



WASTE CAPACITY ASSESSMENT TOWNSHIP OF MCMURRICH & MONTEITH, SPRUCEDALE, ONTARIO

The Corporation of the Township of McMurrich & Monteith

Attention: Ms. Cheryl Marshall, Clerk Treasurer

PO Box 70

Sprucedale, ON P0A 1Y0

November 11, 2025

Project Reference Number: 25116

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1 INTRODUCTION

Greenstone Engineering Ltd. (Greenstone) was commissioned by Ms. Cheryl Marshall of the Township of McMurrich and Monteith (herein referred to as the “Client”) to complete the Waste Capacity Assessment (WCA) for the McMurrich and Monteith Township Waste Disposal Site (WDS) located at 2161 Highway 518 West, Sprucedale, Ontario (hereafter referred to as the “Site” or “WDS”). The purpose of completing this WCA was to determine the existing volume and remaining capacity of the WDS that operates under Provisional Environmental Compliance Approval (ECA) No. A522301, issued on September 4, 1997 (Appendix A) by the Ontario Ministry of Environment, Conservation and Parks (MECP).

The Site is located at 2161 Highway 518 West in Sprucedale. The Site and its’ pertinent features are included in Figures 1 and 2 following the report. Universal Transverse Mercator (UTM) coordinates for the Site, acquired through the use of a GPS surveying system (NAD83) with a horizontal accuracy of less than 5 centimeters, are Zone 17T, 621709.10.00 meters (m) Easting and 5038870.09 m Northing.

1.1 BACKGROUND

The Township of McMurrich and Monteith operate a WDS, having started as a dump site in the late 1950s or early 1960s. The Site property is owned by the Township of McMurrich and Monteith and the surrounding properties in all directions from the WDS are vacant, undeveloped forested land, much of which is owned by the township. The current ECA includes a landfilling area of 1.2 hectares (ha) within the 56.6 ha property. The Site is approved to receive solid, non-hazardous waste (i.e., municipal waste) as defined under Ontario Regulation 347 and can only receive waste from within the boundaries of the Township of McMurrich and the east half of the former unorganized Township of Monteith.

The Site operates as a natural attenuation landfill, utilizing the naturally occurring chemical, physical and biological processes to reduce contaminant concentrations to meet MECP standards prior to reaching the property boundaries. The waste at the Site is currently deposited using the “area” method; the waste is placed in layers approximately 0.3 m in height which are then compacted by a landfill compactor.

Access to the Site is located on Highway 518 West, with a gate limiting public access to Site operating hours. The main on-site road allows for waste haul trucks and the public to deposit within designated active fill areas. The Site also has a reception office and recycling areas for managing recyclable materials for the Township. Clean wood, brush and leaves are segregated on-site and composted.



1.2 SCOPE OF WORK

The scope of work for this WCA has been developed to evaluate the remaining capacity of the waste disposal facility in comparison to its existing approved fill area. The WCA will include the following project tasks and timeline:

- Review existing and historical information regarding the waste disposal facility, including historical records of fill activity and aerial photographs for the site and subject lands.
- Complete interviews with representatives knowledgeable of the active and historical fill areas on-site and landfill operations.
- Complete a review of ECA approval terms and conditions with respect to the landfill boundaries and the approved area.
- Completion of public and private locates to identify all buried and overhead utility assets prior to the field investigation.
- Advance a series of test pits across the site to determine the lateral extents of the waste deposits as well as the vertical thickness of waste within the facility. It is estimated that the test pits will be advanced during a 1 to 2 day investigation.
- Complete a topographic survey of the facility which shall include elevation survey of the test pit locations and any pertinent features of the facility.
- Using the lateral and vertical extents of the waste deposits, create a volumetric model of the waste within the landfill and complete a volumetric estimate of the existing waste in cubic meters (m³).
- Using the approved footprint area (as per the ECA), prepare a conceptual closure model of the facility (potential to be used during future landfill approval amendments (i.e., updates to the existing design and operating plan)). The closure model will provide the maximum theoretical volume for the facility.
- Complete calculations to determine volume differences between the existing waste volume measured and the maximum theoretical capacity. This will determine the remaining capacity (i.e., 'air-space').
- Complete estimated annual deposition rates based on Stats Canada waste generation data per capita for the landfill facility approved catchment area and compare against historically reported data (this will include cover material applied and an estimated volume of construction debris received and/or used on an annual basis). This will determine the annual fill rate.
- Complete final lifespan calculations based on the remaining capacity of the facility and the estimated annual fill rate.



- Prepare a comprehensive WCA report inclusive of figures, models, test pit logs and calculations.

1.3 HISTORICAL BACKGROUND REVIEW AND AVAILABLE INFORMATION

Prior to visiting the Site, Greenstone conducted a review of available information provided by the Client with regards to the former waste fill areas and remaining capacity. Information relative to the Site was assembled, such as inspection reports, aerial photographs, site sketches, and copies of the ECA. Greenstone reviewed the following historical reports for the Site and are referenced within this document:

Greenstone was provided with the following reports for the Site:

- *“Township of McMurrich Monteith Landfill Site, 2009 Monitoring Report”* prepared by Integrated Earth & Environmental Limited (IE&EL) and dated February 26, 2010 (2009 Annual Monitoring Report).
- *“Estimate of Remaining Landfill Capacity, Township of McMurrich/Monteith Landfill Site”* prepared by IE&EL and dated October 2014 (2014 Landfill Capacity Estimate).
- *“Township of McMurrich Monteith Landfill Site, 2010 – 2018 Monitoring Report”* prepared by Mr. Hachkowski and Mr. Kaleny and dated November 15, 2018 (2010-2018 Annual Monitoring Report).
- *“Township of McMurrich Monteith Landfill Site, 2019-2022 Monitoring Report”* prepared by Mr. Hachkowski and Mr. Kaleny and dated January 6, 2023 (2019-2022 Annual Monitoring Report).
- *“2024 Annual Water Quality Monitoring Report, McMurrich & Monteith Township Waste Disposal Site”* prepared by Greenstone and dated March 31, 2025 (2025 Annual Monitoring Report).

Greenstone relied on the information available in these previous environmental reports as part of this assessment. A copy of these documents can be obtained from the Client. Greenstone arranged to meet with the client and WDS representative to review and discuss background Site information, history, records and any pertinent information about the Site.

2 LOCATION AND SITE CHARACTERISTICS

2.1 GEOLOGY AND HYDROGEOLOGY

A review of the Ontario Geological Survey (OGS) Bedrock Geology dataset indicates that the regional physiography at the Site is composed of migmatitic rocks and gneisses of undetermined protolith, commonly layered biotite gneisses and magmatic quartzfeldspathic gneisses, orthogneisses and paragneisses. No bedrock outcrops were noted on the Site.



The Site and surrounding area generally slopes easterly towards a wetland area. Historical well records show native material generally consists of sands with overburden consisting of gravel.

2.2 SURFACE WATER FEATURES

There is no surface water on the property. A wetland is located approximately 750 m southeast of the Site. The inferred flow from the wetlands is northeasterly towards Doe Lake. Due to the site being on a high permeability sand plain, little surface water runoff is expected to reach the wetlands.

2.3 SERVICE AND STUDY AREA

The service area for this WCA includes the boundaries of the Township of McMurrich and the east half of the former unorganized Township of Monteith, which was formed through an amalgamation on January 1, 1998.

McMurrich/Monteith has a population of approximately 1,000 citizens and the area includes the communities of Axe Lake, Banbury, Bear Lake, Bourdeau, Haldane Hill, McMurrich, Sprucedale and Whitehall. Several lakes within the service include Doe Lake, Round Lake, Buck Lake, Axe Lake, Johnson Lake, Hunters Lake, Bear Lake and Horn Lake.

2.4 PLANNING PERIOD

For the purpose of this assessment, the planning period was considered to extend to 2036 (i.e., 10-years). The actual site life is dependent on waste generation rates, the success of waste diversion programs, as well as growth in the study area.

3 METHODOLOGY

3.1 SAFETY, HEALTH, AND ENVIRONMENT

Prior to commencing the field component of this Investigation, an EHSP was developed and all safety, health, and environmental concerns relevant to the Site were reviewed with the field technicians, as well as the tasks involved with completing the field work that would identify any hazards to the workers, the public and/or the environment. At the time the field activities took place, no health, safety, or environmental concerns were identified that would pose unsafe or hazardous working conditions. Safe work practices were implemented throughout the entirety of the project, and no injuries or impairment to the environment were reported.



3.2 TEST PITTING PROGRAM

The subsurface investigation was completed to assess the horizontal and vertical depths of the buried waste at the WDS. Representative soil samples were obtained through the completion of a subsurface investigation and sampling program that included excavating test pits, and sampling directly from the excavations. The site's geological conditions were established based on visual observations of the soil samples reviewed as part of the field program.

A total of seven test pits (TP01 to TP07) were excavated across the WDS. Groundwater was not encountered or assessed during this investigation, which is expected due to known groundwater depth of approximately 18m.

The initial site visit to meet with municipal staff and discuss the known history of the WDS was completed on June 6, 2025 while the test-pit investigation was completed on October 9, 2025, by Greenstone with assistance from the Client. Additional discussions were also completed with municipal staff on October 9, 2025. The client utilized a backhoe to excavate test-pits to allow for Greenstone to review soil samples and determine the presence or absence of waste, as well as the depths of waste where observed. All soil samples were reviewed directly from the bucket of the backhoe.

The test pit plan developed was based on generally accepted professional practices and soil samples were reviewed systematically from the full depth of each test pit at a regular specified interval until the maximum target depth of investigation was met.

All components of the field investigation were completed under the supervision of one of Greenstone's experienced environmental field technicians. Details of the test pits, including sample locations, stratigraphy and environmental characteristics observed are provided on the test pit logs for TP01 to TP07 in Appendix B and are discussed further in Section 4.0.

3.3 TOPOGRAPHIC SURVEY

Greenstone commissioned Avant Garde Geomatics (AGG), a licensed Ontario Land Surveyor (OLS), to complete a topographic survey of the WDS which included an elevation survey of the test pit locations and pertinent features pertaining to the waste pile and WDS facility.

3.4 CAPACITY STUDY REPORT

A WCA Report was prepared containing:

- A summary of background and analysis of available information on the Site as it relates to capacity;



- A description of the methodologies used for the field investigation and a summary of the field work completed;
- A summary of findings including the available life span in years (calculated and theoretical life span), calculation of remaining available volume and a drawing/image that will depict the waste disposal limits, as well as identify areas available for new trenches; and
- A Digital Terrain Model (DTM) of the existing Site features in support of creating a conceptual closure plan for the waste disposal Site based on MECP standards and guidelines.

4 RESULTS OF THE INVESTIGATION

4.1 TEST PITTING PROGRAM

Test pit locations are shown on Figure 2. During the excavation of test pits TP01 through TP07, the following observations were made:

Test Pit TP01

TP01 was excavated on the western perimeter of the northern portion of the waste pile approximately 5m north of the landfill gate and adjacent to the east side of the landfill entrance roadway. Waste at this location was observed to be approximately 2m deep. Below the waste pile in this area, the native soil was observed to be a medium to fine damp brown sand.

Test Pit TP02

TP02 was excavated on the western perimeter of the north-central portion of the waste pile approximately 1m south of the landfill gate and adjacent to the east side of the landfill entrance roadway and fluorescent bulb storage shed. Waste at this location was observed to be approximately 2m deep. Below the waste pile in this area, the native soil was observed to be a medium to fine damp brown sand.

Test Pit TP03

TP03 was excavated on the west side of the landfill entrance roadway approximately 4m north of the landfill gate and approximately 4m west of the western perimeter of the waste pile. There was no waste observed within TP03 and the native soil was observed to be a medium to fine damp brown sand.

Test Pit TP04

TP04 was excavated on the western perimeter of the central portion of the waste pile approximately 1m north of the landfill signage, adjacent to the east side of the landfill roadway and approximately 6m east



of the recycling compactors. Waste at this location was observed to be approximately 2m deep. Below the waste pile in this area, the native soil was observed to be a medium to fine damp brown sand.

Test Pit TP05

TP05 was excavated on the south side of the landfill and adjacent to the north side of the landfill roadway. There was no waste observed within TP05 and the native soil was observed to be a medium to fine damp brown sand.

Test Pit TP06

TP06 was excavated on the east side of the central portion of the landfill and adjacent to the west side of the landfill roadway. There was no waste observed within TP06 and the native soil was observed to be a medium to fine damp brown sand.

Test Pit TP07

TP07 was excavated on the east side of the northern portion of the landfill and adjacent to the west side of the landfill roadway. There was no waste observed within TP07 and the native soil was observed to be a medium to fine damp brown sand.

4.1.1 TEST PIT SUMMARY

The test pits were excavated to determine the vertical and lateral extents of the waste-pile, as well as supplement previously collected data to accurately determine the waste volumes within the WDS. Based on previous records, as well as the new data collected, approximately 80% of the waste pile is 2m in depth above the native natural silty sand, while approximately 20% of the waste pile to the north-central portion of the waste pile is 3m in depth.

4.2 TOPOGRAPHIC SURVEY

With the use of satellite imagery along with the data collected during the test pit program, sufficient details were provided to AGG, a licensed OLS. This topographic survey provides the base for waste quantities as of October 2025 which can then be compared to future annual surveys to determine yearly waste deposition accurately. Further, this information can then be used to determine the year of closure or to forecast the initiation of the landfill expansion process.

Site plans showing the existing contours of the Site are provided in the AGG survey in Appendix C. The area depicting the landfiling operation and facility during the October 2025 is shown on Figure 2.



4.3 REMAINING CAPACITY AND LIFESPAN

IE&EL completed an estimation of the remaining WDS capacity in October 2014 and the findings were discussed in the 2014 Landfill Capacity Estimate Report. That report provided information on estimated waste generation rates used in order to determine future waste quantities. Waste projections included residential and industrial, commercial and institutional (IC&I) disposal. At the time of this 2014 report, the estimated fill rate was believed to be approximately 2,381 to 2,436 m³ per year with approximately 9,000 m³ of buried compacted waste. It should be noted that the 2014 report had some assumptions within it that appear to have allowed for a larger landfill footprint, as well as an overestimation on the annual deposition rate.

The 2014 Landfill Capacity Estimate Report was considered for further analyses of waste quantities included in this report which incorporates consideration of more recent data over the period from 2015 to 2025. With the completion of an updated survey along with the completion of test pits to determine the vertical and lateral extents of the waste pile and fill area, an accurate account of the existing volume has been achieved.

The historical volume of waste calculated in 2014 to exist by IE&EL at the WDS was estimated to be approximately 9,000 m³, whereas the current volume in October 2025 has been calculated at 15,850 m³. Based on the volumetric calculations completed by Greenstone and AGG in October 2025 (topographic subtraction between the October 2025 survey and the October 2014 estimate), it has been calculated that a volume of 6,850 m³ has been deposited at the site during the past 11 years.

Based on a review of the WDS ECA No. A522301, issued on September 4, 1997, the currently approved dimensions of the landfill allow for a footprint of 1.2 ha within a 56.6 ha total site area. This includes final cover and interim cover material. Based on the small landfill exemption of 40,000 m³ discussed in O. Reg. 232/98, minus the existing in-place waste volume of 15,850 m³, the remaining capacity equates to approximately 24,150 m³.

Utilizing the calculated volume of 6,850 m³ that has been estimated to have been received at the WDS during the past 11 years, the annual estimated volume of waste deposited within the landfill amounts to approximately 623 m³ per annum. Taking the remaining capacity of 24,150 m³ and dividing that by 623 m³ per year equates to an estimated remaining lifespan of approximately 39 years.

It should be noted that the estimate of 623 m³ of compacted in-place waste per year received with the landfill is based partially on data collected in 2014. As such, for a more accurate determination of yearly waste deposition, Greenstone recommends annual volumetric surveys to be completed during the next three years to establish a baseline of deposition rates to be averaged and applied to recalculate the total remaining lifespan of the facility.



5 WASTE QUANTITIES AND PROJECTIONS

In order to determine the future waste quantities requiring disposal within the service area, a number of factors have to be taken into consideration including:

- Population projections;
- Waste generation rates or waste disposal rates; and
- Waste diversion rates.

The population projections are used in conjunction with waste disposal rates to determine the quantity of waste to be managed by the township in future years. The following sections provide details of the waste quantity projections that have been incorporated into the project planning.

5.1 POPULATION PROJECTIONS

The population within the township resides at approximately 1,000 citizens. As there is currently no new industry or mining expected with the area, large population growth is not expected; however, a modest annual increase in population of approximately of 1-3% is expected as people leave urban centers destined for rural locations.

5.2 INCOMING WASTE TRACKING

At this time, a summary of the maximum daily, weekly and total annual quantities (tonnes) of waste received at the site is not tabulated as part of the regular operations. Incoming waste is currently tracked by bags and loads on a daily basis only (during days the landfill is open). These records are kept at the township office for future reference and can be provided, if requested. The annual deposition is calculated by topographic survey calculations.

5.3 WASTE CHARACTERISTICS

Recycling is separated at the landfill (paper/cardboard vs glass/plastic and aluminum containers) and compacted for removal off-site. Tires, electronics and scrap steel are also separated at the WDS and diverted from disposal for removal off-site. Municipal waste that is accepted at the landfill includes residential and IC&I non-hazardous solid waste; however, IC&I waste is currently separated and diverted for off-site disposal. Clean wood and brush is also accepted and separated from the waste stream for chipping once quantities are sufficient.



5.4 THEORETICAL WASTE QUANTITY PROJECTIONS

Various government sources quote that Canadians generate approximately 720 kg of waste which can be conservatively converted to approximately 0.9m^3 . In addition to the details provided in Section 4.3 regarding remaining capacity, projections of waste generation were conducted assuming an initial population of approximately 1,000; waste generation rate of 0.9m^3 per person per year; and a waste density of $500\text{kg}/\text{m}^3$. Using the current available space within the landfill of $24,150\text{ m}^3$ and dividing that by 0.9 m^3 , the theoretical expected lifespan of the landfill would be approximately 27 years (from 2025). When comparing the data discussed in Section 4.3 versus the theoretical data, the estimated remaining lifespan of the landfill is between 27 and 39 years.

6 LANDFILL DESIGN & IMPROVEMENTS

Based on discussions with municipal staff during the duration of this study, the following improvements were discussed to support the long-term success of the WDS:

1. Consolidate and contour the waste pile. Currently, the waste pile has sprawled from south to north-northeast. Waste being pushed to the northeast should be excavated or pushed back into the main waste pile where waste should be stacked or piled upwards. A smaller footprint will allow for easier management and a longer landfill life.
2. Additional waste piles. Several smaller waste piles consisting of shingles and other materials exist around the landfill. These piles should be added to the main waste pile prior to or during the consolidation and contouring of the landfill.
3. Clean wood and brush. Wood debris should be removed from the eastern edge of the waste pile and ground-up or chipped. Wood and brush should have its own segregation pile away from the main waste pile similar to the tire storage area and scrap steel pile.
4. Contouring the landfill. The landfill should be contoured into an oval shape and the sidewalls along the south and east should be sloped at approximately 4:1. Defining the landfill extents supports the long-term management of the fill pile upwards.
5. Smaller disposal areas. Currently, the disposal area is not well defined and waste is sprawling which makes the landfill difficult to manage. The working face of the disposal area should be no greater than 10m by 10m (30 feet by 30 feet) so that waste and interim cover can be managed efficiently. This 'cell' can be utilized for incoming waste, compacted regularly, and once the cell reaches the determined height, can have interim cover applied and move to the next adjacent cell.



6. Interim cover material. For areas of the waste pile that are not currently being utilized but will be utilized in the future as the working area moves from cell to cell, interim cover should be applied to limit scavengers and wind blown litter.
7. Additional items. Regarding the mattresses and boxsprings observed at the WDS awaiting off-site disposal; there are initiatives where recycling companies provide a transport trailer for loading and removal. Alternatively, they could be stored in sea-cans until sufficient volume accumulates for a contractor to remove them. Due to the elements, mattresses and boxsprings should not be stored outside.

6.1 PROPOSED FUTURE WASTE DISPOSAL AREAS

Currently, there is sufficient space in areas where waste already exists for the landfill to continue to operate for years to come based on the observed current waste volumes. The existing fill areas occupy approximately only 0.7 ha of the allowable 1.2 ha provided for within the ECA for the WDS. As such, once the wood debris is removed from the central-east portion of the landfill, this additional area of approximately 0.5 ha could be utilized in the future. Based on current waste volumes, the existing 0.7 ha landfill footprint being utilized is anticipated to be sufficient to accept waste over the next 6-8 years.

7 CONCLUSIONS AND RECOMENDATIONS

Based on current projections utilizing a combination of the historical data along with the new data collected as part of this Waste Capacity Assessment, the estimated remaining lifespan of the McMurrich and Monteith WDS is between approximately 27 and 39 years.

Greenstone recommends annual volumetric surveys to be completed during the next three years to establish a baseline of deposition rates to be averaged and applied to recalculate the total remaining lifespan of the facility. In addition, if the recommended landfill design and improvements are initiated, the landfill will continue to service the community well into the future.



8 CLOSING AND STATEMENT OF QUAIFICATIONS

Greenstone is pleased to present this Waste Capacity Assessment report for the above-noted project. This report documents relevant background information, results of our field investigations and analyses and provides findings and conclusions.

This investigation was completed by an Environmental Professional (Mr. Troy Gordon) under the supervision of a Qualified Person (Mr. Christian Tenaglia) of Greenstone Engineering Ltd. To discuss any aspect of this work, please contact the undersigned at the coordinates below.

Sincerely yours,

Christian Tenaglia, M.Env.Sc., P.Eng., QP_{ESA}
President
chris@greenstoneengineering.ca

Troy Gordon, CET, EP
Regional Manager
troy@greenstoneengineering.ca



9 REFERENCES

- Hachkowski, B., and Kaleny, E., “Township of McMurrich Monteith Landfill Site, 2010 – 2018 Monitoring Report” dated November 15, 2018.
- Hachkowski, B., and Kaleny, E., “Township of McMurrich Monteith Landfill Site, 2019-2022 Monitoring Report” dated January 6, 2023.
- Integrated Earth & Environmental Limited document entitled “Township of McMurrich Monteith Landfill Site, 2009 Monitoring Report” dated February 26, 2010.
- MECP document entitled “Landfill Standards: A Guideline on the Regulatory and Approval Requirements for New or Expanding Landfilling Sites” dated January 2012.
- Ontario Regulation 232/98, “Landfilling Sites”, under the Environmental Protection Act (O. Reg. 232).
- Ontario Regulation 347 “General – Waste Management”, as amended (O. Reg. 347).
- Google Imagery



FIGURES

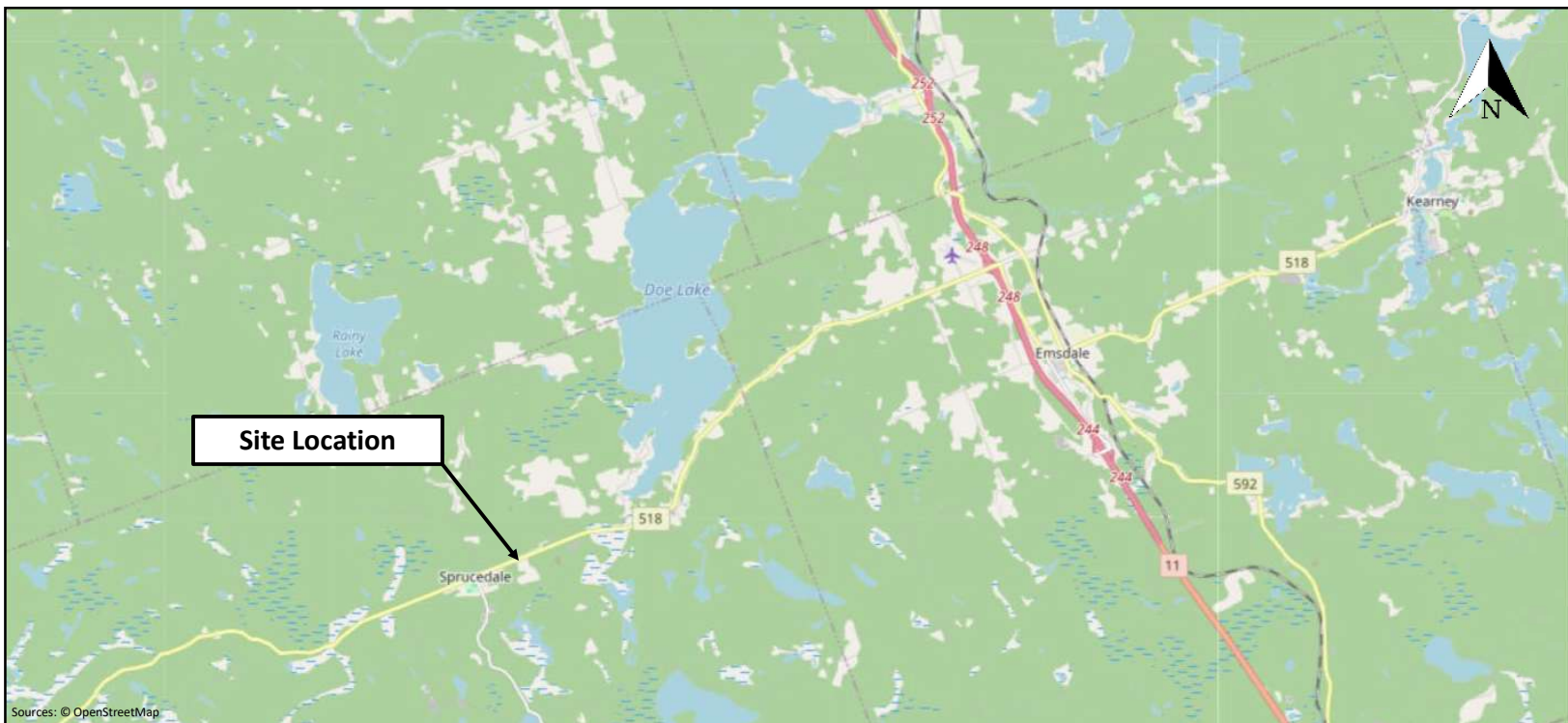


FIGURE 1: LOCATION MAP



Address: 2161 Highway 518 West, Sprucedale, Ontario

Approximate Scale: 1: 70,000

Project Number: 25116

Date: November 2025

Report: Waste Capacity Assessment Report

Client: Township of McMurrich & Monteith



FIGURE 2: TEST PIT LOCATION PLAN



Address: 2161 Highway 518 West, Sprucedale, Ontario

Approximate Scale: 1: 300

Project Number: 25116

Date: November 2025

Report: Waste Capacity Assessment Report

Client: Township of McMurrich & Monteith



APPENDICES



APPENDIX A – ENVIRONMENTAL COMPLIANCE APPROVAL

Provisional Certificate of Approval A522301



Ministry of
Environment
and Energy

Ministère de
l'Environnement
et de l'Énergie

435 James St S
Suite 331
Thunder Bay ON P7E 6E3

435 rue James sud
Bureau 331
Thunder Bay ON P7E 6E3

(705) 564-3245/1-800-890-8516

September 2, 1997

Township of McMurrich
P. O. Box 70
SPRUCEDALE, Ontario
P0A 1Y0

Attention: Mr. R. Gibb
Clerk

Dear Mr. Gibb:

Re: Revised Provisional Certificate of Approval A522301

Attached please find your Revised Provisional Certificate of Approval A522301 for your landfill site.

This Certificate is being issued to you subject to a number of Conditions. Please ensure that you understand and comply with each of these Conditions.

Should you have any questions, please telephone H. Nelson of our Timmins/North Bay District Office at (705) 497-6868.

Yours truly,


for D. Bell

Senior Approvals Evaluator
Environmental Approvals and Planning Review
Technical Support Section
Northern Region

JDB/ab/A522301.LET
Att.

c.c.: A. Gortva, Environmental Monitoring & Reporting Branch
N. Bertucci, Approvals Branch



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

Corporation of the Township of McMurrich
P. O. Box 70
Sprucedale, Ontario
POA 1Y0

for the expansion, use and operation of a 1.2 hectare landfill site within a 56.6 hectare total site area

all in accordance with the following plans and specifications:

listed in Schedule "A"

Located:

Part of Lots 10, 11, and 12,
Concession X
Township of McMurrich
District of Parry Sound

UTM Coordinates
N. 5083750
E. 621830

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

and subject to the following conditions:

1. For the purpose of this Provisional Certificate of Approval:
 - (a) "Certificate" means this Provisional Certificate of Approval including its schedules, if any, issued in accordance with the Environmental Protection Act;
 - (b) "Director" means a Regional Director of the Ministry;
 - (c) "District Manager" means the District Manager of the Timmins-North Bay District of the Ministry of Environment and Energy;
 - (d) "Ministry" means the Ontario Ministry of Environment and Energy, Province of Ontario, unless specific reference is made to another Ministry;
 - (e) "Municipality" means The Corporation of the Township of McMurrich;
 - (f) "Provincial Officer" means a person who is designated by the Ministry of Environment and Energy as a Provincial Officer for the purposes of the Environmental Protection Act, the Ontario Water Resources Act, the Pesticides Act, and their respective



regulations;

- (g) "Site" means the facility described in the Municipality's application, this Provisional Certificate of Approval and in the supporting documentation referred to herein, to the extent approved by this Provisional Certificate of Approval.
2. The requirements of this Provisional Certificate of Approval are imposed pursuant to Section 39 of the Environmental Protection Act. The issuance of this Provisional Certificate of Approval in no way abrogates the Municipality's legal obligations to take all reasonable steps to avoid violating other applicable provisions of this legislation and other legislation and regulations.
3. (a) The requirements of this Provisional Certificate of Approval are severable. If any requirement of this Provisional Certificate of Approval, or the application of any requirement of this Provisional Certificate of Approval to any circumstance, is held invalid, the application of such requirement to other circumstances and the remainder of this Provisional Certificate of Approval shall not be affected thereby.
- (b) In all matters requiring interpretation and implementation of this Provisional Certificate of Approval, the Conditions of this Provisional Certificate of Approval shall take precedence, followed in descending order by the Municipality's application and the documentation, referred to in this Provisional Certificate of Approval, which is submitted in support of the application.
4. The Municipality must ensure compliance with all the terms and Conditions of this Provisional Certificate of Approval at all times. Non-compliance constitutes a violation of the Environmental Protection Act and is grounds for enforcement.
5. (a) The Municipality shall, forthwith upon the request of the Director, District Manager and/or Provincial Officer, furnish any information requested concerning compliance with this Provisional Certificate of Approval including but not limited to any records required to be kept by this Provisional Certificate of Approval.
- (b) In the event the Municipality provides to the Ministry information, records, documentation or notification in accordance with this Provisional Certificate of Approval (for the purposes of this Condition, "information"),



Ontario

Ministry of
Environment
and Energy

Ministère de
l'Environnement
et de l'Énergie

REVISED PROVISIONAL CERTIFICATE OF APPROVAL
FOR A WASTE DISPOSAL SITE

REVISED NO. A522301

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- i) the receipt of said information by the Ministry;
 - ii) the acceptance by the Ministry of the information's completeness or accuracy;
 - or,
 - iii) the failure of the Ministry to prosecute the Municipality, or to require the Municipality to take any action, under this Provisional Certificate of Approval or any statute or regulation in relation to said information; shall not be construed as the approving, excusing or justifying by the Ministry of any act or omission of the Municipality relating to said information, amounting to non-compliance with this Provisional Certificate of Approval or any statute or regulation.
6. (a) In accordance with Section 19(4) of the Environmental Protection Act, this Provisional Certificate of Approval, the application filed to obtain it, and documentation referred to in this Provisional Certificate of Approval which may be reasonably necessary for a proper reading and understanding of it shall be made available for public inspection at the request of any person.
- (b) Additional information to that set out in this Provisional Certificate of Approval and contained in Ministry files may be made available to the public in accordance with the provisions of the Freedom of Information and Protection of Privacy Act.
7. Within six (6) months of the issuance of this Certificate, the Municipality shall invoke their purchase option, as it is outlined in the Operational Report, and shall provide proof of ownership of the property on which the site and buffer zones are located to the District Manager.
8. (a) No person having an interest in the site shall deal with the site in any way without first giving a copy of this Certificate to each and any person acquiring an interest in the site as a result of the dealing.
- (b) Within 30 days of obtaining ownership of the property comprising the site, the Municipality shall submit in writing to the Director a registerable deposition of the said property.



- (c) Within 15 days of a Certificate of Prohibition being signed by the Director pursuant to subsection 197(2) of the EPA, the Municipality shall register on title to the registerable description of the site the Certificates of Prohibition in the appropriate Land Registry Office.
- (d) The Municipality shall submit to the Director a duplicate registered copy of the Certificate of Prohibition no later than ten calendar days after it has been registered on title to the lands comprising the site.
9. The Municipality shall allow a Provincial Officer, or a Ministry authorized representative(s), upon presentation of credentials, to carry out any and all inspections authorized by Section 156, 157 or 158 of the Environmental Protection Act, Section 15(1-9), 16(1-3) or 17(1-6) of the Ontario Water Resources Act or Section 19 or 20 of the Pesticides Act, as amended from time to time, of any place to which this Provisional Certificate of Approval relates and, without restricting the generality of the foregoing to:
- (a) enter at reasonable times upon the premises where the approved works are located, or the location where the records required by the Conditions of this Provisional Certificate of Approval are kept;
- (b) have access to and copy, at reasonable times, any records required by the Conditions of the Provisional Certificate of Approval;
- (c) inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations required by the Conditions of the Provisional Certificate of Approval;
- and/or,
- (d) sample and monitor at reasonable times for the purposes of assuring compliance with the Conditions of the Provisional Certificate of Approval.
10. Except as otherwise provided by these Conditions, this landfill site shall be operated in accordance with the Application for a Provisional Certificate of Approval for a Waste Disposal Site (landfill) dated January 14, 1997 and supporting information, plans and specifications submitted by the Municipality listed in Schedule "A" which is attached to this Provisional Certificate of Approval.



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11. (a) By November 7, 1997, the Municipality shall submit to the District Manager for the approval of the Director, a monitoring program that is consistent with section 4.23 of the Ministry's "Guidance Manual for Landfill Sites Receiving Municipal Wastes" dated November 1993.
 - (b) The monitoring program approved in Condition 11 (a) above shall be implemented immediately.
 - (c) By January 1, 1999, and January 1, 2000, the Municipality shall provide to the District Manager a report outlining the results of monitoring program for the previous year.
 - (d) By April 1, 2005 and every five (5) years thereafter, the Municipality shall submit to the District Manager a summation of the monitoring data and conclusions, and/or recommendations based on the findings of the analysis results.
12. The Municipality shall provide site supervision and inspection that is consistent with Section 4.18 of this Ministry's "Guidance Manual for Landfill Sites Receiving Municipal Waste" dated November 1993.
13. The Municipality shall operate a litter maintenance program, which shall include the collection and proper disposal of any wind blown waste, at least once every month, from off-site deposition locations and from those areas of the site that are not being actively landfilled.
14. (a) The Municipality shall burn only clean wood and brush, subject to weather and atmospheric conditions, and supervision requirements. All burning at the site, under the authority of this Certificate, shall be in accordance with Section 4.21 of this Ministry's "Guidance Manual for Landfill Sites Receiving Municipal Wastes" dated November 1993.
 - (b) Should any complaints be received as a result of any burning of wastes at this site, the Municipality shall report the information to the Ministry and provide details of their response.
15. a) A minimum of ninety (90) days prior to the planned closure of the Site, the Municipality shall provide to the Director for approval, a written Closure Plan. This plan shall include as a minimum, a description of the work that will be undertaken to facilitate closure of the Site and a schedule for completion of that work; and,



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- b) Within ninety (90) days following closure of the Site, the Municipality shall provide to the Director, a report, written by an independent, qualified consultant, confirming that the Site has been closed in accordance with the Closure Plan submitted and approved under subsection (a) above.
16. By October 31, 1997, the Municipality shall construct a firebreak, 30 metres in width, around the perimeter of the landfill area. The centre 6 metres of the firebreak shall be scraped to expose mineral soil.



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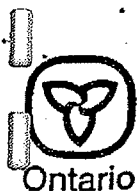
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SCHEDULE "A"

1. Application for a Certificate of Approval for a Waste Disposal Site dated January 14, 1997.
2. Report entitled "Township of McMurrich Design and Operation Report" dated January 1997 and signed by S. J. Blakey, P. Eng.
3. Letter to J. David Bell of the Ministry from Hydroterra Limited dated May 9, 1997 and signed by Leon G. Bryck, P. Eng.
4. Facsimile to J. David Bell of the Ministry from Totten, Sims, Hubicki Associates dated August 25, 1997.



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

1. Condition 1 is included to define certain words.
2. Condition 2 is included to emphasize that the issuance of the Provisional Certificate of Approval does not diminish any other statutory and regulatory obligations to which the Municipality is subject in the construction, maintenance and operation of the site.
3. Condition 3 is included to clarify how the Provisional Certificate of Approval is to be judicially interpreted and specifically, to clarify that the requirements of the Provisional Certificate of Approval are severable and that they prevail over supporting documentation.
4. Condition 4 is included to emphasize that the Municipality is under a statutory obligation to ensure compliance with the Provisional Certificate of Approval.
5. Conditions 5 and 9 are included to ensure that Ministry personnel, when acting in the course of their duties, will be given unobstructed access to the facilities, information and records related to the site which are the subject of this Provisional Certificate of Approval, to enable the Ministry to be assured of the owner's compliance with the terms and Conditions of this Provisional Certificate of Approval.

Condition 5(b) is included to make the owner aware that the mere provision of information in accordance with this Provisional Certificate of Approval shall not exonerate it from enforcement in relation to any non-compliance disclosed by that information simply because the Ministry fails to note the non-compliance, require corrective action or prosecute.
6. Condition 6 is included to make the Municipality aware of the public's right to access information under applicable legislation.
7. Condition 7 is included to ensure that the Municipality acquires ownership of the lands comprising the site.
8. Condition 8, requiring registration of a Certificate of Prohibition on title, is included pursuant to subsection 197(1) of the Environmental Protection Act, to provide that any potential future buyers of or persons having an interest in the site are aware that the land has been approved and used for the purposes of waste disposal.



9. The reason for Condition 10 is to ensure that this site is operated in accordance with the application submitted for the Provisional Certificate of Approval and not on a basis which the Director has not been asked to consider.
10. The reason for Condition 11 is that monitoring is required to ensure that surface water and groundwater off site will not be adversely affected by the respective landfill operations and to operate this site without such Condition would not be in the public interest and may create a hazard to the health and safety of any one person or to the natural environment.
11. The reason for Condition 12 is to ensure that the site is operated in an environmentally satisfactory manner.
12. Condition 13 is included to minimize the exposure of waste to reduce off-property effects. The use and operation of this site without such Condition may create a nuisance.
13. The reason for Condition 14 is that burning of refuse may create a nuisance and may create environmental problems.
14. The reason for Condition 15 is to ensure that the site is closed in a satisfactorily environmental manner.
15. The reason for Condition 16 is to reduce potential damage and environmental effects due to fire.

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, should you wish to appeal this alteration, you may by written notice served upon me, the Environmental Appeal Board and the Environmental Commissioner, Environmental Bill of Rights, S.O. 1993, Chapter 28, within 15 days after receipt of this Notice, require a hearing by the Board. The Environmental Commissioner will place notice of your appeal on the Environmental Registry. Section 142 of the Environmental Protection Act, as amended provides that the Notice Requiring a hearing shall state:

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

In addition to these legal requirements, the Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;



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8. The municipality within which the waste disposal site is located;

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

Please note, unless stayed by application under Section 143 of the Environmental Protection Act, this approval is effective from the date of issue.

This Notice must be served upon:

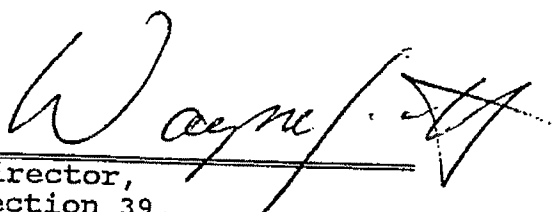
The Secretary
Environmental Appeal Board
2300 Yonge Street, 12th Fl.
P. O. Box 2382
Toronto, Ontario
M4P 1E4

The Director
Section 39
Environmental Protection Act
Ministry of Environment and
Energy
Northern Region
435 James Street South
3rd Floor, Suite 331
Thunder Bay, Ontario
P7E 6S7

The Environmental
Commissioner,
1075 Bay Street,
Suite 605, 6th Floor,
Toronto, Ontario,
M5S 2W5

The instrument is subject to Section 38 of the Environmental Bill of Rights, that allows residents of Ontario to seek leave to appeal the decision on this instrument. Residents of Ontario may seek to appeal for 15 days from the date this decision is placed on the Environmental Registry. By accessing the Environmental Registry, you can determine when the leave to appeal period ends.

DATED AT THUNDER BAY, this 4th day of September, 1997.


Director,
Section 39,
Environmental Protection Act



APPENDIX B – TEST PIT LOGS



TEST PIT LOG - TP1

Waste Capacity Assessment
McMurrich & Monteith Waste Disposal Site
Sprucedale, ON

Date Completed : 10/09/2025
Equipment Type : Backhoe
Excavating Company : McMurrich & Monteith Twnshp
Sampling Method : Continuous Grab Samples
Field Technician : T. Gordon

Zone : 17T
Northing : 5038920 m
Easting : 621673 m

Township of McMurrich & Monteith

Greenstone Project #25116

Depth in Feet	Depth in Meters	<div><div><div></div><div></div></div><div>HVM (ppm)</div><div></div><div>PID (ppm)</div></div>	Sample Collection	Graphic	Sample	Sample ID	REMARKS
			<div><div></div><div>Field Screened</div></div> <div><div></div><div>Sample Submitted for Lab Analysis</div></div>				
			DESCRIPTION				
0	0		SAND AND GRAVEL, mixed landfill waste				
1							
2			SILTY SAND, damp				
3			End of Test Pit				



TEST PIT LOG - TP2

Waste Capacity Assessment
McMurrich & Monteith Waste Disposal Site
Sprucedale, ON

Date Completed : 10/09/2025
Equipment Type : Backhoe
Excavating Company : McMurrich & Monteith Twnshp
Sampling Method : Continuous Grab Samples
Field Technician : T. Gordon

Zone : 17T
Northing : 5038899 m
Easting : 621685 m

Township of McMurrich & Monteith

Greenstone Project #25116

Depth in Feet	Depth in Meters	<div><div><div></div><div>HVM (ppm)</div></div><div><div></div><div>PID (ppm)</div></div></div>	Sample Collection		Graphic	Sample	Sample ID	REMARKS
			<div><div></div><div>Field Screened</div></div>	<div><div></div><div>Sample Submitted for Lab Analysis</div></div>				
			DESCRIPTION					
0	0		SAND AND GRAVEL, mixed landfill waste					
1								
2			SILTY SAND, damp					
3								
			End of Test Pit					



Waste Capacity Assessment
McMurrich & Monteith Waste Disposal Site
Sprucedale, ON

Date Completed	: 10/09/2025	Zone	: 17T
Equipment Type	: Backhoe	Northing	: 5038912 m
Excavating Company	: McMurrich & Monteith Twnshp	Easting	: 621656 m
Sampling Method	: Continuous Grab Samples		
Field Technician	: T. Gordon		

Township of McMurrich & Monteith

Greenstone Project #25116

Sample Collection

 Field Screened

Sample Submitted for Lab Analysis

○ HVM (ppm)

Δ PID (ppm)

DESCRIPTION

Graphic

Sample

Sample ID

REMARKS

A vertical axis with tick marks and labels 0, 1, 2, and 3.

SILTY SAND, damp

End of Test Pit



TEST PIT LOG - TP4

Waste Capacity Assessment
McMurrich & Monteith Waste Disposal Site
Sprucedale, ON

Date Completed : 10/09/2025
Equipment Type : Backhoe
Excavating Company : McMurrich & Monteith Twnshp
Sampling Method : Continuous Grab Samples
Field Technician : T. Gordon

Zone : 17T
Northing : 5038877 m
Easting : 621687 m

Township of McMurrich & Monteith

Greenstone Project #25116

Depth in Feet	Depth in Meters	<div><div><div></div><div></div></div><div>HVM (ppm)</div><div></div><div>PID (ppm)</div></div>	Sample Collection	Graphic	Sample	Sample ID	REMARKS
			<div><div></div><div>Field Screened</div></div> <div><div></div><div>Sample Submitted for Lab Analysis</div></div>				
0	0						
			SAND AND GRAVEL, mixed landfill waste				
1							
2			SILTY SAND, damp				
3			End of Test Pit				



Date Completed	: 10/09/2025	Zone	: 17T
Equipment Type	: Backhoe	Northing	: 5038832 m
Excavating Company	: McMurrich & Monteith Twnshp	Easting	: 621737 m
Sampling Method	: Continuous Grab Samples		
Field Technician	: T. Gordon		

Excavating Company : McMurrich & Monteith Twnshp
Sampling Method : Continuous Grab Samples

Field Technician : T. Gordon

Depth in Feet	Depth in Meters	Sample Collection		Graphic	Sample	Sample ID	REMARKS
		<div>○ HVM (ppm)</div> <div>△ PID (ppm)</div>	<div>☒ Field Screened</div> <div>■ Sample Submitted for Lab Analysis</div>				
		DESCRIPTION					
0	0	SILTY SAND, damp					
1							
2							
3							
		End of Test Pit					



Date Completed	: 10/09/2025	Zone	: 17T
Equipment Type	: Backhoe	Northing	: 5038906 m
Excavating Company	: McMurrich & Monteith Twnshp	Easting	: 621758 m
Sampling Method	: Continuous Grab Samples		
Field Technician	: T. Gordon		

Excavating Company : McMurrich & Monteith Twnshp

Field Technician : T. Gordon

Depth in Feet	Depth in Meters	Sample Collection		Graphic	Sample	Sample ID	REMARKS
		<div>○ HVM (ppm)</div> <div>△ PID (ppm)</div>	<div>☒ Field Screened</div> <div>■ Sample Submitted for Lab Analysis</div>				
		DESCRIPTION					
0	0	SILTY SAND, damp					
1							
2							
3							
		End of Test Pit					



Date Completed	: 10/09/2025	Zone	: 17T
Equipment Type	: Backhoe	Northing	: 5038929 m
Excavating Company	: McMurrich & Monteith Twnshp	Easting	: 621747 m
Sampling Method	: Continuous Grab Samples		
Field Technician	: T. Gordon		

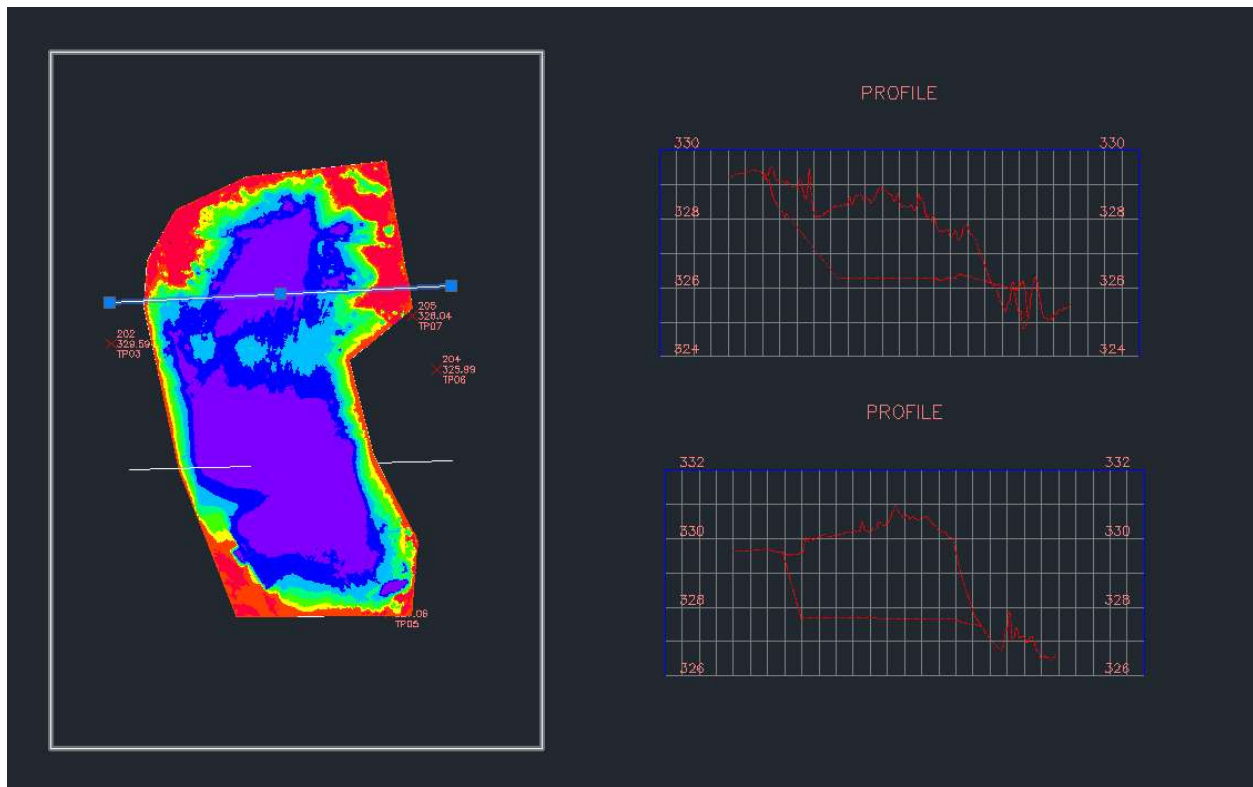
Excavating Company : McMurrich & Monteith Twnshp
Sampling Method : Continuous Grab Samples

Field Technician : T. Gordon

Depth in Feet	Depth in Meters	Sample Collection		Graphic	Sample	Sample ID	REMARKS
		<div>○ HVM (ppm)</div> <div>△ PID (ppm)</div>	<div>☒ Field Screened</div> <div>■ Sample Submitted for Lab Analysis</div>				
		DESCRIPTION					
0	0	SILTY SAND, damp					
1							
2							
3							
		End of Test Pit					



APPENDIX C – TOPOGRAPHIC SURVEY





REPORT LIMITATIONS & GUIDELINES FOR USE

This report has been prepared for the exclusive use and sole benefit of the Client, and may not be used by any third party without the express written consent of Greenstone Engineering Ltd. and the Client. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of third parties. This report is not to be construed as legal advice. Greenstone Engineering Ltd. disclaims responsibility of consequential financial effects on transactions or property values, or requirements for follow-up actions and costs. No other warranty is expressed or implied.

Misinterpretation of this report by other design or project team members or contractors could result in significant financial and/or safety issues. Retaining Greenstone Engineering Ltd. to confer with the appropriate members of future related project teams can substantially lower those potential issues.

BASIS OF THE REPORT

The information, opinions, and/or recommendations made in this report are in accordance with Greenstone Engineering Ltd.'s present understanding of the site-specific conditions as described by the Client. The applicability of this report is restricted to the current site conditions encountered at the time of the investigation or study. If the proposed site specific conditions differs or is modified from what is described in this report or if the site conditions are altered, this report is no longer valid unless Greenstone Engineering Ltd. is requested by the Client to review and revise the report to reflect the differing or modified project specifics and/or the altered site conditions.

STANDARD OF CARE

Based on the limitations of the scope of work, schedule, and budget, the preparation of this report, and all associated work, was carried out in accordance with the normally accepted standard of care for the specific professional service provided to the Client. The environmental conditions that have been presented are based on the factual data obtained from this investigation. No other warranty is expressed or implied.

INTERPRETATION OF SITE CONDITIONS

Descriptions of environmental conditions made in this report are based on site conditions encountered by Greenstone Engineering Ltd. at the time of the work, and at the specific inspected, tested, monitored and/or sampled locations. Classifications and statements of condition(s) have been made in accordance with commonly accepted practices, which are judgmental in nature; no specific description should be considered exact. Extrapolation of in-situ conditions can only be made to some limited extent beyond the sampling or test points, if completed. The extent depends on variability of the specific media conditions (building materials, soil, groundwater, rock, sediment, etc.) as influenced by natural, environmental, geological and/or hydrogeological processes, construction activity, and site/building use. No warranty or other conditions, expressed or implied, should be understood.



VARYING OR UNEXPECTED CONDITIONS

Regardless of how exhaustive an environmental investigation is performed, the investigation cannot identify all the subsurface conditions, which may differ from the conditions encountered at the test locations at the time of our investigation. Further, subsurface conditions can change with time due to natural and direct or indirect human impacts at or away from the site. As such, no warranty is expressed or implied that the entire site is representative of the subsurface information obtained at the specific locations of our investigation, which may also change with time.

Should any site or subsurface conditions be encountered that are different from those described in this report or encountered at the test locations, Greenstone Engineering Ltd. must be notified immediately to assess if the varying or unexpected conditions are substantial and if reassessments of the report conclusions or recommendations are required. Greenstone Engineering Ltd. will not be responsible to any party for damages incurred as a result of failing to notify Greenstone Engineering Ltd. that differing site or subsurface conditions are present upon becoming aware of such conditions.

PLANNING, DESIGN, AND CONSTRUCTION

If there are any changes in the project scope or development features, which may affect our assessment, the information obtained during the investigation may be inadequate. In this case, Greenstone Engineering Ltd. should be retained to review the project changes to evaluate if the changes will affect the conclusions and recommendations within our report, and if additional field investigation work, as well as reporting is required as part of the reassessment.

Development or design plans and specifications should be reviewed by Greenstone Engineering Ltd., sufficiently ahead of initiating the next project stage (property acquisition, financing, tender, construction, etcetera), to confirm that this report completely addresses the elaborated project specifics and that the contents of this report have been properly interpreted. Specialty quality assurance services (field observations and testing) during construction can be a necessary part of the evaluation of subsurface conditions and site preparation works. Site work relating to the recommendations included in this report should only be carried out in the presence of a qualified environmental engineer. Greenstone Engineering Ltd. cannot be responsible for site work carried out without being present or consulted.

FINANCIAL DISCLAIMER

Greenstone Engineering Ltd. will not be responsible for any consequential or indirect damages. Greenstone Engineering Ltd. will only be held liable for damages resulting from the negligence of our work completed. Any liability resulting from the negligence of Greenstone Engineering Ltd. and its officers shall be limited to the lesser of fees paid and/or actual damages incurred by the Client.

LEGAL DISCLAIMER

Greenstone Engineering Ltd. makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters that could be construed within 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.