/L	2	< 2	1	10	97	90	110	NA		

Total Nitrogen

Method: SM 4500-N C/4500-NO3- F | Internal ref.: ME-CA-[ENV]SFA-LAK-AN-002

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Kjeldahl Nitrogen (N)	SKA0262-APR24	mg/L	0.05	<0.05	3	10	98	90	110	96	75	125
Total Kjeldahl Nitrogen (N)	SKA0273-APR24	mg/L	0.05	<0.05	ND	10	97	90	110	97	75	125

QC SUMMARY

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

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

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

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

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

RL: Reporting limit

RPD: Relative percent difference

AC: Acceptance criteria

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

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

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

LEGEND

FOOTNOTES

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

Results relate only to the sample tested.
Data reported represent the sample as submitted to SGS. Solid samples expressed on a dry weight basis.
"Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.
Analysis conducted on samples submitted pursuant to or as part of Reg. 153/04, are in accordance to the "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act and Excess Soil Quality" published by the Ministry and dated March 9, 2004 as amended.

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

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

This report supersedes all previous versions.

-- End of Analytical Report --

SGS

Request for Laboratory Services and CHAIN OF CUSTODY (General)

SGS Environmental Services - Lakefield: 185 Concession St., Lakefield, ON K0L 2H0 Phone: 705-652-2000 Toll Free: 877-747-7658 Fax: 705-652-6365 Web: www.ca.sgs.com {4}

SGS Environmental Services - London: 657 Consortium Court, London, ON, N6E 2S8 Phone: 519-672-4500 Toll Free: 877-848-8060 Fax: 519-672-0361 Web: www.ca.sgs.com {4}

Laboratory Information Section

Received Date (mm/dd/yyyy): APR 25 2024

Received Time (After Hours Only): __:__

LAB LIMS #: Apr 157599

Temperature Upon Receipt (°C): 6°X3

Billing & Reporting Information

Invoice/Receipt to {3}:

Company:	Pinchin
Attention:	Alana Valle
Address:	662 Falconbridge Rd, Unit 3 Sudbury, Ontario P3A 4S4
Email:	avalle@pinchin.com

Project Name/Number: 225335.008-Croft Landfill SW

P.O. #:

Quote #: 2023 544

Attached Parameter List: ☑ YES ☐ NO

Turnaround Time

Is *Rush Turnaround Time Required? ☐ YES ☒ NO

Specify:

* Rush TA Requests Require Lab Approval

Client Information/Report To:

Client Lab #:

Company Name:		Phone Number:	705.507.9479
Contact Name:		Fax Number:	
Address:		E-mail:	
Copy to:			

Sample Information

Sample Identifier	Date Sampled (mm/dd/yy)	Time Sampled	# of Bottles	Analysis Requested (please enter the analysis required below and check off which analysis applies to each sample)							
				Field Filtered	Field Temp (°C)	Field pH		SW Package			
~~SW1~~	04/24/24	8:00						X			
SW2	↓	↓	11					X			
SW3	↓	↓	11					X			
SW DUP	↓	12:30	11					X			

Sampled By {1}:	(Name) Katie Pinzldi	(Signature)		Date: 04/24/24	(mm/dd/yy)
Relinquished by {2}:	(Name) Katie Pinzldi	(Signature)		Date: 04/24/24	(mm/dd/yy)

Note: {1} Submission of samples to SGS is acknowledgement that you have been provided direction on sample collection/handling and transportation of samples. {2} Submission of samples to SGS is considered authorization for completion of work. Signatures may appear on this form or be retained on file in the contract, or in an alternative format (e.g. shipping documents). {3} Results may be sent by email to an unlimited number of addresses for no additional cost. Fax is available upon request. {4} Completion of work may require the subcontracting of samples between the London and Lakefield laboratories.

10.003

3346649 1257, other

FINAL REPORT

CA15762-APR24 R

225335.008, Croft GW

Prepared for

Pinchin Ltd

FINAL REPORT

CA15762-APR24 R

First Page

CLIENT DETAILS

Client	Pinchin Ltd
Address	662 Falconbridge Road, Unit 3, Sudbury Canada, P3A 4S4 Phone: 705-521-0560. Fax:
Contact	Alana Valle
Telephone	705-521-0560
Facsimile	
Email	avalle@Pinchin.com
Project	225335.008, Croft GW
Order Number	
Samples	Ground Water (9)

LABORATORY DETAILS

Project Specialist	Brad Moore Hon. B.Sc
Laboratory	SGS Canada Inc.
Address	185 Concession St., Lakefield ON, K0L 2H0
Telephone	705-652-2143
Facsimile	705-652-6365
Email	brad.moore@sgs.com
SGS Reference	CA15762-APR24
Received	04/25/2024
Approved	05/10/2024
Report Number	CA15762-APR24 R
Date Reported	05/10/2024

COMMENTS

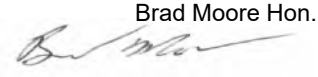
Temperature of Sample upon Receipt: 3 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Chain of Custody Number: n/a

BOD spike rep high, accepting results based on other qc

SIGNATORIES

Brad Moore Hon. B.Sc



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FINAL REPORT

CA15762-APR24 R

Client: Pinchin Ltd
Project: 225335.008, Croft GW
Project Manager: Alana Valle
Samplers: Katie Rinaldi

MATRIX: WATER

L1 = ODWS_AO / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Parameter	Units	RL	L1	L2	Sample Number	7	8	9	10	11	12	13	14
					Sample Name	BH1	BH8	BH9	BH10	BH11	BH12	BH13	BH14
					Sample Matrix	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
					Sample Date	24/04/2024	24/04/2024	24/04/2024	24/04/2024	24/04/2024	24/04/2024	24/04/2024	24/04/2024
						Result	Result	Result	Result	Result	Result	Result	Result
Acid Rock Drainage													
pH Check <2	pH	0.05				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
General Chemistry													
Biochemical Oxygen Demand (BOD5)	mg/L	2				< 4↑	< 4↑	< 4↑	< 4↑	< 4↑	< 4↑	< 4↑	< 4↑
Prep BOD	Prep	no				45407	45407	45407	45407	45407	45407	45407	45407
Total Suspended Solids	mg/L	2				60	27	74	20	20	752	2030	327
Alkalinity	mg/L as CaCO3	2				83	9	230	347	45	50	22	82
Conductivity	uS/cm	2				165	28	697	1480	244	128	50	337
Total Dissolved Solids	mg/L	30	500			160	40	434	811	183	91	46	231
Chemical Oxygen Demand	mg/L	8				59	13	60	36	29	< 8	16	< 8
Turbidity	NTU	0.10	5	1		8.9	17	75	8.8	7.2	380	550	70
Total Kjeldahl Nitrogen (N)	as N mg/L	0.05				0.86	0.23	3.15	10.4	1.40	0.26	0.41	0.07
Ammonia+Ammonium (N)	as N mg/L	0.04				0.22	< 0.04	2.44	9.86	0.97	0.05	< 0.04	0.08
Total Reactive Phosphorous (o-phosphate as P)	mg/L	0.03				< 0.03	0.03	0.04	< 0.03	< 0.03	0.08	0.12	0.04
Dissolved Organic Carbon	mg/L	1	5			20	3	16	12	10	2	4	2

FINAL REPORT

CA15762-APR24 R

Client: Pinchin Ltd
Project: 225335.008, Croft GW
Project Manager: Alana Valle
Samplers: Katie Rinaldi

MATRIX: WATER

L1 = ODWS_AO / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

					Sample Number	7	8	9	10	11	12	13	14
					Sample Name	BH1	BH8	BH9	BH10	BH11	BH12	BH13	BH14
					Sample Matrix	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
					Sample Date	24/04/2024	24/04/2024	24/04/2024	24/04/2024	24/04/2024	24/04/2024	24/04/2024	24/04/2024
Parameter		**Units**	**RL**	**L1**	**L2**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
Metals and Inorganics													
Phosphorus (total)		mg/L	0.03			< 0.03	< 0.03	< 0.03	< 0.03	0.03	0.32	1.36	0.12
Sulphate		mg/L	2	500		< 2	3	11	18	42	10	3	20
Nitrite (as N)	as N	mg/L	0.03		1	< 0.03	< 0.03	< 0.03	< 0.03	0.03	< 0.03	< 0.03	< 0.03
Nitrate (as N)	as N	mg/L	0.06		10	< 0.06	< 0.06	< 0.06	< 0.06	0.10	< 0.06	< 0.06	< 0.06
Hardness (dissolved)	mg/L as CaCO3		0.05			76.0	4.6	235	344	49.7	56.6	24.1	165
Silver (dissolved)		mg/L	0.00005			< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00007	< 0.00005
Aluminum (dissolved)		mg/L	0.001			0.303	0.206	0.138	0.027	0.170	0.053	0.116	0.012
Arsenic (dissolved)		mg/L	0.0002		0.01	0.0019	0.0020	0.0011	0.0002	0.0003	0.0003	0.0002	0.0003
Barium (dissolved)		mg/L	0.00008		1	0.0792	0.00619	0.0804	0.142	0.0428	0.0360	0.0153	0.0661
Beryllium (dissolved)		mg/L	0.000007			0.000055	0.000013	0.000020	0.000009	0.000025	0.000037	0.000042	0.000029
Bismuth (dissolved)		mg/L	0.00001			< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Boron (dissolved)		mg/L	0.002		5	0.048	< 0.002	0.585	0.700	0.296	0.062	0.020	0.058
Calcium (dissolved)		mg/L	0.01			21.5	1.30	77.7	109	15.2	19.0	8.05	52.0
Cadmium (dissolved)		mg/L	0.000003		0.005	0.000007	0.000007	0.000017	0.000031	0.000038	0.000003	0.000034	< 0.000003
Cobalt (dissolved)		mg/L	0.000004			0.0118	0.000246	0.00890	0.00202	0.000745	0.000127	0.000098	0.000463
Chromium (dissolved)		mg/L	0.00008		0.05	0.00159	0.00043	0.00181	0.00109	0.00062	0.00024	0.00032	0.00018
Copper (dissolved)		mg/L	0.001	1		0.002	0.014	< 0.001	0.006	0.002	< 0.001	0.004	< 0.001
Iron (dissolved)		mg/L	0.007	0.3		10.8	0.085	19.2	0.066	0.072	1.04	0.138	3.28
Potassium (dissolved)		mg/L	0.009			7.07	0.273	15.3	31.7	10.2	1.02	0.501	2.52
Magnesium (dissolved)		mg/L	0.001			5.43	0.320	9.92	17.4	2.86	2.23	0.964	8.47
Manganese (dissolved)		mg/L	0.00001	0.05		1.67	0.00206	3.28	1.12	0.289	0.297	0.0720	0.924
Molybdenum (dissolved)		mg/L	0.0004			0.0007	0.0006	0.0018	0.0010	0.0006	0.0006	< 0.0004	< 0.0004

Client: Pinchin Ltd
Project: 225335.008, Croft GW
Project Manager: Alana Valle
Samplers: Katie Rinaldi

MATRIX: WATER

L1 = ODWS_AO / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

					Sample Number	7	8	9	10	11	12	13	14
					Sample Name	BH1	BH8	BH9	BH10	BH11	BH12	BH13	BH14
					Sample Matrix	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
					Sample Date	24/04/2024	24/04/2024	24/04/2024	24/04/2024	24/04/2024	24/04/2024	24/04/2024	24/04/2024
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
Metals and Inorganics (continued)													
Sodium (dissolved)	mg/L	0.01	200	20	6.36	4.20	40.2	135	27.6	4.52	1.86	9.72
Silicon (dissolved)	mg/L	0.02			4.54	2.60	3.37	3.51	1.12	4.80	2.23	9.68
Nickel (dissolved)	mg/L	0.0001			0.0016	0.0019	0.0021	0.0015	0.0009	0.0002	0.0006	0.0003
Lead (dissolved)	mg/L	0.00009		0.01	0.00015	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009
Antimony (dissolved)	mg/L	0.0009		0.006	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009
Selenium (dissolved)	mg/L	0.00004		0.05	0.00080	0.00009	0.00029	0.00015	0.00018	0.00008	0.00012	0.00005
Tin (dissolved)	mg/L	0.00006			0.00006	< 0.00006	< 0.00006	< 0.00006	< 0.00006	< 0.00006	< 0.00006	< 0.00006
Strontium (dissolved)	mg/L	0.00008			0.105	0.00748	0.265	0.490	0.0506	0.0755	0.0161	0.239
Thallium (dissolved)	mg/L	0.000005			0.000009	0.000005	0.000013	0.000049	0.000033	< 0.000005	0.000008	< 0.000005
Titanium (dissolved)	mg/L	0.0001			0.0148	0.0042	0.0027	0.0008	0.0010	0.0007	0.0011	0.0003
Uranium (dissolved)	mg/L	0.000002		0.02	0.000787	0.000155	0.00114	0.00344	0.000267	0.000170	0.00164	0.000390
Vanadium (dissolved)	mg/L	0.00001			0.00494	0.00036	0.00340	0.00038	0.00016	0.00032	0.00029	0.00028
Zinc (dissolved)	mg/L	0.002	5		< 0.002	0.004	< 0.002	< 0.002	< 0.002	< 0.002	0.004	< 0.002

Client: Pinchin Ltd
Project: 225335.008, Croft GW
Project Manager: Alana Valle
Samplers: Katie Rinaldi

MATRIX: WATER

L1 = ODWS_AO / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Parameter	Units	RL	L1	L2	Sample Number	7	8	9	10	11	12	13	14
					Sample Name	BH1	BH8	BH9	BH10	BH11	BH12	BH13	BH14
					Sample Matrix	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
					Sample Date	24/04/2024	24/04/2024	24/04/2024	24/04/2024	24/04/2024	24/04/2024	24/04/2024	24/04/2024
						Result	Result	Result	Result	Result	Result	Result	Result
Other (ORP)													
pH	No unit	0.05				7.25	6.97	7.56	7.80	7.18	6.97	7.14	7.71
Chloride	mg/L	1	250			5	< 1	74	280	35	5	1	59
Phenols													
4AAP-Phenolics	mg/L	0.002				0.003	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002

MATRIX: WATER

L1 = ODWS_AO / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Parameter	Units	RL	L1	L2	Sample Number	15
					Sample Name	GW DUP
					Sample Matrix	Ground Water
					Sample Date	24/04/2024
						Result
Acid Rock Drainage						
pH Check <2	pH	0.05				1.00
General Chemistry						
Biochemical Oxygen Demand (BOD5)	mg/L	2				< 4 ↑
Prep BOD	Prep	no				45407
Total Suspended Solids	mg/L	2				2710
Alkalinity	mg/L as CaCO3	2				26
Conductivity	uS/cm	2				54
Total Dissolved Solids	mg/L	30	500			63
Chemical Oxygen Demand	mg/L	8				14
Turbidity	NTU	0.10	5	1		500
Total Kjeldahl Nitrogen (N)	as N mg/L	0.05				0.46

Client: Pinchin Ltd
Project: 225335.008, Croft GW
Project Manager: Alana Valle
Samplers: Katie Rinaldi

MATRIX: WATER

Sample Number	15
Sample Name	GW DUP
Sample Matrix	Ground Water
Sample Date	24/04/2024

L1 = ODWS_AO / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Parameter	Units	RL	L1	L2	Result
General Chemistry (continued)					
Ammonia+Ammonium (N)	as N mg/L	0.04			0.04
Total Reactive Phosphorous (o-phosphate as P)	mg/L	0.03			0.11
Dissolved Organic Carbon	mg/L	1	5		4
Metals and Inorganics					
Phosphorus (total)	mg/L	0.03			1.46
Sulphate	mg/L	2	500		2
Nitrite (as N)	as N mg/L	0.03		1	< 0.03
Nitrate (as N)	as N mg/L	0.06		10	< 0.06
Hardness (dissolved)	mg/L as CaCO3	0.05			24.2
Silver (dissolved)	mg/L	0.00005			0.00011
Aluminum (dissolved)	mg/L	0.001			0.120
Arsenic (dissolved)	mg/L	0.0002		0.01	0.0003
Barium (dissolved)	mg/L	0.00008		1	0.0150
Beryllium (dissolved)	mg/L	0.000007			0.000043
Bismuth (dissolved)	mg/L	0.00001			< 0.00001
Boron (dissolved)	mg/L	0.002		5	0.016
Calcium (dissolved)	mg/L	0.01			8.06
Cadmium (dissolved)	mg/L	0.000003		0.005	0.000042
Cobalt (dissolved)	mg/L	0.000004			0.000094
Chromium (dissolved)	mg/L	0.00008		0.05	0.00034
Copper (dissolved)	mg/L	0.001	1		0.004

Client: Pinchin Ltd
Project: 225335.008, Croft GW
Project Manager: Alana Valle
Samplers: Katie Rinaldi

MATRIX: WATER

Sample Number	15
Sample Name	GW DUP
Sample Matrix	Ground Water
Sample Date	24/04/2024

L1 = ODWS_AO / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Parameter	Units	RL	L1	L2	Result
Metals and Inorganics (continued)					
Iron (dissolved)	mg/L	0.007	0.3		0.129
Potassium (dissolved)	mg/L	0.009			0.499
Magnesium (dissolved)	mg/L	0.001			0.981
Manganese (dissolved)	mg/L	0.00001	0.05		0.0725
Molybdenum (dissolved)	mg/L	0.0004			< 0.0004
Sodium (dissolved)	mg/L	0.01	200	20	1.90
Silicon (dissolved)	mg/L	0.02			2.33
Nickel (dissolved)	mg/L	0.0001			0.0005
Lead (dissolved)	mg/L	0.00009		0.01	< 0.00009
Antimony (dissolved)	mg/L	0.0009		0.006	< 0.0009
Selenium (dissolved)	mg/L	0.00004		0.05	0.00012
Tin (dissolved)	mg/L	0.00006			< 0.00006
Strontium (dissolved)	mg/L	0.00008			0.0162
Thallium (dissolved)	mg/L	0.000005			0.000007
Titanium (dissolved)	mg/L	0.0001			0.0013
Uranium (dissolved)	mg/L	0.000002		0.02	0.00171
Vanadium (dissolved)	mg/L	0.00001			0.00031
Zinc (dissolved)	mg/L	0.002	5		0.005

Client: Pinchin Ltd
Project: 225335.008, Croft GW
Project Manager: Alana Valle
Samplers: Katie Rinaldi

MATRIX: WATER

L1 = ODWS_AO / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Sample Number	15
Sample Name	GW DUP
Sample Matrix	Ground Water
Sample Date	24/04/2024

Parameter	Units	RL	L1	L2	Result
Other (ORP)					
pH	No unit	0.05			7.18
Chloride	mg/L	1	250		2
Phenols					
4AAP-Phenolics	mg/L	0.002			< 0.002

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	ODWS_AO / WATER / - - Table 4 - Drinking Water - Reg O.169_03 L1	ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03 L2
BH1					
Turbidity	SM 2130	NTU	8.9	5	1
Iron (dissolved)	SM 3030/EPA 200.8	mg/L	10.8	0.3	
Manganese (dissolved)	SM 3030/EPA 200.8	mg/L	1.67	0.05	
Dissolved Organic Carbon	SM 5310	mg/L	20	5	
BH8					
Turbidity	SM 2130	NTU	17	5	1
BH9					
Turbidity	SM 2130	NTU	75	5	1
Iron (dissolved)	SM 3030/EPA 200.8	mg/L	19.2	0.3	
Manganese (dissolved)	SM 3030/EPA 200.8	mg/L	3.28	0.05	
Sodium (dissolved)	SM 3030/EPA 200.8	mg/L	40.2		20
Dissolved Organic Carbon	SM 5310	mg/L	16	5	
BH10					
Turbidity	SM 2130	NTU	8.8	5	1
Total Dissolved Solids	SM 2540C	mg/L	811	500	
Manganese (dissolved)	SM 3030/EPA 200.8	mg/L	1.12	0.05	
Sodium (dissolved)	SM 3030/EPA 200.8	mg/L	135		20
Dissolved Organic Carbon	SM 5310	mg/L	12	5	
Chloride	US EPA 325.2	mg/L	280	250	
BH11					
Turbidity	SM 2130	NTU	7.2	5	1
Manganese (dissolved)	SM 3030/EPA 200.8	mg/L	0.289	0.05	
Sodium (dissolved)	SM 3030/EPA 200.8	mg/L	27.6		20
Dissolved Organic Carbon	SM 5310	mg/L	10	5	
BH12					
Turbidity	SM 2130	NTU	380	5	1
Iron (dissolved)	SM 3030/EPA 200.8	mg/L	1.04	0.3	
Manganese (dissolved)	SM 3030/EPA 200.8	mg/L	0.297	0.05	
BH13					
Turbidity	SM 2130	NTU	550	5	1
Manganese (dissolved)	SM 3030/EPA 200.8	mg/L	0.0720	0.05	
BH14					
Turbidity	SM 2130	NTU	70	5	1
Iron (dissolved)	SM 3030/EPA 200.8	mg/L	3.28	0.3	

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	ODWS_AO / WATER / - - Table 4 - Drinking Water - Reg O.169_03 L1	ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03 L2
BH14 (continued)					
Manganese (dissolved)	SM 3030/EPA 200.8	mg/L	0.924	0.05	
GW DUP					
Turbidity	SM 2130	NTU	500	5	1
Manganese (dissolved)	SM 3030/EPA 200.8	mg/L	0.0725	0.05	

QC SUMMARY

Alkalinity

Method: SM 2320 I Internal ref.: ME-CA-IENVIEWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Alkalinity	EWL0646-APR24	mg/L as CaCO3	2	< 2	3	20	102	80	120	NA		
Alkalinity	EWL0648-APR24	mg/L as CaCO3	2	< 2	1	20	100	80	120	NA		

Ammonia by SFA

Method: SM 4500 I Internal ref.: ME-CA-IENVISFA-LAK-AN-007

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Ammonia+Ammonium (N)	SKA0275-APR24	mg/L	0.04	<0.04	2	10	100	90	110	97	75	125

QC SUMMARY

Anions by discrete analyzer

Method: US EPA 325.2 | Internal ref.: ME-CA-[ENVIEWL-LAK-AN-026

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Chloride	DIO8007-MAY24	mg/L	1	<1	1	20	100	80	120	102	75	125
Sulphate	DIO8007-MAY24	mg/L	2	<2	ND	20	105	80	120	113	75	125

Anions by IC

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Nitrite (as N)	DIO0614-APR24	mg/L	0.03	<0.03	0	20	101	90	110	101	75	125
Nitrate (as N)	DIO0614-APR24	mg/L	0.06	<0.06	0	20	100	90	110	86	75	125
Nitrite (as N)	DIO0622-APR24	mg/L	0.03	<0.03	3	20	97	90	110	99	75	125
Nitrate (as N)	DIO0622-APR24	mg/L	0.06	<0.06	1	20	98	90	110	102	75	125
Nitrite (as N)	DIO0623-APR24	mg/L	0.03	<0.03	ND	20	98	90	110	100	75	125
Nitrate (as N)	DIO0623-APR24	mg/L	0.06	<0.06	0	20	99	90	110	102	75	125

QC SUMMARY

Biochemical Oxygen Demand

Method: SM 5210 I Internal ref.: ME-CA-[ENV]EWL-LAK-AN-007

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Biochemical Oxygen Demand (BOD5)	BOD0051-APR24	mg/L	2	< 2	20	30	87	70	130	160	70	130

Carbon by SFA

Method: SM 5310 I Internal ref.: ME-CA-[ENV]SFA-LAK-AN-009

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Dissolved Organic Carbon	SKA0278-APR24	mg/L	1	<1	0	20	98	90	110	103	75	125
Dissolved Organic Carbon	SKA0291-APR24	mg/L	1	<1	2	20	93	90	110	95	75	125

QC SUMMARY

Chemical Oxygen Demand

Method: HACH 8000 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-009

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Chemical Oxygen Demand	EWL0638-APR24	mg/L	8	<8	0	20	100	80	120	95	75	125
Chemical Oxygen Demand	EWL0639-APR24	mg/L	8	<8	7	20	102	80	120	94	75	125

Conductivity

Method: SM 2510 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Conductivity	EWL0646-APR24	uS/cm	2	< 2	0	20	100	90	110	NA		
Conductivity	EWL0687-APR24	uS/cm	2	< 2	0	20	98	90	110	NA		

QC SUMMARY

Metals in aqueous samples - ICP-MS

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Silver (dissolved)	EMS0265-APR24	mg/L	0.00005	<0.00005	ND	20	103	90	110	83	70	130
Aluminum (dissolved)	EMS0265-APR24	mg/L	0.001	<0.001	16	20	103	90	110	96	70	130
Arsenic (dissolved)	EMS0265-APR24	mg/L	0.0002	<0.0002	2	20	104	90	110	102	70	130
Barium (dissolved)	EMS0265-APR24	mg/L	0.00008	<0.00008	0	20	91	90	110	79	70	130
Beryllium (dissolved)	EMS0265-APR24	mg/L	0.000007	<0.000007	ND	20	105	90	110	88	70	130
Boron (dissolved)	EMS0265-APR24	mg/L	0.002	<0.002	ND	20	108	90	110	100	70	130
Bismuth (dissolved)	EMS0265-APR24	mg/L	0.00001	<0.00001	ND	20	105	90	110	88	70	130
Calcium (dissolved)	EMS0265-APR24	mg/L	0.01	<0.01	0	20	97	90	110	89	70	130
Cadmium (dissolved)	EMS0265-APR24	mg/L	0.000003	<0.000003	0	20	106	90	110	101	70	130
Cobalt (dissolved)	EMS0265-APR24	mg/L	0.000004	<0.000004	9	20	99	90	110	96	70	130
Chromium (dissolved)	EMS0265-APR24	mg/L	0.00008	<0.00008	ND	20	107	90	110	114	70	130
Copper (dissolved)	EMS0265-APR24	mg/L	0.001	<0.001	ND	20	105	90	110	109	70	130
Iron (dissolved)	EMS0265-APR24	mg/L	0.007	<0.007	6	20	101	90	110	75	70	130
Potassium (dissolved)	EMS0265-APR24	mg/L	0.009	<0.009	2	20	95	90	110	91	70	130
Magnesium (dissolved)	EMS0265-APR24	mg/L	0.001	<0.001	1	20	95	90	110	93	70	130
Manganese (dissolved)	EMS0265-APR24	mg/L	0.00001	<0.00001	16	20	102	90	110	96	70	130
Molybdenum (dissolved)	EMS0265-APR24	mg/L	0.0004	<0.0004	ND	20	100	90	110	99	70	130
Sodium (dissolved)	EMS0265-APR24	mg/L	0.01	<0.01	5	20	99	90	110	96	70	130
Nickel (dissolved)	EMS0265-APR24	mg/L	0.0001	<0.0001	15	20	104	90	110	104	70	130
Lead (dissolved)	EMS0265-APR24	mg/L	0.00009	<0.00009	ND	20	106	90	110	101	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS (continued)

Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-[ENV]SPE-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Antimony (dissolved)	EMS0265-APR24	mg/L	0.0009	<0.0009	ND	20	110	90	110	117	70	130
Selenium (dissolved)	EMS0265-APR24	mg/L	0.00004	<0.00004	5	20	100	90	110	109	70	130
Silicon (dissolved)	EMS0265-APR24	mg/L	0.02	<0.02	1	20	102	90	110	NV	70	130
Tin (dissolved)	EMS0265-APR24	mg/L	0.00006	<0.00006	ND	20	96	90	110	NV	70	130
Strontium (dissolved)	EMS0265-APR24	mg/L	0.00008	<0.00008	2	20	100	90	110	82	70	130
Titanium (dissolved)	EMS0265-APR24	mg/L	0.0001	<0.0001	ND	20	97	90	110	NV	70	130
Thallium (dissolved)	EMS0265-APR24	mg/L	0.000005	<0.000005	0	20	105	90	110	99	70	130
Uranium (dissolved)	EMS0265-APR24	mg/L	0.000002	<0.000002	8	20	110	90	110	106	70	130
Vanadium (dissolved)	EMS0265-APR24	mg/L	0.00001	<0.00001	3	20	105	90	110	106	70	130
Zinc (dissolved)	EMS0265-APR24	mg/L	0.002	<0.002	ND	20	97	90	110	117	70	130

pH

Method: SM 4500 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
pH	EWL0646-APR24	No unit	0.05	NA	0		101			NA		
pH	EWL0648-APR24	No unit	0.05	NA	0		101			NA		

QC SUMMARY

Phenols by SFA

Method: SM 5530B-D | Internal ref.: ME-CA-[ENVISFA-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
4AAP-Phenolics	SKA0274-APR24	mg/L	0.002	<0.002	4	10	102	80	120	88	75	125

Phosphorus by SFA

Method: SM 4500-P J | Internal ref.: ME-CA-[ENVISFA-LAK-AN-003

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Phosphorus (total)	SKA0277-APR24	mg/L	0.03	<0.03	0	10	100	90	110	91	75	125
Phosphorus (total)	SKA0290-APR24	mg/L	0.03	<0.03	6	10	99	90	110	95	75	125

QC SUMMARY

Reactive Phosphorus by SFA

Method: SM 4500-P F | Internal ref.: ME-CA-[ENV]SFA-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Reactive Phosphorous (o-phosphate as P)	SKA0272-APR24	mg/L	0.03	<0.03	ND	10	102	90	110	85	75	125

Solids Analysis

Method: SM 2540C | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Dissolved Solids	EWL0624-APR24	mg/L	30	<30	ND	20	90	80	120	NA		
Total Dissolved Solids	EWL0626-APR24	mg/L	30	<30	3	20	96	80	120	NA		

QC SUMMARY

Suspended Solids

Method: SM 2540D | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Suspended Solids	EWL0651-APR24	mg/L	2	< 2	1	10	98	90	110	NA		
Total Suspended Solids	EWL0653-APR24	mg/L	2	< 2	1	10	97	90	110	NA		

Total Nitrogen

Method: SM 4500-N C/4500-NO3- F | Internal ref.: ME-CA-[ENV]SFA-LAK-AN-002

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Kjeldahl Nitrogen (N)	SKA0262-APR24	mg/L	0.05	<0.05	3	10	98	90	110	96	75	125
Total Kjeldahl Nitrogen (N)	SKA0273-APR24	mg/L	0.05	<0.05	ND	10	97	90	110	97	75	125

QC SUMMARY

Turbidity

Method: SM 2130 I Internal ref.: ME-CA-[ENV]EWL-LAK-AN-003

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Turbidity	EWL0623-APR24	NTU	0.10	< 0.10	0	10	100	90	110	NA		

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

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

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

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

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

RL: Reporting limit

RPD: Relative percent difference

AC: Acceptance criteria

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

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

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

LEGEND

FOOTNOTES

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

Results relate only to the sample tested.
Data reported represent the sample as submitted to SGS. Solid samples expressed on a dry weight basis.
"Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.
Analysis conducted on samples submitted pursuant to or as part of Reg. 153/04, are in accordance to the "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act and Excess Soil Quality" published by the Ministry and dated March 9, 2004 as amended.

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

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

This report supersedes all previous versions.

-- End of Analytical Report --

SGS

Request for Laboratory Services and CHAIN OF CUSTODY (General)

SGS Environmental Services - Lakefield: 185 Concession St., Lakefield, ON K0L 2H0 Phone: 705-652-2000 Toll Free: 877-747-7658 Fax: 705-652-6365 Web: www.ca.sgs.com {4}

SGS Environmental Services - London: 657 Consortium Court, London, ON, N6E 2S8 Phone: 519-672-4500 Toll Free: 877-848-8060 Fax: 519-672-0361 Web: www.ca.sgs.com {4}

Laboratory Information Section

Received Date (mm/dd/yyyy): APR 25 2024

LAB LIMS #: Apr 15762

Received Time (After Hours Only): __:__

Temperature Upon Receipt (°C): 3°X3

Billing & Reporting Information

Invoice/Receipt to {3}:

Company:	Pinchin
Attention:	Alana Valle
Address:	662 Falconbridge Rd, Unit 3 Sudbury, Ontario P3A 4S4
Email:	avalle@pinchin.com

Project Name/Number: 225335.008 Croft Landfill GW

P.O. #:

Quote #: 2023 544

Attached Parameter List: ☑ YES ☐ NO

Turnaround Time

Is *Rush Turnaround Required? ☐ YES ☒ NO

Specify:

* Rush TA Requests Require Lab Approval

Client Information/Report To:

Client Lab #:

Company Name:		Phone Number:	705.507.9479
Contact Name:		Fax Number:	
Address:		E-mail:	
Copy to:			

Sample Information

Sample Identifier	Date Sampled (mm/dd/yy)	Time Sampled	# of Bottles	Analysis Requested (please enter the analysis required below and check off which analysis applies to each sample)							
				Field Filtered	Field Temp (°C)	Field pH		GW Package			
BH1	04/24/24	8:00	11					X			
BH8			11					X			
BH9			11					X			
BH10			11					X			
BH11			11					X			
BH12			11					X			
BH13			11					X			
BH14			11					X			
GW DUP		12:30	11					X			

Sampled By {1}:	(Name) Katie Binsdi	(Signature)		Date: 04/24/24	(mm/dd/yy)
Relinquished by {2}:	(Name) Katie Binsdi	(Signature)		Date: 04/24/24	(mm/dd/yy)

Note: {1} Submission of samples to SGS is acknowledgement that you have been provided direction on sample collection/handling and transportation of samples. {2} Submission of samples to SGS is considered authorization for completion of work. Signatures may appear on this form or be retained on file in the contract, or in an alternative format (e.g. shipping documents). {3} Results may be sent by email to an unlimited number of addresses for no additional cost. Fax is available upon request. {4} Completion of work may require the subcontracting of samples between the London and Lakefield laboratories.

Revision #: 2.3
Date of Issue: 24 Jun. 2014

10:00

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FINAL REPORT

CA15563-OCT24 R

225335.008, Croft GW

Prepared for

Pinchin Ltd

FINAL REPORT

CA15563-OCT24 R

First Page

CLIENT DETAILS

Client	Pinchin Ltd
Address	662 Falconbridge Road, Unit 3, Sudbury Canada, P3A 4S4 Phone: 705-521-0560. Fax:
Contact	Alana Valle
Telephone	705-521-0560
Facsimile	
Email	avalle@Pinchin.com
Project	225335.008, Croft GW
Order Number	
Samples	Ground Water (8)

LABORATORY DETAILS

Project Specialist	Brad Moore Hon. B.Sc
Laboratory	SGS Canada Inc.
Address	185 Concession St., Lakefield ON, K0L 2H0
Telephone	705-652-2143
Facsimile	705-652-6365
Email	brad.moore@sgs.com
SGS Reference	CA15563-OCT24
Received	10/04/2024
Approved	10/22/2024
Report Number	CA15563-OCT24 R
Date Reported	10/22/2024

COMMENTS

Temperature of Sample upon Receipt: 9 degrees C

Raised RL for some nitrates due to SM

SIGNATORIES

Brad Moore Hon. B.Sc

TABLE OF CONTENTS

Client: Pinchin Ltd
Project: 225335.008, Croft GW
Project Manager: Alana Valle
Samplers: Olivia King + Katie Rinaldi

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

Parameter	Units	RL	L1	L2	Sample Number	7	8	9	10	11	12	13	14
					Sample Name	BH1	BH8	BH9	BH10	BH11	BH13	BH14	GW DUP
					Sample Matrix	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
					Sample Date	03/10/2024	03/10/2024	03/10/2024	03/10/2024	03/10/2024	03/10/2024	03/10/2024	03/10/2024
						Result	Result	Result	Result	Result	Result	Result	Result
Acid Rock Drainage													
pH Check <2	pH	0.05				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
General Chemistry													
Biochemical Oxygen Demand (BOD5)	mg/L	2				5	< 4↑	< 4↑	< 4↑	< 4↑	< 4↑	< 4↑	5
Prep BOD	Prep	no				45569	45569	45569	45569	45569	45569	45569	45569
Total Suspended Solids	mg/L	2				26	71	71	191	50	357	1200	42
Alkalinity	mg/L as CaCO3	2	500			93	24	210	456	43	47	81	112
Conductivity	uS/cm	2				453	68	510	2390	171	106	205	479
Total Dissolved Solids	mg/L	30	500			394	86	437	1470	166	103	140	366
Chemical Oxygen Demand	mg/L	8				55	< 8	68	43	49	15	< 8	57
Turbidity	NTU	0.10	5	1		8.5	26	60	2.2	55	15	120	7.9
Total Kjeldahl Nitrogen	as N mg/L	0.5				0.8	< 0.5	3.3	16.2	1.6	< 0.5	< 0.5	0.8
Ammonia+Ammonium (N)	as N mg/L	0.1				0.2	< 0.1	2.3	15.5	0.7	< 0.1	< 0.1	0.2
Total Reactive Phosphorous (o-phosphate as P)	mg/L	0.03				< 0.03	< 0.03	< 0.03	< 0.03	0.09	< 0.03	0.04	< 0.03
Dissolved Organic Carbon	mg/L	1	5			18	2	28	18	20	6	2	17

FINAL REPORT

CA15563-OCT24 R

Client: Pinchin Ltd
Project: 225335.008, Croft GW
Project Manager: Alana Valle
Samplers: Olivia King + Katie Rinaldi

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

					Sample Number	7	8	9	10	11	12	13	14
					Sample Name	BH1	BH8	BH9	BH10	BH11	BH13	BH14	GW DUP
					Sample Matrix	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
					Sample Date	03/10/2024	03/10/2024	03/10/2024	03/10/2024	03/10/2024	03/10/2024	03/10/2024	03/10/2024
Parameter		**Units**	**RL**	**L1**	**L2**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
Metals and Inorganics													
Phosphorus (total)		mg/L	0.03			< 0.03	0.04	< 0.03	< 0.03	0.33	0.16	0.83	< 0.03
Sulphate		mg/L	2	500		85	8	15	16	24	3	8	82
Nitrite (as N)	as N	mg/L	0.03		1	< 0.03	< 0.03	< 0.03	< 0.3↑	< 0.03	< 0.03	< 0.03	< 0.03
Nitrate (as N)	as N	mg/L	0.06		10	< 0.06	< 0.06	< 0.06	2.32	0.39	0.33	< 0.06	< 0.06
Hardness (dissolved)	mg/L as CaCO3		0.05	100		157	26.2	191	557	25.8	48.4	100	161
Silver (dissolved)		mg/L	0.00005			< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Aluminum (dissolved)		mg/L	0.001			0.175	0.050	0.135	0.027	0.270	0.173	0.017	0.184
Arsenic (dissolved)		mg/L	0.0002		0.01	0.0022	0.0016	0.0019	0.0003	0.0005	0.0004	0.0003	0.0024
Barium (dissolved)		mg/L	0.00008		1	0.176	0.0277	0.0846	0.295	0.0365	0.0365	0.0361	0.183
Beryllium (dissolved)		mg/L	0.000007			0.000063	0.000013	0.000030	0.000018	0.000035	0.000067	0.000025	0.000069
Bismuth (dissolved)		mg/L	0.00001			< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Boron (dissolved)		mg/L	0.002		5	0.134	0.015	0.626	1.10	0.384	0.057	0.116	0.143
Calcium (dissolved)		mg/L	0.01			44.9	5.98	63.9	177	8.03	16.1	32.2	45.6
Cadmium (dissolved)		mg/L	0.000003		0.005	0.000003	0.000038	0.000024	0.000070	0.000072	0.000052	< 0.000003	0.000004
Cobalt (dissolved)		mg/L	0.000004			0.0285	0.000533	0.0110	0.00298	0.000614	0.000176	0.00104	0.0291
Chromium (dissolved)		mg/L	0.00008		0.05	0.00149	0.00021	0.00193	0.00144	0.00112	0.00035	0.00027	0.00154
Copper (dissolved)		mg/L	0.001	1		< 0.001	0.006	0.001	0.008	0.005	0.010	0.002	< 0.001
Iron (dissolved)		mg/L	0.007	0.3		39.1	0.042	22.3	0.110	0.119	0.286	1.25	41.2
Potassium (dissolved)		mg/L	0.009			8.58	1.80	11.4	47.3	8.39	1.05	3.38	8.94
Magnesium (dissolved)		mg/L	0.001			10.9	2.74	7.71	27.6	1.39	2.00	4.79	11.5
Manganese (dissolved)		mg/L	0.00001	0.05		3.35	0.00832	2.58	1.86	0.190	0.171	0.673	3.45
Molybdenum (dissolved)		mg/L	0.0004			0.0007	< 0.0004	0.0018	0.0013	0.0010	< 0.0004	0.0007	0.0007

Client: Pinchin Ltd
Project: 225335.008, Croft GW
Project Manager: Alana Valle
Samplers: Olivia King + Katie Rinaldi

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

					Sample Number	7	8	9	10	11	12	13	14
					Sample Name	BH1	BH8	BH9	BH10	BH11	BH13	BH14	GW DUP
					Sample Matrix	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
					Sample Date	03/10/2024	03/10/2024	03/10/2024	03/10/2024	03/10/2024	03/10/2024	03/10/2024	03/10/2024
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
Metals and Inorganics (continued)													
Sodium (dissolved)	mg/L	0.01	200	20	12.8	2.33	31.8	214	19.8	2.81	9.44	13.4
Silicon (dissolved)	mg/L	0.02			7.02	4.46	4.42	5.35	1.45	3.71	9.40	7.38
Nickel (dissolved)	mg/L	0.0001			0.0029	0.0027	0.0024	0.0018	0.0011	0.0006	0.0002	0.0028
Lead (dissolved)	mg/L	0.00009		0.01	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009
Antimony (dissolved)	mg/L	0.0009		0.006	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009
Selenium (dissolved)	mg/L	0.00004		0.05	0.00057	0.00004	0.00029	0.00034	0.00034	0.00014	0.00005	0.00066
Tin (dissolved)	mg/L	0.00006			< 0.00006	< 0.00006	0.00008	0.00010	< 0.00006	0.00031	0.00006	< 0.00006
Strontium (dissolved)	mg/L	0.00008			0.227	0.0269	0.230	0.861	0.0254	0.0335	0.131	0.236
Thallium (dissolved)	mg/L	0.000005			0.000007	0.000011	0.000020	0.000089	0.000032	0.000017	< 0.000005	0.000007
Titanium (dissolved)	mg/L	0.0001			0.0076	0.0014	0.0024	0.0008	0.0022	0.0017	0.0005	0.0079
Uranium (dissolved)	mg/L	0.000002		0.02	0.00156	0.000162	0.000546	0.00434	0.000506	0.00434	0.000321	0.00171
Vanadium (dissolved)	mg/L	0.00001			0.00602	0.00021	0.00416	0.00054	0.00032	0.00037	0.00037	0.00619
Zinc (dissolved)	mg/L	0.002	5		< 0.002	0.013	0.005	0.003	< 0.002	0.005	< 0.002	< 0.002

Client: Pinchin Ltd
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Project Manager: Alana Valle
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MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

				Sample Number	7	8	9	10	11	12	13	14
				Sample Name	BH1	BH8	BH9	BH10	BH11	BH13	BH14	GW DUP
				Sample Matrix	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
				Sample Date	03/10/2024	03/10/2024	03/10/2024	03/10/2024	03/10/2024	03/10/2024	03/10/2024	03/10/2024
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
Other (ORP)												
pH	No unit	0.05	8.5		6.46	6.88	7.04	7.21	7.00	6.88	7.37	6.56
Chloride	mg/L	1	250		35	< 1	49	510	14	5	12	36
Phenols												
4AAP-Phenolics	mg/L	0.002			0.002	< 0.002	< 0.002	0.002	< 0.002	< 0.002	< 0.002	0.002

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03 L1	ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03 L2
BH1					
Turbidity	SM 2130	NTU	8.5	5	1
Hardness (dissolved)	SM 3030/EPA 200.7	mg/L as CaCO3	157	100	
Iron (dissolved)	SM 3030/EPA 200.8	mg/L	39.1	0.3	
Manganese (dissolved)	SM 3030/EPA 200.8	mg/L	3.35	0.05	
Dissolved Organic Carbon	SM 5310	mg/L	18	5	
BH8					
Turbidity	SM 2130	NTU	26	5	1
BH9					
Turbidity	SM 2130	NTU	60	5	1
Hardness (dissolved)	SM 3030/EPA 200.7	mg/L as CaCO3	191	100	
Iron (dissolved)	SM 3030/EPA 200.8	mg/L	22.3	0.3	
Manganese (dissolved)	SM 3030/EPA 200.8	mg/L	2.58	0.05	
Sodium (dissolved)	SM 3030/EPA 200.8	mg/L	31.8		20
Dissolved Organic Carbon	SM 5310	mg/L	28	5	
BH10					
Turbidity	SM 2130	NTU	2.2		1
Total Dissolved Solids	SM 2540C	mg/L	1470	500	
Hardness (dissolved)	SM 3030/EPA 200.7	mg/L as CaCO3	557	100	
Manganese (dissolved)	SM 3030/EPA 200.8	mg/L	1.86	0.05	
Sodium (dissolved)	SM 3030/EPA 200.8	mg/L	214	200	20
Dissolved Organic Carbon	SM 5310	mg/L	18	5	
Chloride	US EPA 325.2	mg/L	510	250	
BH11					
Turbidity	SM 2130	NTU	55	5	1
Manganese (dissolved)	SM 3030/EPA 200.8	mg/L	0.190	0.05	
Dissolved Organic Carbon	SM 5310	mg/L	20	5	
BH13					
Turbidity	SM 2130	NTU	15	5	1
Manganese (dissolved)	SM 3030/EPA 200.8	mg/L	0.171	0.05	
Dissolved Organic Carbon	SM 5310	mg/L	6	5	
BH14					
Turbidity	SM 2130	NTU	120	5	1
Iron (dissolved)	SM 3030/EPA 200.8	mg/L	1.25	0.3	
Manganese (dissolved)	SM 3030/EPA 200.8	mg/L	0.673	0.05	

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03 L1	ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03 L2
GW DUP					
Turbidity	SM 2130	NTU	7.9	5	1
Hardness (dissolved)	SM 3030/EPA 200.7	mg/L as CaCO3	161	100	
Iron (dissolved)	SM 3030/EPA 200.8	mg/L	41.2	0.3	
Manganese (dissolved)	SM 3030/EPA 200.8	mg/L	3.45	0.05	
Dissolved Organic Carbon	SM 5310	mg/L	17	5	

QC SUMMARY

Alkalinity

Method: SM 2320 I Internal ref.: ME-CA-IENVIEWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Alkalinity	EWL0132-OCT24	mg/L as CaCO3	2	< 2	0	20	98	80	120	NA		
Alkalinity	EWL0133-OCT24	mg/L as CaCO3	2	< 2	3	20	98	80	120	NA		

Ammonia by SFA

Method: SM 4500 I Internal ref.: ME-CA-IENVISFA-LAK-AN-007

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Ammonia+Ammonium (N)	SKA0067-OCT24	as N mg/L	0.1	<0.1	ND	10	100	90	110	100	75	125
Ammonia+Ammonium (N)	SKA0088-OCT24	as N mg/L	0.1	<0.1	ND	10	101	90	110	102	75	125

QC SUMMARY

Anions by discrete analyzer

Method: US EPA 325.2 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-026

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Chloride	DIO5004-OCT24	mg/L	1	<1	ND	20	97	80	120	102	75	125
Sulphate	DIO5004-OCT24	mg/L	2	<2	ND	20	106	80	120	104	75	125

Anions by IC

Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-[ENV]IC-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Nitrite (as N)	DIO0119-OCT24	mg/L	0.03	<0.03	ND	20	106	90	110	101	75	125
Nitrate (as N)	DIO0119-OCT24	mg/L	0.06	<0.06	ND	20	101	90	110	99	75	125
Nitrite (as N)	DIO0120-OCT24	mg/L	0.03	<0.03	NV	20	104	90	110	NV	75	125
Nitrate (as N)	DIO0120-OCT24	mg/L	0.06	<0.06	0	20	100	90	110	100	75	125
Nitrite (as N)	DIO0178-OCT24	mg/L	0.03	<0.03	12	20	102	90	110	105	75	125

QC SUMMARY

Biochemical Oxygen Demand

Method: SM 5210 I Internal ref.: ME-CA-[ENV]EWL-LAK-AN-007

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Biochemical Oxygen Demand (BOD5)	BOD0010-OCT24	mg/L	2	< 2	3	30	99	70	130	95	70	130

Carbon by SFA

Method: SM 5310 I Internal ref.: ME-CA-[ENV]SFA-LAK-AN-009

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Dissolved Organic Carbon	SKA0061-OCT24	mg/L	1	<1	ND	20	100	90	110	100	75	125
Dissolved Organic Carbon	SKA0073-OCT24	mg/L	1	<1	2	20	100	90	110	99	75	125

Chemical Oxygen Demand

Method: HACH 8000 I Internal ref.: ME-CA-[ENV]EWL-LAK-AN-009

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Chemical Oxygen Demand	EWL0170-OCT24	mg/L	8	<8	4	20	104	80	120	88	75	125

QC SUMMARY

Conductivity

Method: SM 2510 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Conductivity	EWL0132-OCT24	uS/cm	2	< 2	0	20	90	90	110	NA		
Conductivity	EWL0133-OCT24	uS/cm	2	< 2	1	20	99	90	110	NA		

QC SUMMARY

Metals in aqueous samples - ICP-MS

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Silver (dissolved)	EMS0061-OCT24	mg/L	0.00005	<0.00005	ND	20	93	90	110	86	70	130
Aluminum (dissolved)	EMS0061-OCT24	mg/L	0.001	<0.001	2	20	100	90	110	105	70	130
Arsenic (dissolved)	EMS0061-OCT24	mg/L	0.0002	<0.0002	ND	20	99	90	110	98	70	130
Barium (dissolved)	EMS0061-OCT24	mg/L	0.00008	<0.00008	2	20	101	90	110	97	70	130
Beryllium (dissolved)	EMS0061-OCT24	mg/L	0.000007	<0.000007	ND	20	96	90	110	77	70	130
Boron (dissolved)	EMS0061-OCT24	mg/L	0.002	<0.002	7	20	93	90	110	91	70	130
Bismuth (dissolved)	EMS0061-OCT24	mg/L	0.00001	<0.00001	ND	20	93	90	110	96	70	130
Calcium (dissolved)	EMS0061-OCT24	mg/L	0.01	<0.01	1	20	100	90	110	98	70	130
Cadmium (dissolved)	EMS0061-OCT24	mg/L	0.000003	<0.000003	ND	20	96	90	110	96	70	130
Cobalt (dissolved)	EMS0061-OCT24	mg/L	0.000004	<0.000004	13	20	97	90	110	97	70	130
Chromium (dissolved)	EMS0061-OCT24	mg/L	0.00008	<0.00008	13	20	97	90	110	110	70	130
Copper (dissolved)	EMS0061-OCT24	mg/L	0.001	<0.001	5	20	97	90	110	107	70	130
Iron (dissolved)	EMS0061-OCT24	mg/L	0.007	<0.007	0	20	104	90	110	100	70	130
Potassium (dissolved)	EMS0061-OCT24	mg/L	0.009	<0.009	5	20	102	90	110	92	70	130
Magnesium (dissolved)	EMS0061-OCT24	mg/L	0.001	<0.001	0	20	102	90	110	96	70	130
Manganese (dissolved)	EMS0061-OCT24	mg/L	0.00001	<0.00001	1	20	97	90	110	102	70	130
Molybdenum (dissolved)	EMS0061-OCT24	mg/L	0.0004	<0.0004	ND	20	99	90	110	103	70	130
Sodium (dissolved)	EMS0061-OCT24	mg/L	0.01	0.01	1	20	99	90	110	94	70	130
Nickel (dissolved)	EMS0061-OCT24	mg/L	0.0001	<0.0001	ND	20	99	90	110	101	70	130
Lead (dissolved)	EMS0061-OCT24	mg/L	0.00009	<0.00009	4	20	92	90	110	88	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS (continued)

Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-[ENV]SPE-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Antimony (dissolved)	EMS0061-OCT24	mg/L	0.0009	<0.0009	ND	20	103	90	110	73	70	130
Selenium (dissolved)	EMS0061-OCT24	mg/L	0.00004	<0.00004	13	20	94	90	110	101	70	130
Silicon (dissolved)	EMS0061-OCT24	mg/L	0.02	<0.02	7	20	102	90	110	NV	70	130
Tin (dissolved)	EMS0061-OCT24	mg/L	0.00006	<0.00006	8	20	101	90	110	NV	70	130
Strontium (dissolved)	EMS0061-OCT24	mg/L	0.00008	<0.00008	1	20	99	90	110	96	70	130
Titanium (dissolved)	EMS0061-OCT24	mg/L	0.0001	<0.0001	5	20	101	90	110	NV	70	130
Thallium (dissolved)	EMS0061-OCT24	mg/L	0.000005	<0.000005	ND	20	93	90	110	96	70	130
Uranium (dissolved)	EMS0061-OCT24	mg/L	0.000002	<0.000002	0	20	94	90	110	70	70	130
Vanadium (dissolved)	EMS0061-OCT24	mg/L	0.00001	<0.00001	5	20	100	90	110	103	70	130
Zinc (dissolved)	EMS0061-OCT24	mg/L	0.002	<0.002	1	20	96	90	110	102	70	130

pH

Method: SM 4500 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
pH	EWL0132-OCT24	No unit	0.05	NA	1		100			NA		
pH	EWL0133-OCT24	No unit	0.05	NA	0		100			NA		

QC SUMMARY

Phenols by SFA

Method: SM 5530B-D | Internal ref.: ME-CA-[ENVISFA-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
4AAP-Phenolics	SKA0064-OCT24	mg/L	0.002	<0.002	ND	10	101	80	120	99	75	125
4AAP-Phenolics	SKA0076-OCT24	mg/L	0.002	<0.002	ND	10	103	80	120	107	75	125

Phosphorus by SFA

Method: SM 4500-P J | Internal ref.: ME-CA-[ENVISFA-LAK-AN-003

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Phosphorus (total)	SKA0068-OCT24	mg/L	0.03	<0.03	5	10	96	90	110	91	75	125

QC SUMMARY

Reactive Phosphorus by SFA

Method: SM 4500-P F | Internal ref.: ME-CA-[ENV]SFA-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Reactive Phosphorous (o-phosphate as P)	SKA0062-OCT24	mg/L	0.03	<0.03	ND	10	98	90	110	79	75	125

Solids Analysis

Method: SM 2540C | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Dissolved Solids	EWL0115-OCT24	mg/L	30	<30	0	20	98	80	120	NA		

QC SUMMARY

Suspended Solids

Method: SM 2540D | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Suspended Solids	EWL0166-OCT24	mg/L	2	< 2	0	10	100	90	110	NA		
Total Suspended Solids	EWL0169-OCT24	mg/L	2	< 2	2	10	96	90	110	NA		

Total Nitrogen

Method: SM 4500-N C/4500-NO3- F | Internal ref.: ME-CA-[ENV]SFA-LAK-AN-002

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Kjeldahl Nitrogen	SKA0074-OCT24	as N mg/L	0.5	<0.5	ND	10	102	90	110	NV	75	125

Turbidity

Method: SM 2130 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-003

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Turbidity	EWL0116-OCT24	NTU	0.10	< 0.10	0	10	100	90	110	NA		

QC SUMMARY

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

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

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

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

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

RL: Reporting limit

RPD: Relative percent difference

AC: Acceptance criteria

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

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

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

LEGEND

FOOTNOTES

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

Results relate only to the sample tested.
Data reported represent the sample as submitted to SGS. Solid samples expressed on a dry weight basis.
"Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.
Analysis conducted on samples submitted pursuant to or as part of Reg. 153/04, are in accordance to the "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act and Excess Soil Quality" published by the Ministry and dated March 9, 2004 as amended.

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

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

This report supersedes all previous versions.

-- End of Analytical Report --

SGS

Request for Laboratory Services and CHAIN OF CUSTODY (General)

SGS Environmental Services - Lakefield: 185 Concession St., Lakefield, ON K0L 2H0 Phone: 705-652-2000 Toll Free: 877-747-7658 Fax: 705-652-6365 Web: www.ca.sgs.com {4}

SGS Environmental Services - London: 657 Consortium Court, London, ON, N6E 2S8 Phone: 519-672-4500 Toll Free: 877-848-8060 Fax: 519-672-0361 Web: www.ca.sgs.com {4}

Laboratory Information Section

Received Date (mm/dd/yyyy): OCT 04 2024 | LAB LIMS #: CA15563 Oct 24

Received Time (After Hours Only): __:__ | Temperature Upon Receipt (°C): 10.7.9

Billing & Reporting Information

Invoice/Receipt to {3}:

Company: Pinchin
Attention: Alana Valle
Address: 662 Falconbridge Rd, Unit 3, Sudbury, Ontario, P3A 4S4
Email: avalle@pinchin.com

Quote #: 2023 544

Attached Parameter List: ☒ YES ☐ NO

Turnaround Time

Is *Rush Turnaround Time Required? ☐ YES ☒ NO

Specify:

* Rush TA Requests Require Lab Approval

Project Name/Number: 225335.008 Croft Landfill GW | P.O. #:

Client Information/Report To: | Client Lab #:

Company Name: Pinchin | Phone Number: 705.507.9479

Contact Name: Alana Valle | Fax Number:

Address: 662 Falconbridge Rd Unit 3 Sudbury, ON | E-mail: avalle@pinchin.com

Copy to:

Sample Information

Sample Identifier	Date Sampled (mm/dd/yy)	Time Sampled	# of Bottles	Analysis Requested (please enter the analysis required below and check off which analysis applies to each sample)							
				Field Filtered	Field Temp (°C)	Field pH		GW Package			
BH1	10/03/24	8:45-11:00	11					X			
BH8	10/02/24	4:30	11					X			
BH9	↓	5:45	11					X			
BH10	10/03/24	8:45	11					X			
BH11	↓	11:00	11					X			
~~BH12~~								~~X~~			
BH13	10/03/24	8:45	11					X			
BH14	↓	↓	11					X			
GW DUP		11:00	11					X			

Sampled By {1}: (Name) Olivia King + Katie Rinaldi (Signature) [signature] Date: 10/03/24 (mm/dd/yy)

Relinquished by {2}: (Name) Olivia King (Signature) [signature] Date: 10/03/24 (mm/dd/yy)

Note: {1} Submission of samples to SGS is acknowledgement that you have been provided direction on sample collection/handling and transportation of samples. {2} Submission of samples to SGS is considered authorization for completion of work. Signatures may appear on this form or be retained on file in the contract, or in an alternative format (e.g. shipping documents). {3} Results may be sent by email to an unlimited number of addresses for no additional cost. Fax is available upon request. {4} Completion of work may require the subcontracting of samples between the London and Lakefield laboratories.

Revision #: 2.3
Date of Issue: 24 Jun. 2014

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RTN 10:30

FINAL REPORT

CA15056-OCT24 R

225335.008, Croft Landfill SW

Prepared for

Pinchin Ltd

FINAL REPORT

CA15056-OCT24 R

First Page

CLIENT DETAILS

Client	Pinchin Ltd
Address	662 Falconbridge Road, Unit 3, Sudbury Canada, P3A 4S4 Phone: 705-521-0560. Fax:
Contact	Alana Valle
Telephone	705-521-0560
Facsimile	
Email	avalle@Pinchin.com
Project	225335.008, Croft Landfill SW
Order Number	
Samples	Surface Water (2)

LABORATORY DETAILS

Project Specialist	Brad Moore Hon. B.Sc
Laboratory	SGS Canada Inc.
Address	185 Concession St., Lakefield ON, K0L 2H0
Telephone	705-652-2143
Facsimile	705-652-6365
Email	brad.moore@sgs.com
SGS Reference	CA15056-OCT24
Received	10/04/2024
Approved	10/21/2024
Report Number	CA15056-OCT24 R
Date Reported	10/21/2024

COMMENTS

Temperature of Sample upon Receipt: 7 degrees C

SIGNATORIES

Brad Moore Hon. B.Sc

TABLE OF CONTENTS

Client: Pinchin Ltd
Project: 225335.008, Croft Landfill SW
Project Manager: Alana Valle
Samplers: OK +KR

MATRIX: WATER

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

Sample Number	6	7
Sample Name	SW2	SW DUP
Sample Matrix	Surface Water	Surface Water
Sample Date	02/10/2024	02/10/2024

Parameter	Units	RL	L1	Result	Result
General Chemistry					
Biochemical Oxygen Demand (BOD5)	mg/L	2		< 4↑	< 4↑
Prep BOD	Prep	no		45569	45569
Total Suspended Solids	mg/L	2		3	< 2
Alkalinity	mg/L as CaCO3	2		6	6
Conductivity	uS/cm	2		26	25
Total Dissolved Solids	mg/L	30		31	31
Chemical Oxygen Demand	mg/L	8		20	24
Colour	TCU	3		55	54
Total Kjeldahl Nitrogen	as N mg/L	0.5		< 0.5	< 0.5
Ammonia+Ammonium (N)	as N mg/L	0.1		< 0.1	< 0.1
Total Reactive Phosphorous (o-phosphate as P)	mg/L	0.03		< 0.03	< 0.03
Dissolved Organic Carbon	mg/L	1		8	7
Metals and Inorganics					
Sulphate	mg/L	2		< 2	< 2
Nitrite (as N)	as N mg/L	0.03		< 0.03	< 0.03
Nitrate (as N)	as N mg/L	0.06		< 0.06	< 0.06
Hardness	mg/L as CaCO3	0.05		8.6	8.4
Silver (total)	mg/L	0.00005	0.0001	< 0.00005	< 0.00005
Aluminum (0.2µm)	mg/L	0.001	0.075	0.044	0.047
Arsenic (total)	mg/L	0.0002	0.005	0.0003	0.0003
Barium (total)	mg/L	0.00008		0.00941	0.00898

Client: Pinchin Ltd
Project: 225335.008, Croft Landfill SW
Project Manager: Alana Valle
Samplers: OK +KR

MATRIX: WATER

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

Sample Number	6	7
Sample Name	SW2	SW DUP
Sample Matrix	Surface Water	Surface Water
Sample Date	02/10/2024	02/10/2024

Parameter	Units	RL	L1	Result	Result
Metals and Inorganics (continued)					
Beryllium (total)	mg/L	0.000007	0.011	0.000016	0.000012
Bismuth (total)	mg/L	0.00001		< 0.00001	< 0.00001
Boron (total)	mg/L	0.002	0.2	0.010	0.010
Calcium (total)	mg/L	0.01		2.56	2.50
Cadmium (total)	mg/L	0.000003	0.0001	0.000003	0.000004
Cobalt (total)	mg/L	0.000004	0.0009	0.000225	0.000209
Chromium (total)	mg/L	0.00008	0.1	0.00035	0.00036
Copper (total)	mg/L	0.001	0.001	< 0.001	< 0.001
Iron (total)	mg/L	0.007	0.3	0.895	0.758
Potassium (total)	mg/L	0.009		0.377	0.399
Magnesium (total)	mg/L	0.001		0.536	0.536
Manganese (total)	mg/L	0.00001		0.0592	0.0547
Molybdenum (total)	mg/L	0.0004	0.04	< 0.0004	< 0.0004
Sodium (total)	mg/L	0.01		1.10	1.13
Nickel (total)	mg/L	0.0001	0.025	0.0006	0.0005
Lead (total)	mg/L	0.00009	0.005	0.00016	0.00016
Phosphorus (total)	mg/L	0.003	0.01	0.013	0.012
Antimony (total)	mg/L	0.0009	0.02	< 0.0009	< 0.0009
Selenium (total)	mg/L	0.00004	0.1	0.00005	0.00007
Silicon (total)	mg/L	0.02		0.50	0.50
Tin (total)	mg/L	0.00006		0.00010	< 0.00006
Strontium (total)	mg/L	0.00008		0.0178	0.0179

Client: Pinchin Ltd
Project: 225335.008, Croft Landfill SW
Project Manager: Alana Valle
Samplers: OK +KR

MATRIX: WATER

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

Sample Number	6	7
Sample Name	SW2	SW DUP
Sample Matrix	Surface Water	Surface Water
Sample Date	02/10/2024	02/10/2024

Parameter	Units	RL	L1	Result	Result
Metals and Inorganics (continued)					
Titanium (total)	mg/L	0.0001		0.0010	0.0009
Uranium (total)	mg/L	0.000002	0.005	0.000025	0.000022
Vanadium (total)	mg/L	0.00001	0.006	0.00033	0.00027
Zinc (total)	mg/L	0.002	0.02	0.003	0.004
Other (ORP)					
pH	No unit	0.05	8.6	6.69	6.81
Chloride	mg/L	1		1	< 1
Phenols					
4AAP-Phenolics	mg/L	0.001	0.001	< 0.001	< 0.001

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	PWQO_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E L1
SW2				
Iron	SM 3030/EPA 200.8	mg/L	0.895	0.3
Phosphorus	SM 3030/EPA 200.8	mg/L	0.013	0.01
SW DUP				
Iron	SM 3030/EPA 200.8	mg/L	0.758	0.3
Phosphorus	SM 3030/EPA 200.8	mg/L	0.012	0.01

QC SUMMARY

Alkalinity

Method: SM 2320 I Internal ref.: ME-CA-IENVIEWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Alkalinity	EWL0132-OCT24	mg/L as CaCO3	2	< 2	0	20	98	80	120	NA		
Alkalinity	EWL0133-OCT24	mg/L as CaCO3	2	< 2	3	20	98	80	120	NA		

Ammonia by SFA

Method: SM 4500 I Internal ref.: ME-CA-IENVISFA-LAK-AN-007

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Ammonia+Ammonium (N)	SKA0067-OCT24	as N mg/L	0.1	<0.1	ND	10	100	90	110	100	75	125

QC SUMMARY

Anions by discrete analyzer

Method: US EPA 325.2 | Internal ref.: ME-CA-[ENVIEWL-LAK-AN-026

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Chloride	DIO5004-OCT24	mg/L	1	<1	ND	20	97	80	120	102	75	125
Sulphate	DIO5004-OCT24	mg/L	2	<2	ND	20	106	80	120	104	75	125

Anions by IC

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Nitrite (as N)	DIO0119-OCT24	mg/L	0.03	<0.03	ND	20	106	90	110	101	75	125
Nitrate (as N)	DIO0119-OCT24	mg/L	0.06	<0.06	ND	20	101	90	110	99	75	125

QC SUMMARY

Biochemical Oxygen Demand

Method: SM 5210 I Internal ref.: ME-CA-[ENV]EWL-LAK-AN-007

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Biochemical Oxygen Demand (BOD5)	BOD0010-OCT24	mg/L	2	< 2	3	30	99	70	130	95	70	130

Carbon by SFA

Method: SM 5310 I Internal ref.: ME-CA-[ENV]SFA-LAK-AN-009

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Dissolved Organic Carbon	SKA0061-OCT24	mg/L	1	<1	ND	20	100	90	110	100	75	125
Dissolved Organic Carbon	SKA0073-OCT24	mg/L	1	<1	2	20	100	90	110	99	75	125

Chemical Oxygen Demand

Method: HACH 8000 I Internal ref.: ME-CA-[ENV]EWL-LAK-AN-009

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Chemical Oxygen Demand	EWL0170-OCT24	mg/L	8	<8	4	20	104	80	120	88	75	125

QC SUMMARY

Colour

Method: SM 2120 I Internal ref.: ME-CA-[ENV]EWL-LAK-AN-002

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Colour	EWL0145-OCT24	TCU	3	< 3	0	10	110	80	120	NA		

Conductivity

Method: SM 2510 I Internal ref.: ME-CA-[ENV]EWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Conductivity	EWL0132-OCT24	uS/cm	2	< 2	0	20	90	90	110	NA		
Conductivity	EWL0133-OCT24	uS/cm	2	< 2	1	20	99	90	110	NA		

QC SUMMARY

Metals in aqueous samples - ICP-MS

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Silver (total)	EMS0067-OCT24	mg/L	0.00005	<0.00005	ND	20	101	90	110	96	70	130
Aluminum (0.2µm)	EMS0067-OCT24	mg/L	0.001	<0.001	3	20	103	90	110	120	70	130
Arsenic (total)	EMS0067-OCT24	mg/L	0.0002	<0.0002	ND	20	100	90	110	101	70	130
Barium (total)	EMS0067-OCT24	mg/L	0.00008	<0.00008	2	20	100	90	110	100	70	130
Beryllium (total)	EMS0067-OCT24	mg/L	0.000007	<0.000007	ND	20	101	90	110	96	70	130
Boron (total)	EMS0067-OCT24	mg/L	0.002	<0.002	1	20	98	90	110	96	70	130
Bismuth (total)	EMS0067-OCT24	mg/L	0.00001	<0.00001	9	20	98	90	110	102	70	130
Calcium (total)	EMS0067-OCT24	mg/L	0.01	<0.01	3	20	100	90	110	104	70	130
Cadmium (total)	EMS0067-OCT24	mg/L	0.000003	<0.000003	15	20	100	90	110	99	70	130
Cobalt (total)	EMS0067-OCT24	mg/L	0.000004	<0.000004	13	20	96	90	110	95	70	130
Chromium (total)	EMS0067-OCT24	mg/L	0.00008	<0.00008	15	20	101	90	110	119	70	130
Copper (total)	EMS0067-OCT24	mg/L	0.001	<0.001	ND	20	102	90	110	109	70	130
Iron (total)	EMS0067-OCT24	mg/L	0.007	<0.007	0	20	104	90	110	100	70	130
Potassium (total)	EMS0067-OCT24	mg/L	0.009	<0.009	16	20	102	90	110	99	70	130
Magnesium (total)	EMS0067-OCT24	mg/L	0.001	<0.001	2	20	102	90	110	98	70	130
Manganese (total)	EMS0067-OCT24	mg/L	0.00001	<0.00001	5	20	93	90	110	100	70	130
Molybdenum (total)	EMS0067-OCT24	mg/L	0.0004	<0.0004	ND	20	99	90	110	102	70	130
Sodium (total)	EMS0067-OCT24	mg/L	0.01	0.01	ND	20	99	90	110	93	70	130
Nickel (total)	EMS0067-OCT24	mg/L	0.0001	<0.0001	11	20	100	90	110	102	70	130
Lead (total)	EMS0067-OCT24	mg/L	0.00009	<0.00009	0	20	97	90	110	107	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS (continued)

Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-[ENV]SPE-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Phosphorus (total)	EMS0067-OCT24	mg/L	0.003	<0.003	0	20	101	90	110	NV	70	130
Antimony (total)	EMS0067-OCT24	mg/L	0.0009	<0.0009	ND	20	103	90	110	109	70	130
Selenium (total)	EMS0067-OCT24	mg/L	0.00004	<0.00004	15	20	109	90	110	114	70	130
Silicon (total)	EMS0067-OCT24	mg/L	0.02	<0.02	4	20	102	90	110	NV	70	130
Tin (total)	EMS0067-OCT24	mg/L	0.00006	<0.00006	ND	20	101	90	110	NV	70	130
Strontium (total)	EMS0067-OCT24	mg/L	0.00008	<0.00008	0	20	100	90	110	103	70	130
Titanium (total)	EMS0067-OCT24	mg/L	0.0001	<0.0001	7	20	101	90	110	NV	70	130
Uranium (total)	EMS0067-OCT24	mg/L	0.000002	<0.000002	2	20	99	90	110	102	70	130
Vanadium (total)	EMS0067-OCT24	mg/L	0.00001	<0.00001	6	20	101	90	110	95	70	130
Zinc (total)	EMS0067-OCT24	mg/L	0.002	<0.002	1	20	101	90	110	108	70	130

pH

Method: SM 4500 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
pH	EWL0132-OCT24	No unit	0.05	NA	1		100			NA		
pH	EWL0133-OCT24	No unit	0.05	NA	0		100			NA		

QC SUMMARY

Phenols by SFA

Method: SM 5530B-D | Internal ref.: ME-CA-IENVISFA-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
4AAP-Phenolics	SKA0064-OCT24	mg/L	0.001	<0.001	ND	10	101	80	120	99	75	125

Reactive Phosphorus by SFA

Method: SM 4500-P F | Internal ref.: ME-CA-IENVISFA-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Reactive Phosphorous (o-phosphate as P)	SKA0062-OCT24	mg/L	0.03	<0.03	ND	10	98	90	110	79	75	125

Solids Analysis

Method: SM 2540C | Internal ref.: ME-CA-IENVIEWL-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Dissolved Solids	EWL0150-OCT24	mg/L	30	<30	0	20	99	80	120	NA		

QC SUMMARY

Suspended Solids

Method: SM 2540D | Internal ref.: ME-CA-[ENVIEWL-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Suspended Solids	EWL0166-OCT24	mg/L	2	< 2	0	10	100	90	110	NA		

Total Nitrogen

Method: SM 4500-N C/4500-NO3- F | Internal ref.: ME-CA-[ENVISFA-LAK-AN-002

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Kjeldahl Nitrogen	SKA0074-OCT24	as N mg/L	0.5	<0.5	ND	10	102	90	110	NV	75	125

QC SUMMARY

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

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

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

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

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

RL: Reporting limit

RPD: Relative percent difference

AC: Acceptance criteria

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

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

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

LEGEND

FOOTNOTES

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

Results relate only to the sample tested.
Data reported represent the sample as submitted to SGS. Solid samples expressed on a dry weight basis.
"Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.
Analysis conducted on samples submitted pursuant to or as part of Reg. 153/04, are in accordance to the "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act and Excess Soil Quality" published by the Ministry and dated March 9, 2004 as amended.

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

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

This report supersedes all previous versions.

-- End of Analytical Report --

SGS

Request for Laboratory Services and CHAIN OF CUSTODY (General)

SGS Environmental Services - Lakefield: 185 Concession St., Lakefield, ON K0L 2H0 Phone: 705-652-2000 Toll Free: 877-747-7658 Fax: 705-652-6365 Web: www.ca.sgs.com {4}

SGS Environmental Services - London: 657 Consortium Court, London, ON, N6E 2S8 Phone: 519-672-4500 Toll Free: 877-848-8060 Fax: 519-672-0361 Web: www.ca.sgs.com {4}

Laboratory Information Section

Received Date (mm/dd/yyyy): ~~OCT 04 2024~~	LAB LIMS #: CA15056-OCT24 93
Received Time (After Hours Only): __:__	Temperature Upon Receipt (°C): 7 x 3

Billing & Reporting Information

Invoice/Receipt to {3}:	
Company:	Pinchin
Attention:	Alana Valle
Address:	662 Falconbridge Rd, Unit 3 Sudbury, Ontario P3A 4S4
Email:	avalle@pinchin.com

Quote #: 2023 544

Attached Parameter List: ☑ YES ☐ NO

Turnaround Time

Is *Rush Turnaround Time Required? ☐ YES ☒ NO

Specify:

* Rush TA Requests Require Lab Approval

Project Name/Number:	225335.008-Croft Landfill SW	P.O. #:	

Client Information/Report To:

Company Name:	Pinchin	**Phone Number:**	705.507.9479
Contact Name:	Alana Valle	**Fax Number:**	
Address:	662 Falconbridge Road, Unit 3	**E-mail:**	avalle@pinchin.com
Copy to:			

Client Lab #:

Sample Information

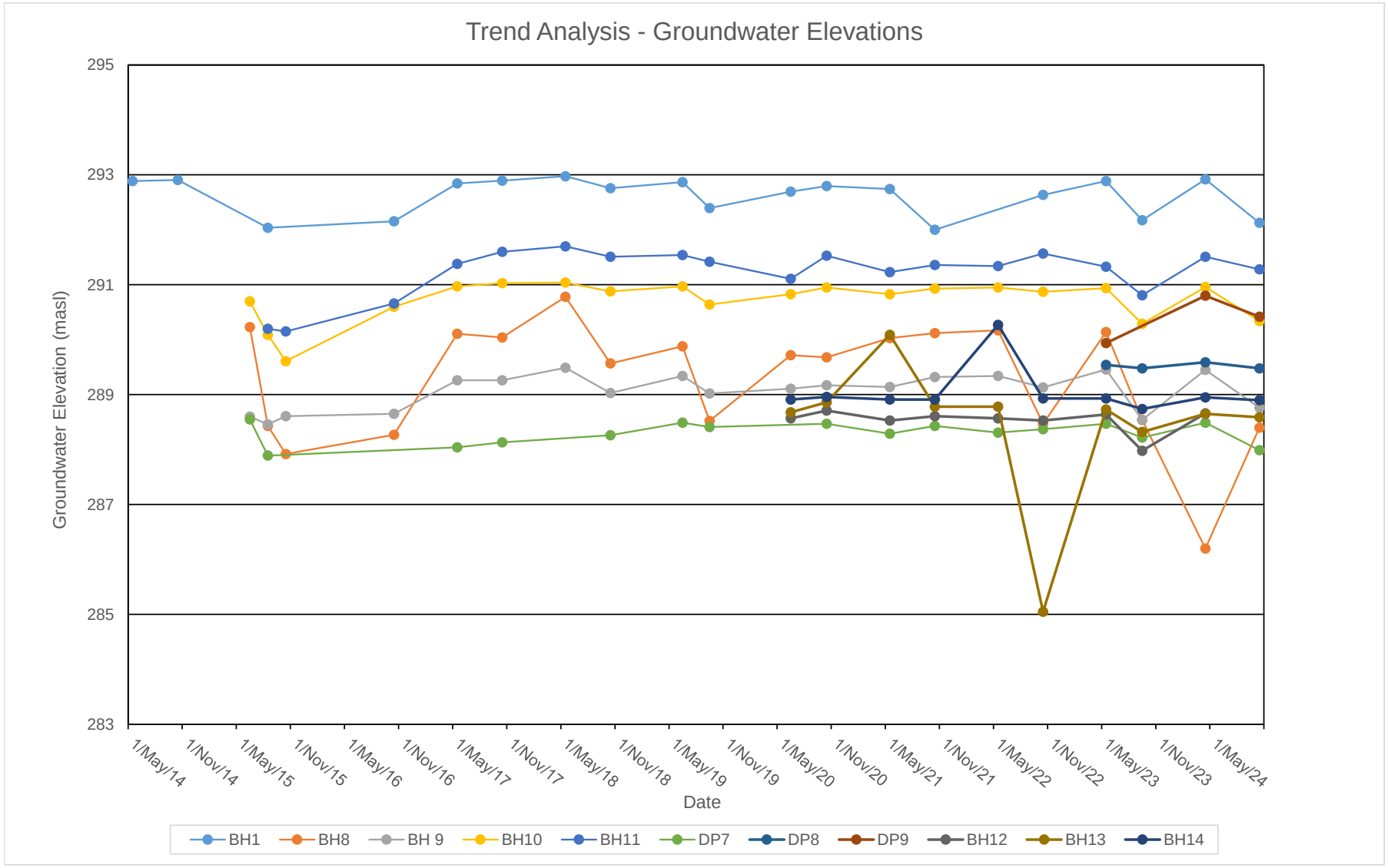
Sample Identifier	Date Sampled (mm/dd/yy)	Time Sampled	# of Bottles	Analysis Requested (please enter the analysis required below and check off which analysis applies to each sample)							
				Field Filtered	Field Temp (°C)	Field pH		SW Package			
~~SW1~~								X			
SW2	10/02/24	4:30	11	N	20.6	6.08		X			
~~SW3~~								X			
SW DUP	10/02/24	4:30	11	N	20.6	6.08		X			

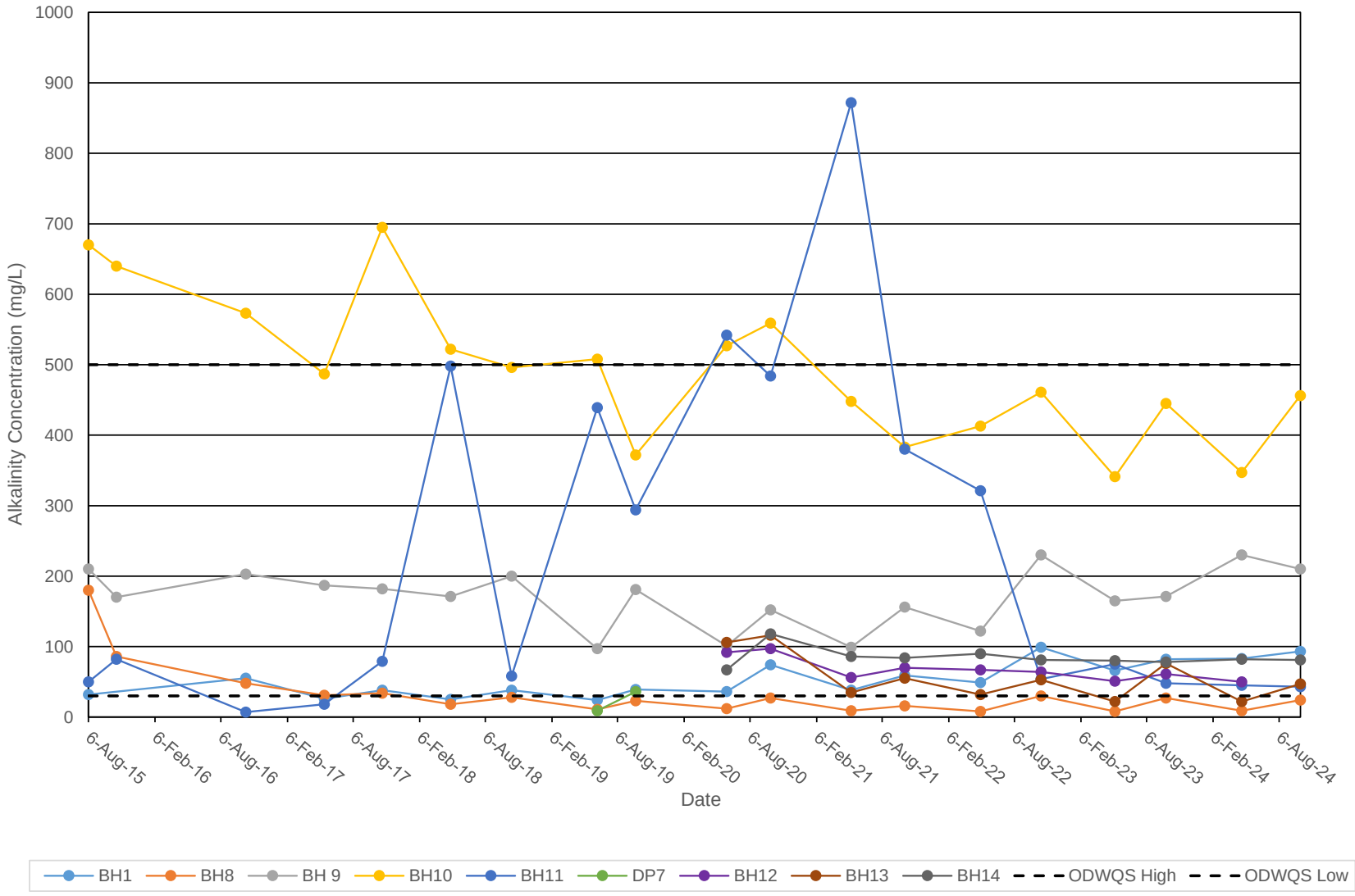
Sampled By {1}:	(Name) OH + MB	(Signature)		Date: 10/02/24	(mm/dd/yy)
Relinquished by {2}:	(Name) Katie Rinaldi	(Signature)		Date: 10/03/24	(mm/dd/yy)

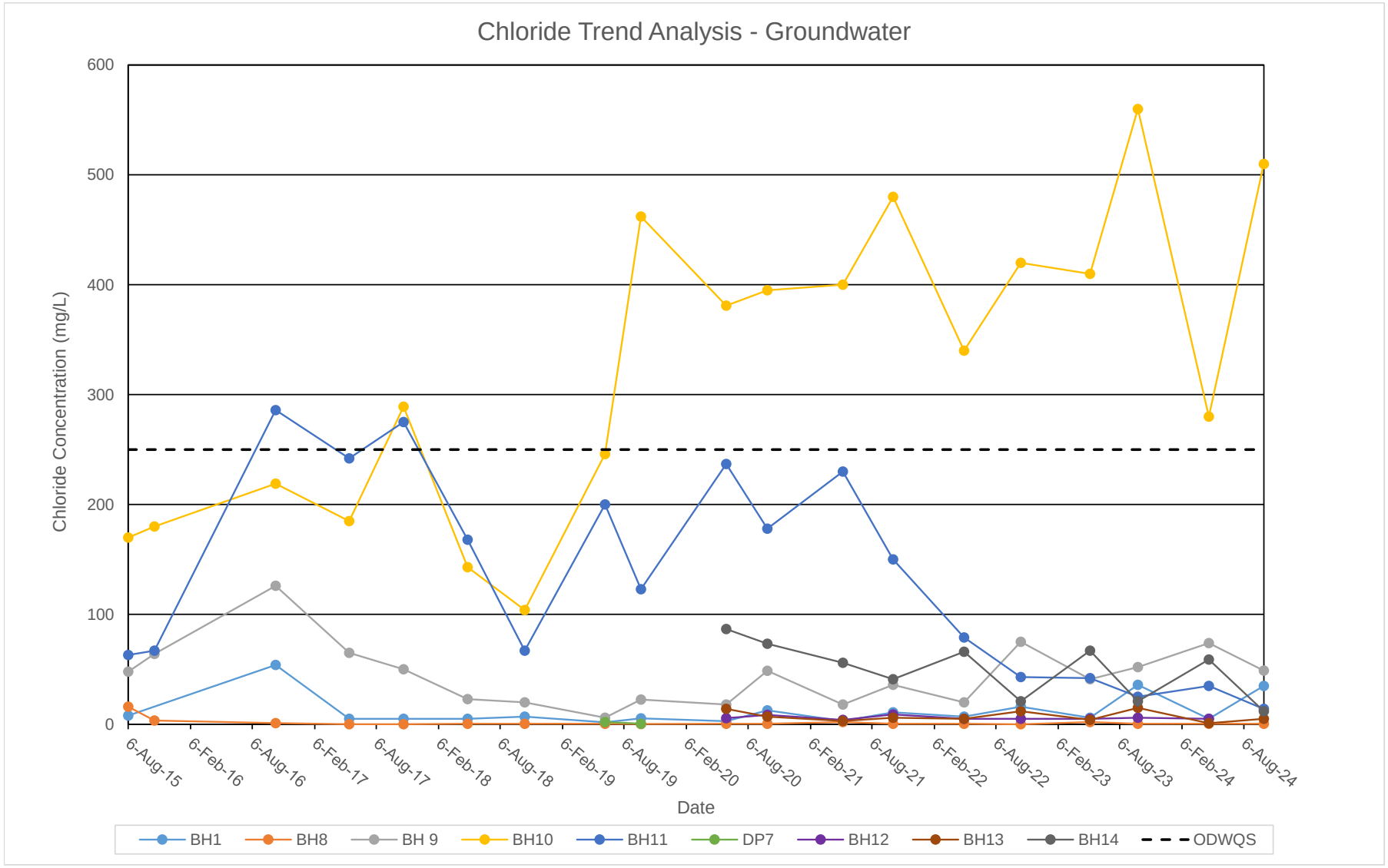
Note: {1} Submission of samples to SGS is acknowledgement that you have been provided direction on sample collection/handling and transportation of samples. {2} Submission of samples to SGS is considered authorization for completion of work. Signatures may appear on this form or be retained on file in the contract, or in an alternative format (e.g. shipping documents). {3} Results may be sent by email to an unlimited number of addresses for no additional cost. Fax is available upon request. {4} Completion of work may require the subcontracting of samples between the London and Lakefield laboratories.

Rtn 334941771191 93 10:30

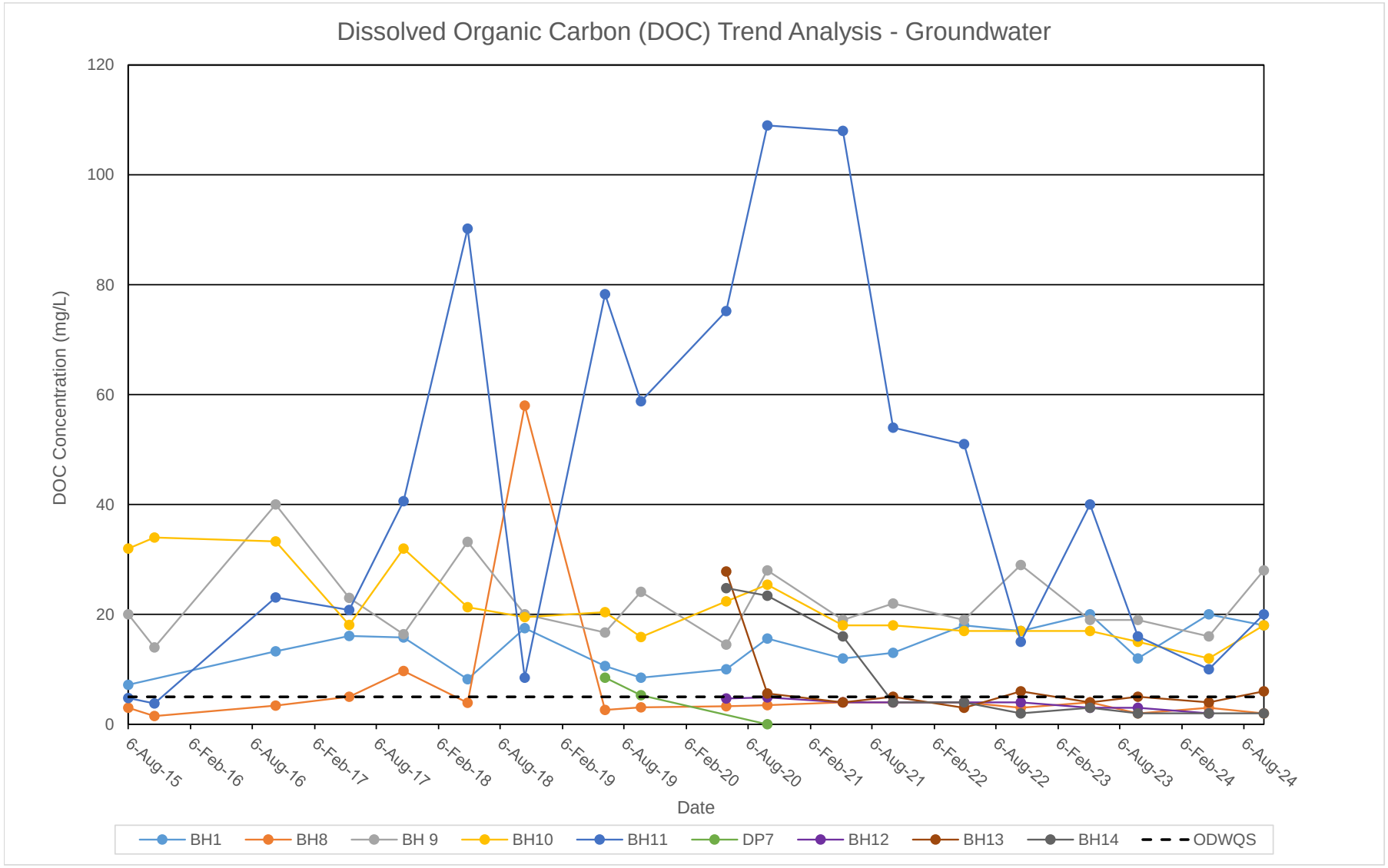
APPENDIX VII
Groundwater Trend Analysis


Trend Analysis - Groundwater Elevations
Groundwater Elevation (masl)
295
293
291
289
287
285
283
1/May/14
1/Nov/14
1/May/15
1/Nov/15
1/May/16
1/Nov/16
1/May/17
1/Nov/17
1/May/18
1/Nov/18
1/May/19
1/Nov/19
1/May/20
1/Nov/20
1/May/21
1/Nov/21
1/May/22
1/Nov/22
1/May/23
1/Nov/23
1/May/24
Date
BH1
BH8
BH 9
BH10
BH11
DP7
DP8
DP9
BH12
BH13
BH14


Alkalintiy Trend Analysis - Groundwater
Alkalinity Concentration (mg/L)
1000
900
800
700
600
500
400
300
200
100
0
6-Aug-15
6-Feb-16
6-Aug-16
6-Feb-17
6-Aug-17
6-Feb-18
6-Aug-18
6-Feb-19
6-Aug-19
6-Feb-20
6-Aug-20
6-Feb-21
6-Aug-21
6-Feb-22
6-Aug-22
6-Feb-23
6-Aug-23
6-Feb-24
6-Aug-24
Date
BH1
BH8
BH 9
BH10
BH11
DP7
BH12
BH13
BH14
ODWQS High
ODWQS Low



Pinchin File Number: 225335.008



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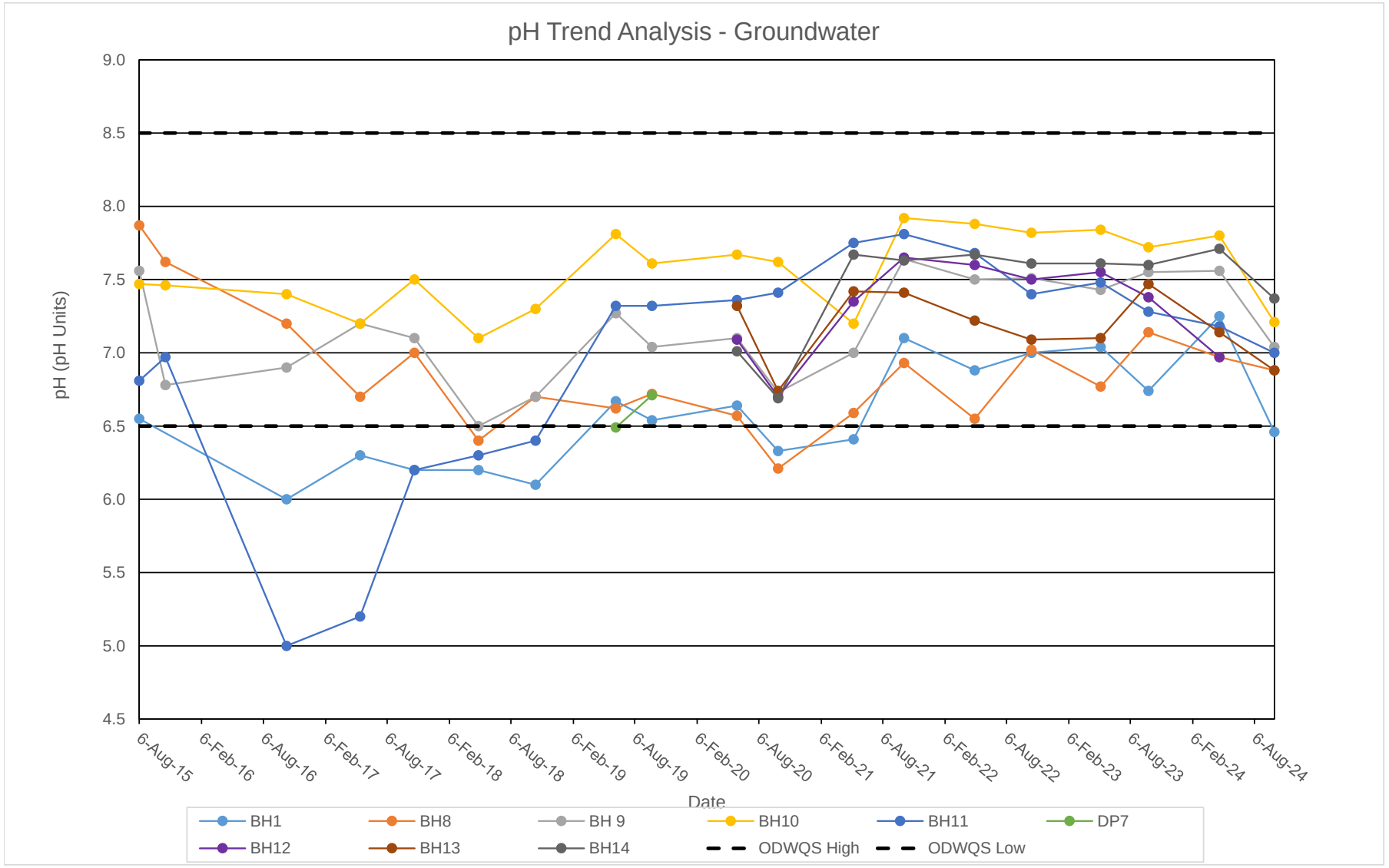
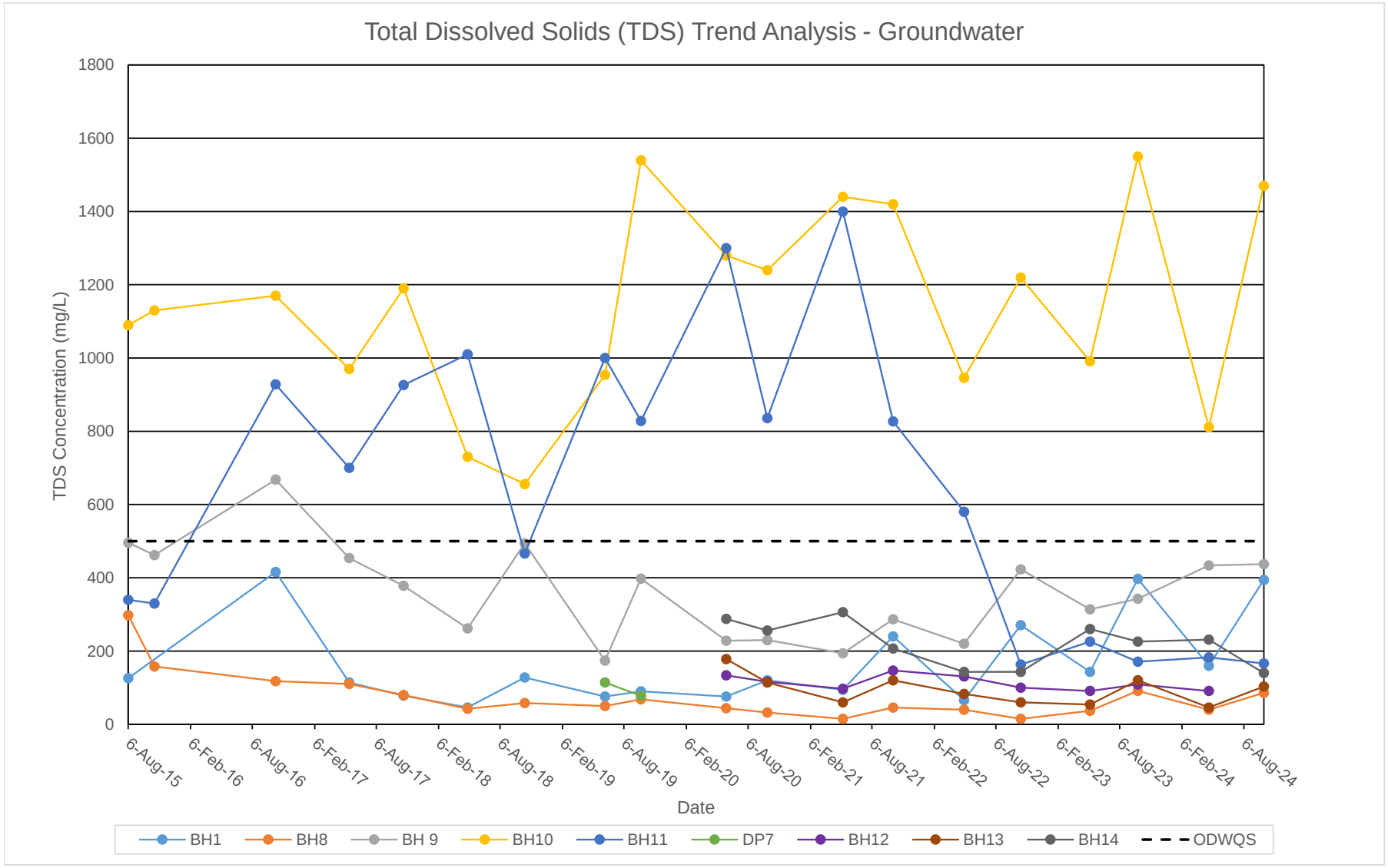

pH Trend Analysis - Groundwater
pH (pH Units)
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
6-Aug-15
6-Feb-16
6-Aug-16
6-Feb-17
6-Aug-17
6-Feb-18
6-Aug-18
6-Feb-19
6-Aug-19
6-Feb-20
6-Aug-20
6-Feb-21
6-Aug-21
6-Feb-22
6-Aug-22
6-Feb-23
6-Aug-23
6-Feb-24
6-Aug-24
Date
BH1
BH8
BH 9
BH10
BH11
DP7
BH12
BH13
BH14
ODWQS High
ODWQS Low



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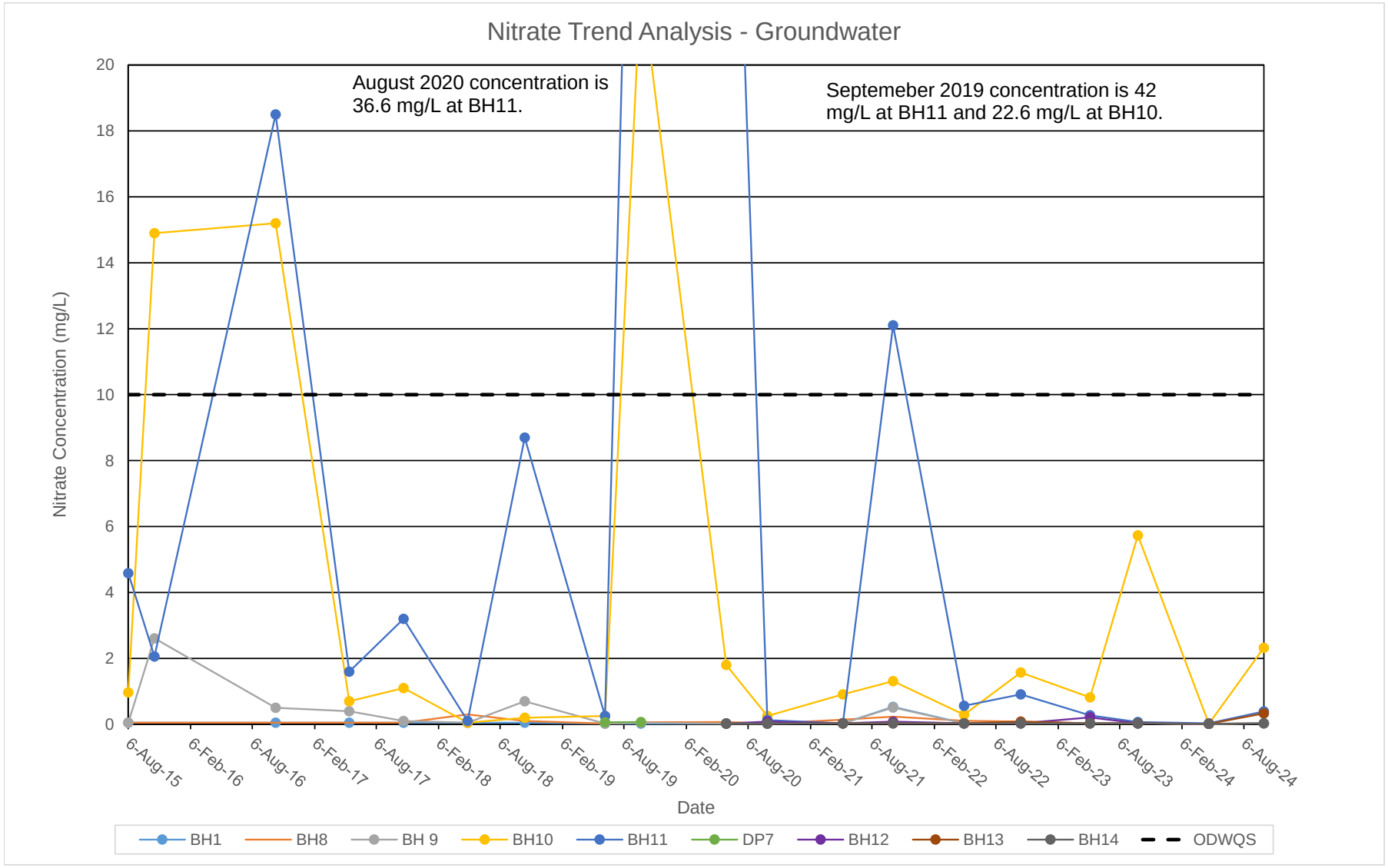

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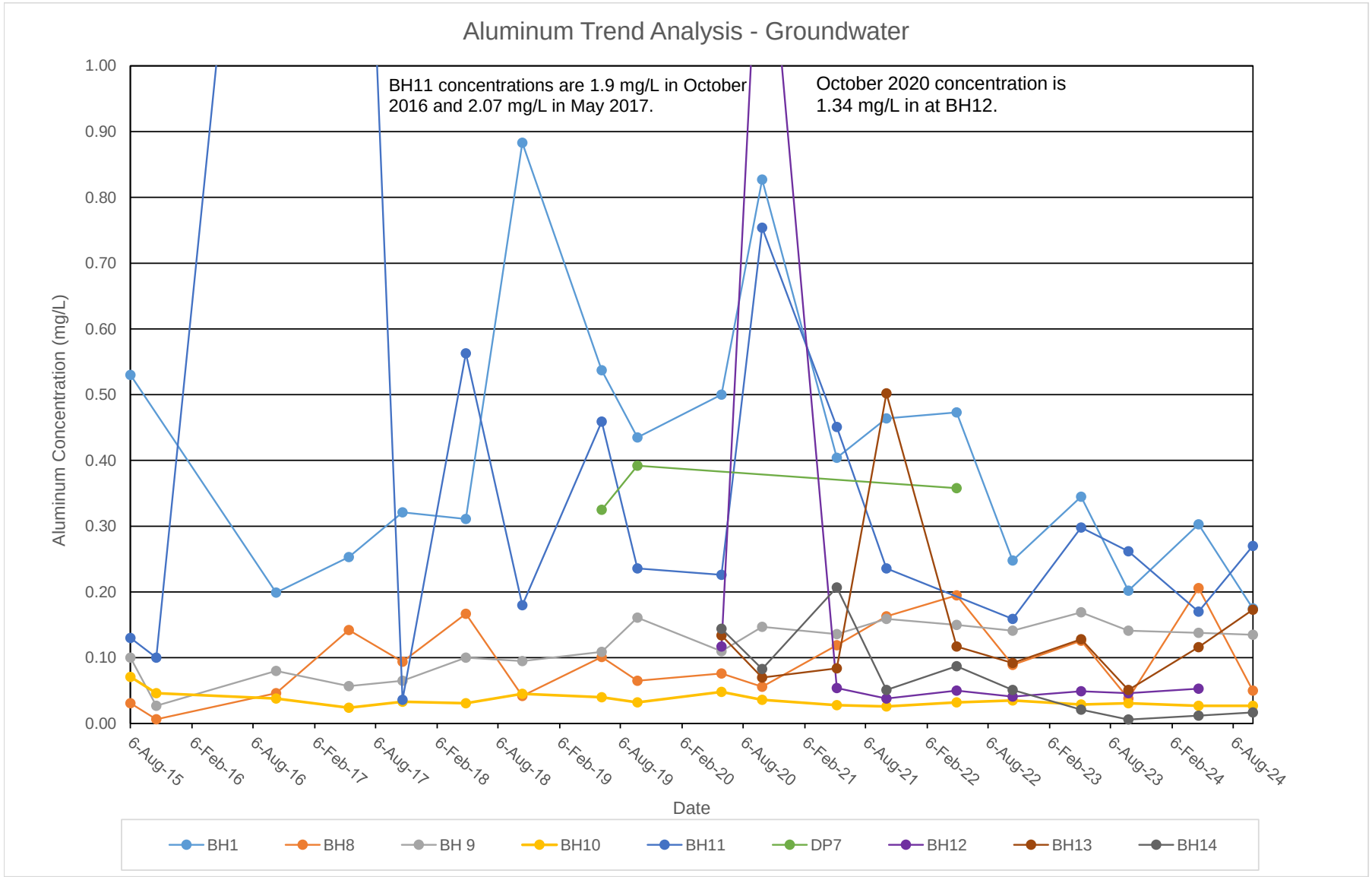

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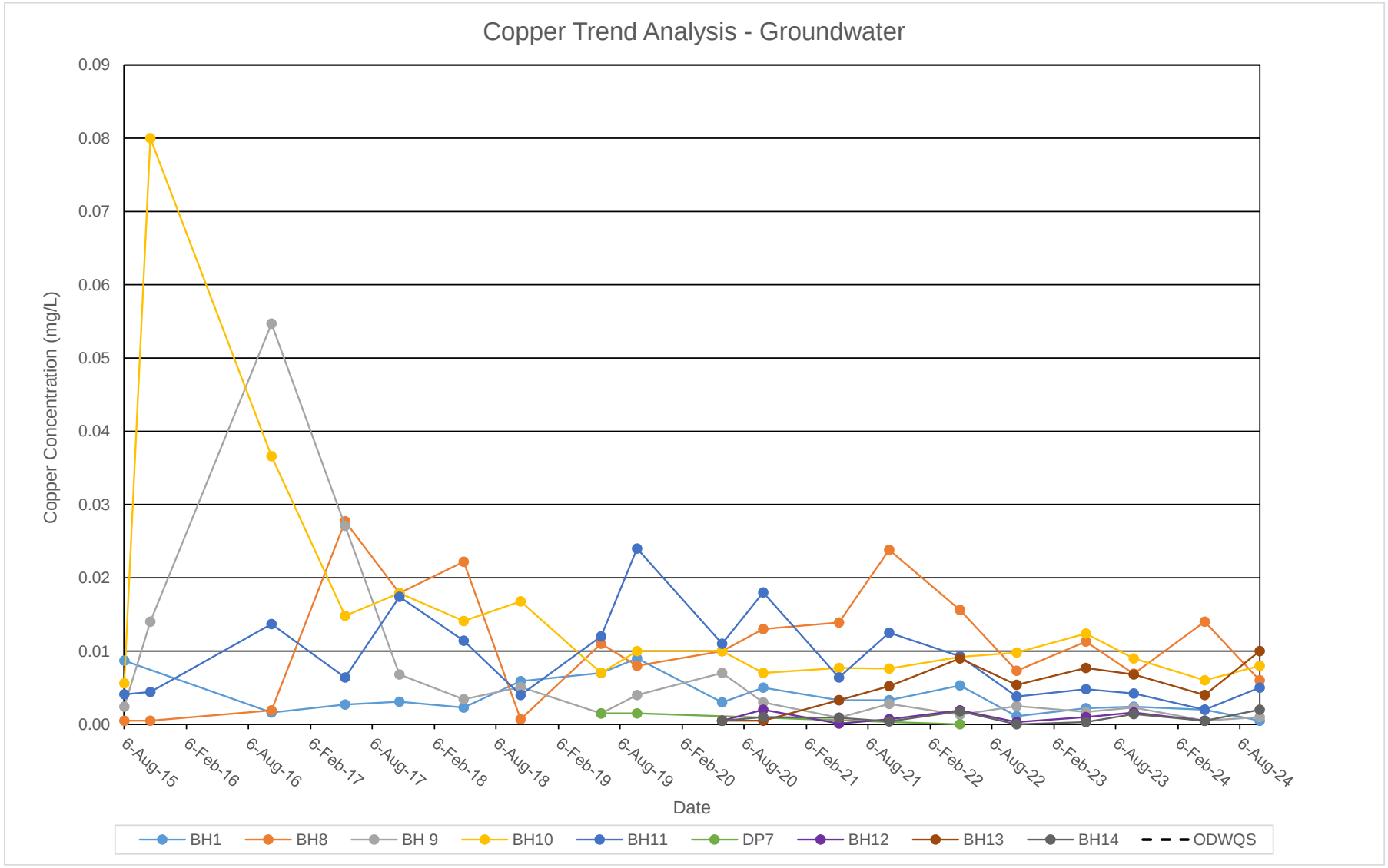

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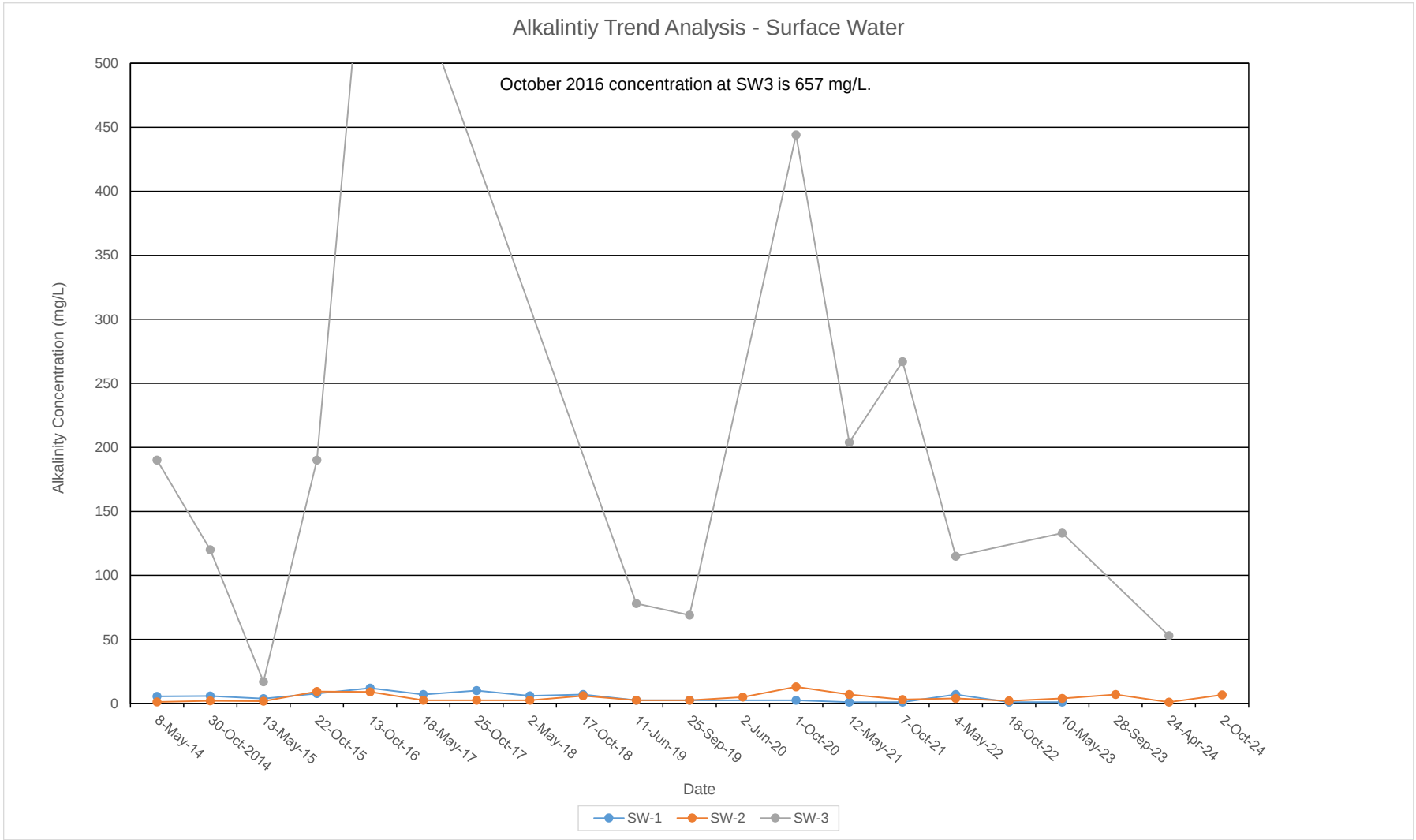
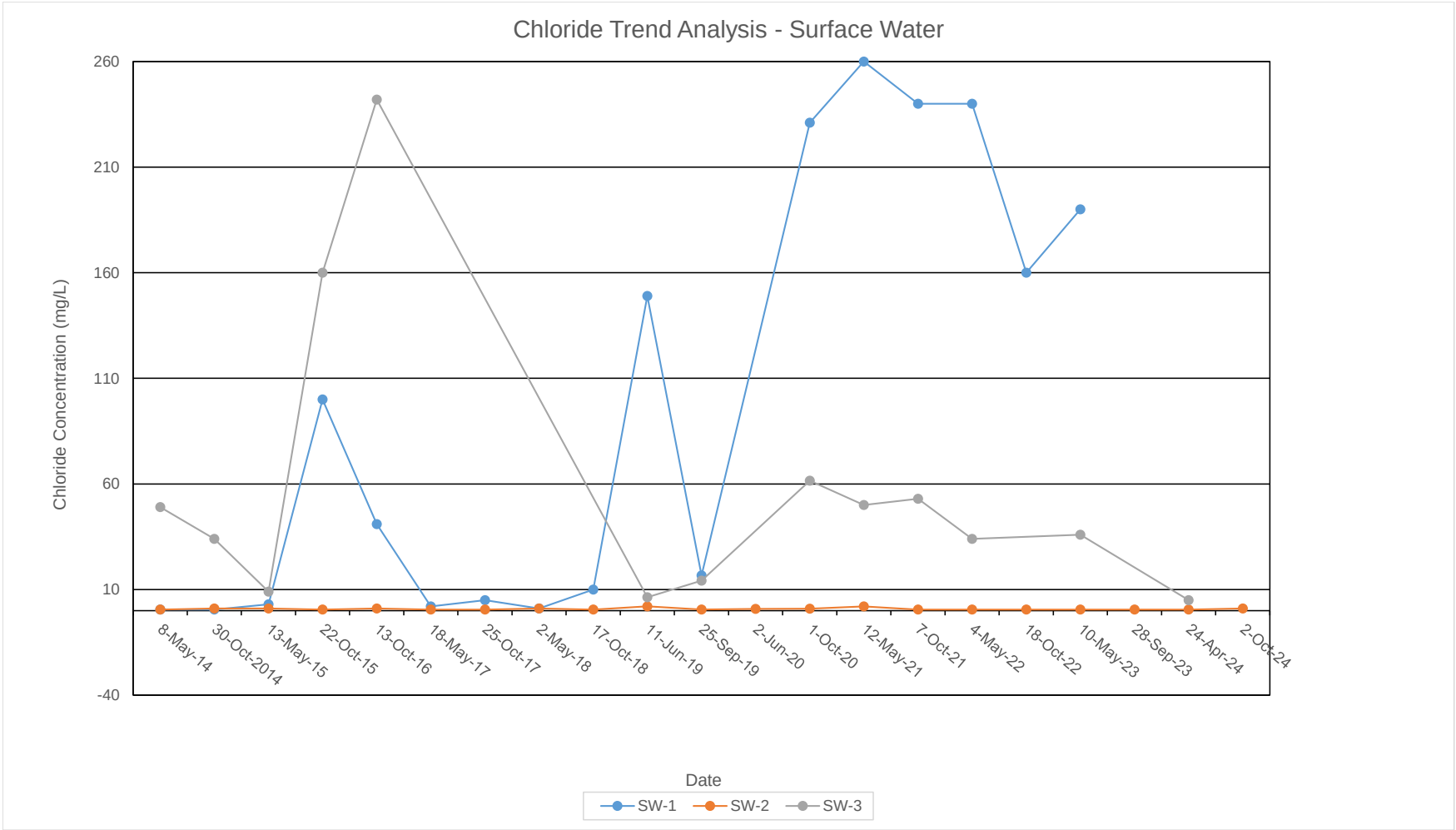
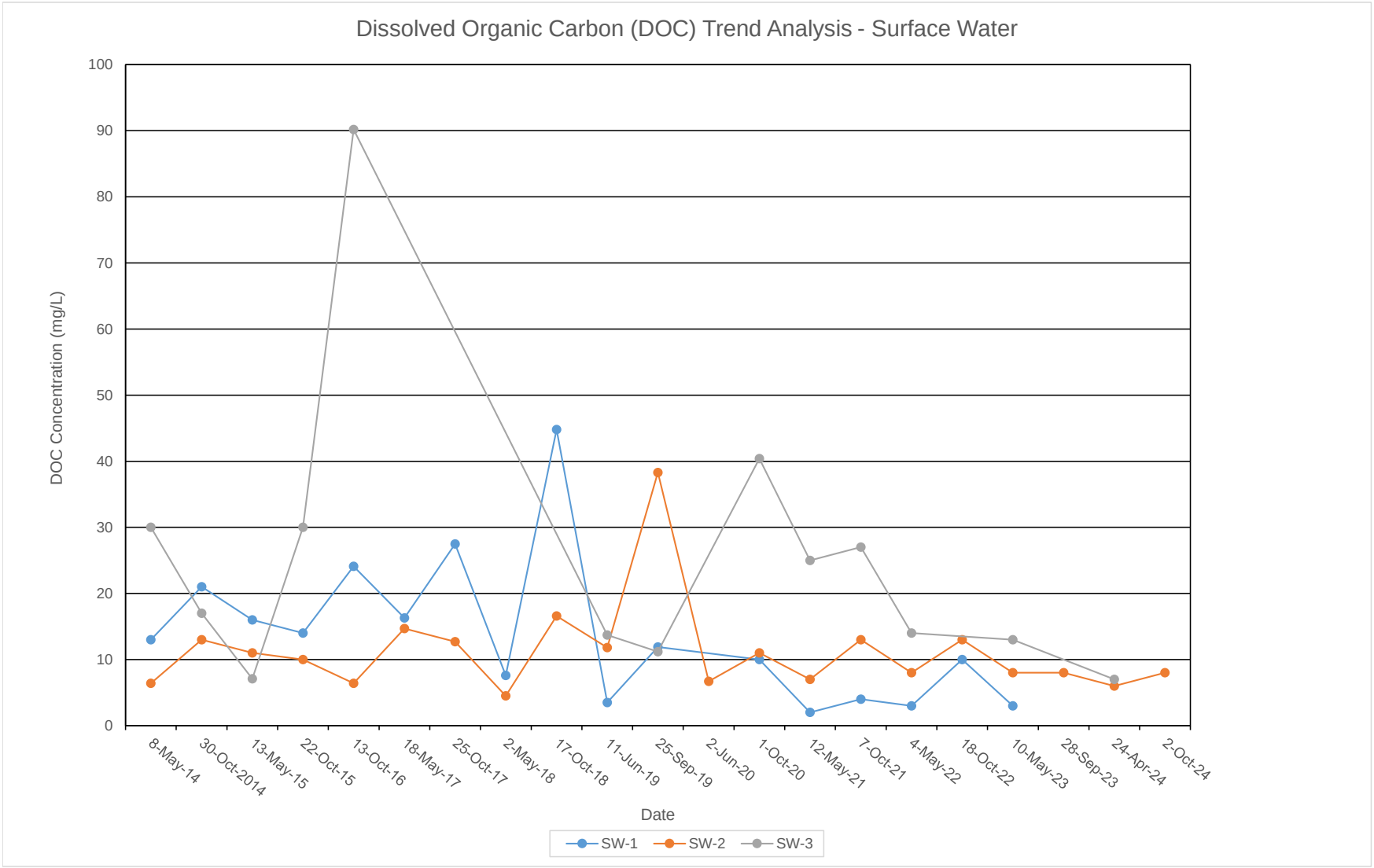
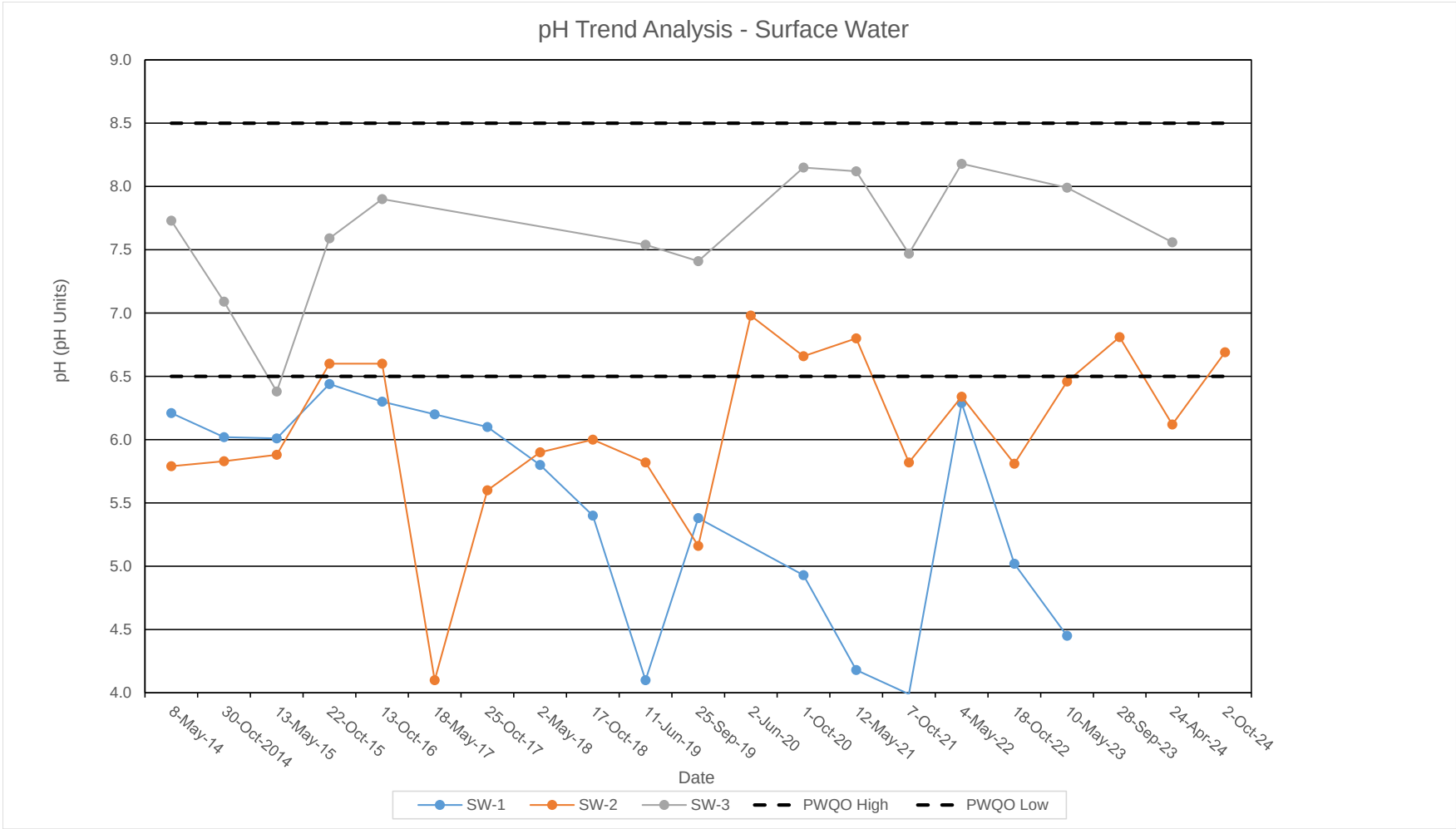
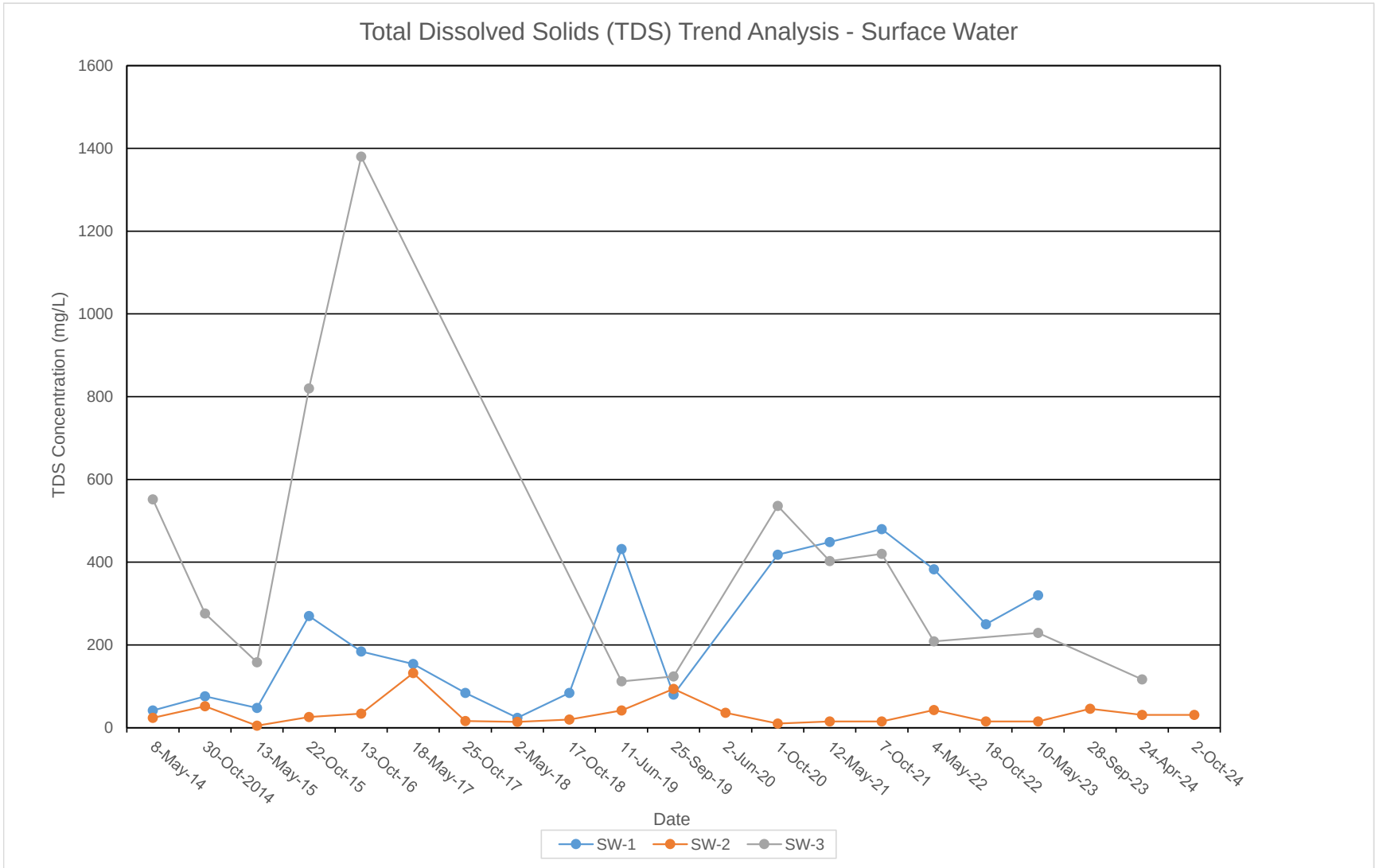
APPENDIX VIII
Surface Water Trend Analysis

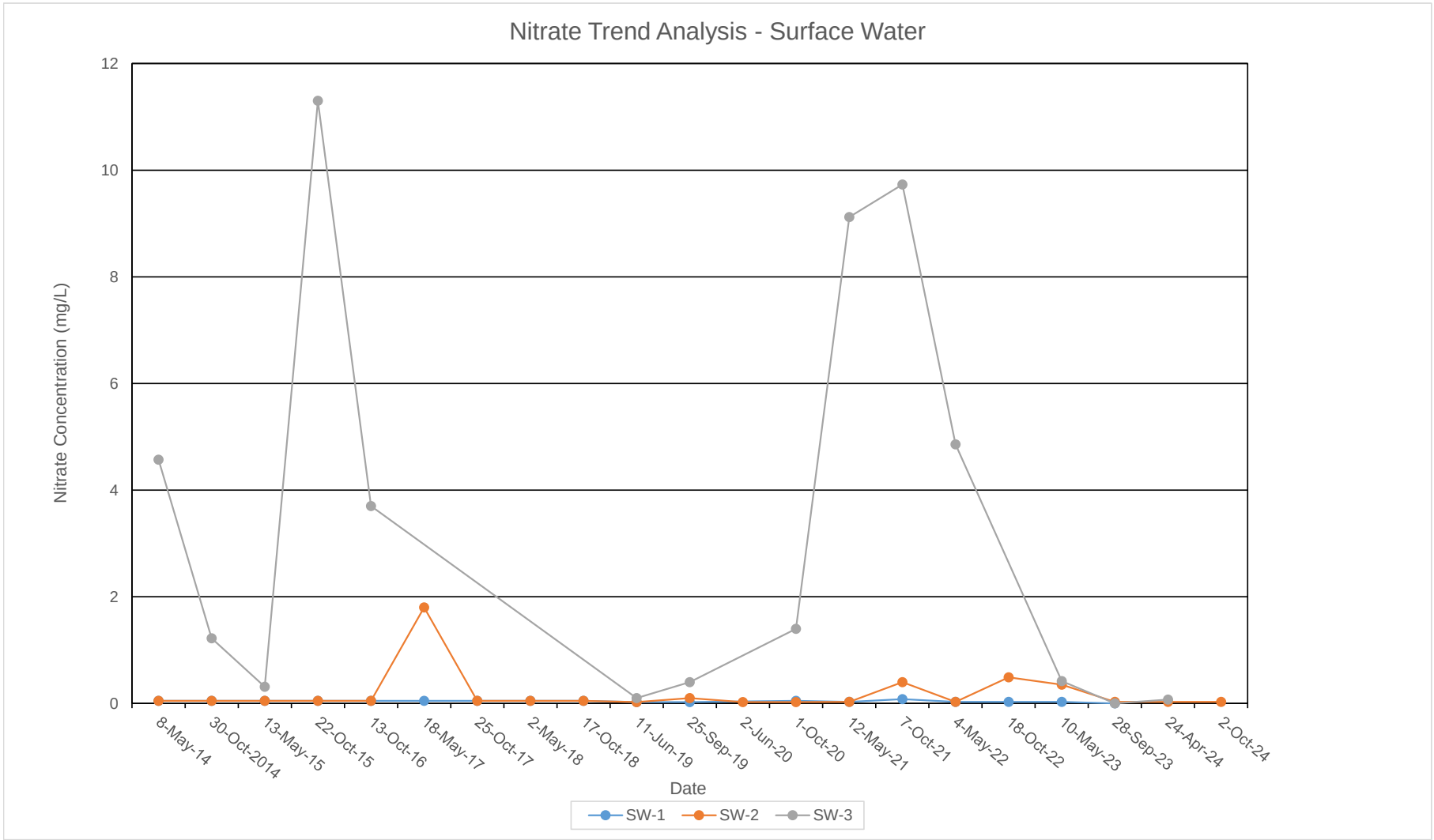

Alkalintiy Trend Analysis - Surface Water
October 2016 concentration at SW3 is 657 mg/L.
Alkalinity Concentration (mg/L)
500
450
400
350
300
250
200
150
100
50
0
8-May-14
30-Oct-2014
13-May-15
22-Oct-15
13-Oct-16
18-May-17
25-Oct-17
2-May-18
17-Oct-18
11-Jun-19
25-Sep-19
2-Jun-20
1-Oct-20
12-May-21
7-Oct-21
4-May-22
18-Oct-22
10-May-23
28-Sep-23
24-Apr-24
2-Oct-24
Date
SW-1
SW-2
SW-3


Chloride Trend Analysis - Surface Water
Chloride Concentration (mg/L)
260
210
160
110
60
10
-40
8-May-14
30-Oct-2014
13-May-15
22-Oct-15
13-Oct-16
18-May-17
25-Oct-17
2-May-18
17-Oct-18
11-Jun-19
25-Sep-19
2-Jun-20
1-Oct-20
12-May-21
7-Oct-21
4-May-22
18-Oct-22
10-May-23
28-Sep-23
24-Apr-24
2-Oct-24
Date
SW-1
SW-2
SW-3


Dissolved Organic Carbon (DOC) Trend Analysis - Surface Water
DOC Concentration (mg/L)
100
90
80
70
60
50
40
30
20
10
0
8-May-14
30-Oct-2014
13-May-15
22-Oct-15
13-Oct-16
18-May-17
25-Oct-17
2-May-18
17-Oct-18
11-Jun-19
25-Sep-19
2-Jun-20
1-Oct-20
12-May-21
7-Oct-21
4-May-22
18-Oct-22
10-May-23
28-Sep-23
24-Apr-24
2-Oct-24
Date
SW-1
SW-2
SW-3


pH Trend Analysis - Surface Water
pH (pH Units)
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
8-May-14
30-Oct-2014
13-May-15
22-Oct-15
13-Oct-16
18-May-17
25-Oct-17
2-May-18
17-Oct-18
11-Jun-19
25-Sep-19
2-Jun-20
1-Oct-20
12-May-21
7-Oct-21
4-May-22
18-Oct-22
10-May-23
28-Sep-23
24-Apr-24
2-Oct-24
Date
SW-1
SW-2
SW-3
PWQO High
PWQO Low


Total Dissolved Solids (TDS) Trend Analysis - Surface Water
TDS Concentration (mg/L)
1600
1400
1200
1000
800
600
400
200
0
8-May-14
30-Oct-2014
13-May-15
22-Oct-15
13-Oct-16
18-May-17
25-Oct-17
2-May-18
17-Oct-18
11-Jun-19
25-Sep-19
2-Jun-20
1-Oct-20
12-May-21
7-Oct-21
4-May-22
18-Oct-22
10-May-23
28-Sep-23
24-Apr-24
2-Oct-24
Date
SW-1
SW-2
SW-3



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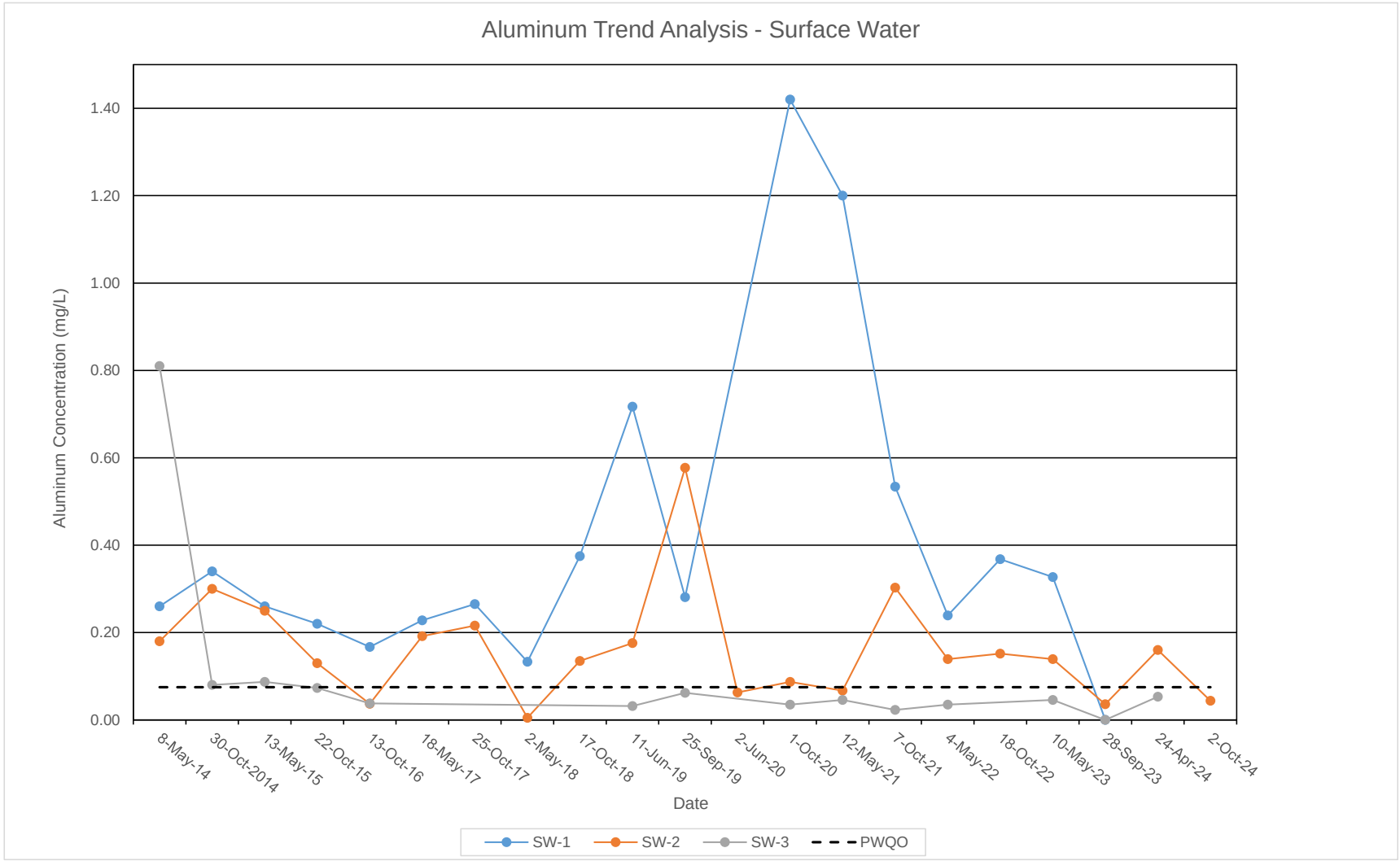
Aluminum Trend Analysis - Surface Water
Aluminum Concentration (mg/L)
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
8-May-14
30-Oct-2014
13-May-15
22-Oct-15
13-Oct-16
18-May-17
25-Oct-17
2-May-18
17-Oct-18
11-Jun-19
25-Sep-19
2-Jun-20
1-Oct-20
12-May-21
7-Oct-21
4-May-22
18-Oct-22
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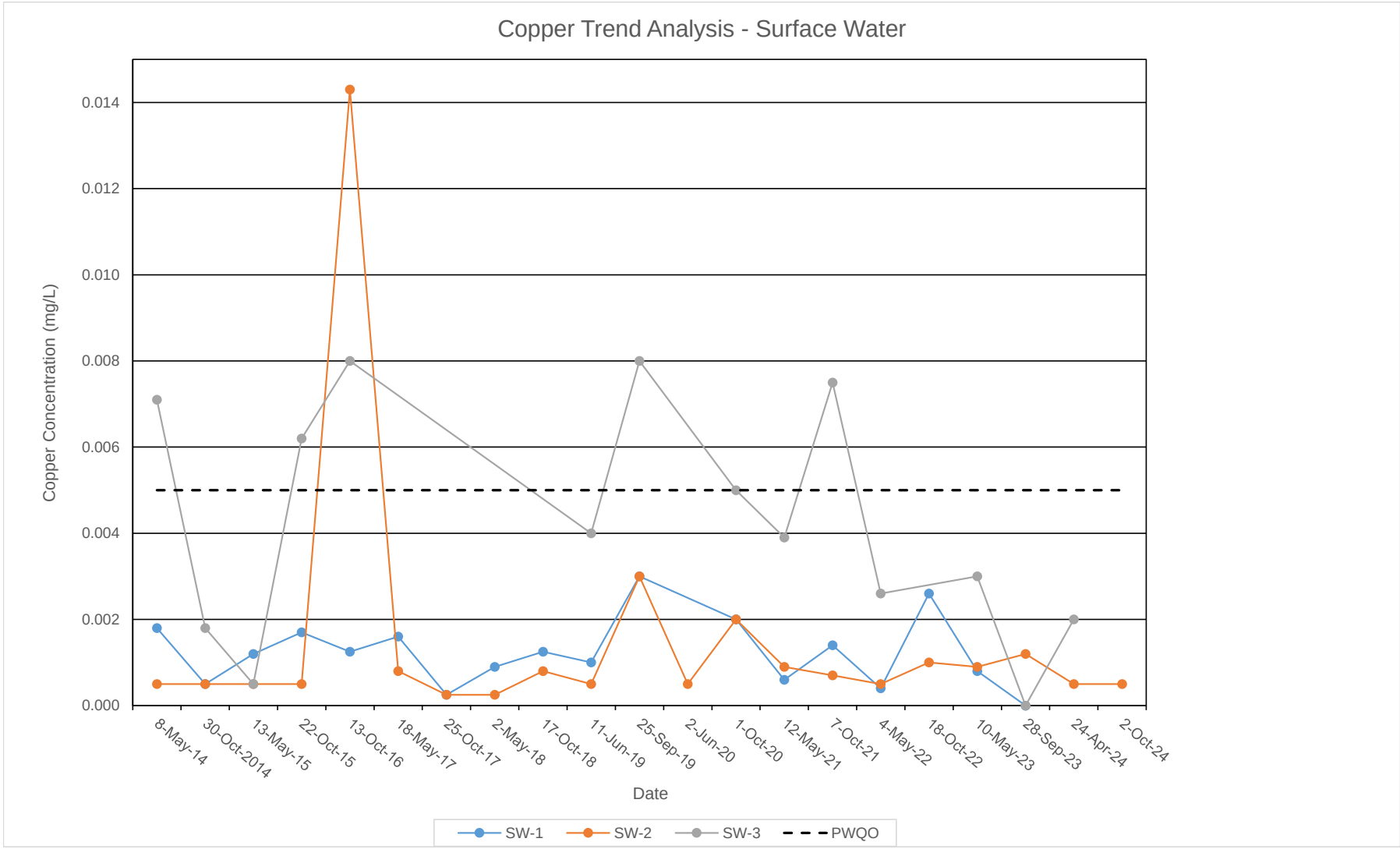
28-Sep-23
24-Apr-24
2-Oct-24
Date
SW-1
SW-2
SW-3
PWQO


Copper Trend Analysis - Surface Water
Copper Concentration (mg/L)
0.014
0.012
0.010
0.008
0.006
0.004
0.002
0.000
8-May-14
30-Oct-2014
13-May-15
22-Oct-15
13-Oct-16
18-May-17
25-Oct-17
2-May-18
17-Oct-18
11-Jun-19
25-Sep-19
2-Jun-20
1-Oct-20
12-May-21
7-Oct-21
4-May-22
18-Oct-22
10-May-23
28-Sep-23
24-Apr-24
2-Oct-24
Date
SW-1
SW-2
SW-3
PWQO

APPENDIX IX

Monitoring and Screening Checklist

Appendix D-Monitoring and Screening Checklist
General Information and Instructions

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

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

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

Monitoring Report and Site Information	
Waste Disposal Site Name	Croft Waste Disposal Site
Location (e.g. street address, lot, concession)	Lot 26, Concession 11, within the Municipality of Magnetawan, District of Parry Sound, Ontario
GPS Location (taken within the property boundary at front gate/ front entry)	Universal Transverse Mercator (UTM) Zone 17U, 593,659 meters (m) Easting, 5,058,398 m Northing (North American Datum 1983)
Municipality	Magnetawan
Client and/or Site Owner	The Corporation of the Municipality of Magnetawan
Monitoring Period (Year)	2024
This Monitoring Report is being submitted under the following:	
Certificate of Approval No.:	A7034002
Director's Order No.:	
Provincial Officer's Order No.:	
Other:	

Report Submission Frequency	◉ **Annual** ○ **Other**	Specify:
The site is:	◉ **Active** ○ **Inactive** ○ **Closed**	
If closed, specify C of A, control or authorizing document closure date:		
Has the nature of the operations at the site changed during this monitoring period?	○ **Yes** ◉ **No**	
If yes, provide details:		
Have any measurements been taken since the last reporting period that indicate landfill gas volumes have exceeded the MOE limits for subsurface or adjacent buildings? (i. e. exceeded the LEL for methane)	○ Yes ◉ No	

Groundwater WDS Verification:

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

Sampling and Monitoring Program Status:

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

Groundwater Sampling Location	**Description/Explanation for change (change in name or location, additions, deletions)**	**Date**
BH12	A sample was not collected from BH12 during the fall sampling event in 2024, as the well was found to be damaged. The well has since been repaired.	Fall 2024

3) a) Some or all groundwater, leachate and WDS gas sampling and monitoring requirements have been established or defined outside of a ministry C of A, authorizing, or control document.	○ **Yes** ◉ **No** ○ **Not Applicable**	
b) If yes, the sampling and monitoring identified under 3(a) for the monitoring period being reported on was successfully completed in accordance with established protocols, frequencies, locations, and parameters developed as per the Technical Guidance Document:	○ **Yes** ○ **No** ◉ **Not Applicable**	If no, list exceptions below or attach additional information.

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

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

Sampling and Monitoring Program Results/WDS Conditions and Assessment:

5) The site has an adequate buffer, Contaminant Attenuation Zone (CAZ) and/or contingency plan in place. Design and operational measures, including the size and configuration of any CAZ, are adequate to prevent potential human health impacts and impairment of the environment.	(●) **Yes** ( ) **No**	No formal CAZ registered for the Site, but wells reflective of the property boundary conditions currently meet the applicable criteria.	
6) The site meets compliance and assessment criteria.	(●) **Yes** ( ) **No**	If no, list and explain exceptions:	
7) The site continues to perform as anticipated. There have been no unusual trends/ changes in measured leachate and groundwater levels or concentrations.	( ) **Yes** (●) **No**	Potential increases in landfill-related parameters have been noted at background monitoring well BH1 - further monitoring data is required to establish a trend at this location.	
1) Is one or more of the following risk reduction practices in place at the site: ***(a)*** **There is minimal reliance on natural attenuation of leachate due to the presence of an effective waste liner and active leachate collection/treatment; or** ***(b)*** **There is a predictive monitoring program in-place (modeled indicator concentrations projected over time for key locations); or** ***(c)*** **The site meets the following two conditions (typically achieved after 15 years or longer of site operation):** ***i.*** **The site has developed stable leachate mound(s) and stable leachate plume geometry/concentrations; and** ***ii.*** **Seasonal and annual water levels and water quality fluctuations are well understood.**	(●) **Yes** ( ) **No**	**Note which practice(s):**	☐ **(a)** ☐ **(b)** ☒ **(c)**
9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):	( ) **Yes** ( ) **No** (●) **Not Applicable**	If yes, list value(s) that are/have been exceeded and follow-up action taken:	

Groundwater CEP Declaration:

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

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

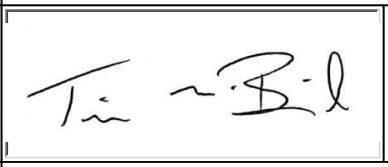
If any exceptions or potential concerns have been noted in the questions in the checklist attached to this declaration, it is my opinion that these exceptions and concerns are minor in nature and will be rectified for the next monitoring/reporting period. Where this is not the case, the circumstances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

22-Feb-2025

Recommendations:

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

○ **No changes to the monitoring program are recommended**	A PVC cap should be added to drive point DP7. BH12 was repaired in November 2024. It is therefore recommended that the top of casing elevation be re-surveyed and tied into the existing survey network during the next annual monitoring event in the spring of 2025 in order to ensure accurate groundwater elevations can continue to be calculated for monitoring location.
◉ **The following change(s) to the monitoring program is/are recommended:**	
◉ **No Changes to site design and operation are recommended**	
○ **The following change(s) to the site design and operation is/ are recommended:**	

Name:	Tim McBride		
Seal:	Add Image		
Signature:		**Date:**	22-Feb-2025
CEP Contact Information:	Tim McBride		
Company:	Pinchin Ltd.		
Address:	662 Falconbridge Road, Unit 3 Sudbury, Ontario P3A 4S4		
Telephone No.:	705.521.0560	Fax No. :	
E-mail Address:	tmcbride@pinchin.com		
Co-signers for additional expertise provided:			
Signature:		**Date:**	Select Date
Signature:		**Date:**	Select Date

Surface Water WDS Verification:

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

Name (s)	Love Lake Unnamed tributary to Ahmic Lake
Distance(s)	500 m northeast of the Site South of the Site

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

Sampling and Monitoring Program Status:

1) The current surface water monitoring program continues to effectively characterize the surface water conditions, and includes data that relates upstream/background and downstream receiving water conditions:	(●) Yes ( ) No	Samples have not been collected from background monitoring location SW-1 since the spring of 2023, due to dry conditions encountered during the subsequent sampling events.
2) All surface water sampling for the monitoring period being reported was successfully completed in accordance with the Certificate(s) of Approval or relevant authorizing/control document(s) (if applicable):	( ) Yes (●) No ( ) **Not applicable (No C of A, authorizing / control document applies)**	If no, specify below or provide details in an attachment.

Surface Water Sampling Location	Description/Explanation for change (change in name or location, additions, deletions)	Date
SW-1	Dry	Spring and Fall 2024
SW-3	Dry	Fall 2024

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

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

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

Sampling and Monitoring Program Results/WDS Conditions and Assessment:

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

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

Parameter	Compliance or Assessment Criteria or Background	Amount by which Compliance or Assessment Criteria or Background Exceeded
e.g. Nickel	e.g. C of A limit, PWQO, background	e.g. X% above PWQO
pH	PWQO and CWQG	6.12 vs. the PWQO/CWQG lower limit of 6.5 (Spring 2024)
Iron	PWQO and CWQG	0.420 mg/L vs. PWQO/CWQG of 0.3 mg/L (Spring 2024) 1 mg/L vs. PWQO/CWQG of 0.3 mg/L (Fall 2024)
Aluminum	PWQO and CWQG	0.160 mg/L vs. PWQO/CWQG of 0.075 mg/L and 0.1 mg/L (Spring 2024)
6) In my opinion, any exceedances listed in Question 5 are the result of non-WDS related influences (such as background, road salting, sampling site conditions)?	◉ **Yes** ○ **No**	Elevated background concentrations of iron and aluminum, as well as low pH, have historically been reported at background monitoring location SW-1.

7) All monitoring program surface water parameter concentrations fall within a stable or decreasing trend. The site is not characterized by historical ranges of concentrations above assessment and compliance criteria.	◉ **Yes** ○ **No**	If no, list parameters and stations that is outside the expected range. Identify whether parameter concentrations show an increasing trend or are within a high historical range:
8) For the monitoring program parameters, does the water quality in the groundwater zones adjacent to surface water receivers exceed assessment or compliance criteria (e.g. , PWQOs, CWQGs, or toxicity values for aquatic biota (APVs)):	○ Yes ○ No ◉ Not Known ○ Not Applicable	If yes, provide details and whether remedial measures are necessary:
9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):	○ **Yes** ○ **No** ◉ **Not Applicable**	If yes, list value(s) that are/have been exceeded and follow-up action taken:

Surface Water CEP Declaration:

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

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

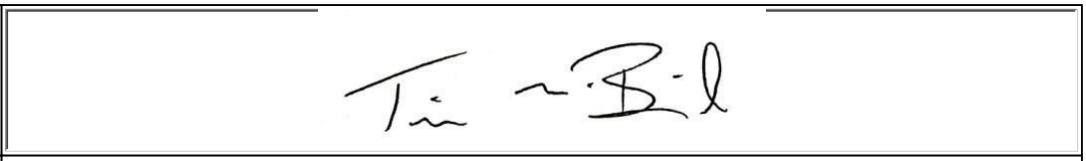
If any exceptions or potential concerns have been noted in the questions in the checklist attached to this declaration, it is my opinion that these exceptions and concerns are minor in nature or will be rectified for future monitoring events. Where this is not the case, the circumstances concerning the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

22-Feb-2025

Recommendations:

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

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

CEP Signature	
Relevant Discipline	Hydrogeologist
Date:	22-Feb-2025
CEP Contact Information:	Tim McBride
Company:	Pinchin Ltd.
Address:	662 Falconbridge Road, Unit 3 Sudbury, Ontario P3A 4S4
Telephone No.:	705.521.0560
Fax No. :	
E-mail Address:	tmcbride@pinchin.com

Save As **Print Form**