



**Geomaple Geotechnics Inc.**

**GEOTECHNICAL INVESTIGATION REPORT  
PROPOSED ACCESSIBILITY IMPROVEMENT  
WILLIAM G. MILLER PUBLIC SCHOOL  
60 BENNETT ROAD,  
SCARBOROUGH, ONTARIO**

**Prepared for:** Toronto District School Board  
Facility Services  
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Toronto, Ontario  
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**Date:** March 13, 2026

**Project No.:** 2026-10-107

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## **1 INTRODUCTION**

Geomaple Geotechnics Inc. (GGI) was retained by Toronto District School Board (Client) to conduct a geotechnical investigation for the proposed accessibility improvement at William G. Miller Public School located at 60 Bennett Road, Scarborough, Ontario.

This report presents results of the geotechnical investigation conducted at the subject site to determine the prevailing subsurface soil and groundwater conditions, and based on this information, provides pertinent geotechnical engineering and design recommendations for the proposed accessibility improvements.

## **2 SITE AND PROJECT DESCRIPTION**

The subject site is located at the southeast quadrant of the intersection of Lawrence Avenue East and Morningside Avenue, in the City of Toronto, Ontario. The general location of the site is shown on Figure 1 in Appendix A.

Based on the information provided by the client, we understand that the proposed accessibility improvements include the installation of an elevator and the construction of a new sidewalk, accessible pathway, and accessible parking space on the north side of the existing building. The site plan illustrating the proposed improvements was provided by the client and is presented as Figure 2 in Appendix A.

## **3 PROCEDURE**

The field investigation of the site was conducted on February 17, 2026, which consisted of drilling and sampling of four (4) boreholes extending to a depth of about 5.0 m, and excavation of one (1) test pit to a depth of about 1.3 m below grade.

The approximate borehole and test pit locations are shown on Figure 2 in Appendix A. The results of the boreholes are recorded in detail on the Borehole Logs in Appendix B.

The borehole and test pit surface elevations are provided only for relating borehole soil stratigraphy and should not be used or relied on for other purposes.

The borings were drilled by specialist drilling subcontractor using a track mounted drill rig power auger with solid stem augers and were sampled with conventional 25 mm diameter split barrel samplers when the Standard Penetration Test (SPT) was carried out (ASTM D1586). The field work (drilling, sampling, and testing) was observed and recorded by a member of our engineering staff, who logged the bores and examined the samples as they were obtained.

All samples obtained during the investigation were sealed into clean plastic bags and transported

to our office for detailed inspection and testing. The samples were examined (tactile) in detail by our staff and classified according to visual and index properties.

The geotechnical laboratory testing consisted of water content determination, Sieve and Hydrometer Analysis on selected sample(s). The laboratory test results of individual sample(s) are plotted on the Borehole Logs at respective sampling depth, and presented in Appendix C.

Analytical sampling was conducted on selected soil samples obtained from the boreholes to assess the chemical quality of the site soils for the purpose of excess soil management and potential off-site disposal. The samples were analyzed in accordance with O. Reg. 406/19 – On-Site and Excess Soil Management, and the analytical results were compared to the applicable Excess Soil Quality Standards table under the regulation. The laboratory results are presented in Appendix D.

Unstabilized groundwater levels were measured in the boreholes upon completion of drilling. Monitoring well installation was not included in the scope of this assignment. The results of the groundwater level measurements are summarized in Section 4.2 of this report.

## **4 SUBSURFACE CONDITIONS**

It should be noted that soil and groundwater conditions are confirmed at the borehole locations only and may vary at other locations. The stratigraphic boundaries as shown on the Borehole Logs represent an inferred transition between various strata, rather than a precise plane of geologic change.

### **4.1 Stratigraphy**

The borehole results are summarized below and recorded on the accompanying Borehole Logs. This summary is intended to correlate this data to assist in the interpretation of the subsurface conditions at the site.

In summary, the boreholes encountered a surficial layer of pavement structure at the ground surface underlain by earth fill materials overlying undisturbed native soil deposit extending to the full depth of investigation.

#### **4.1.1 Earth Fill**

Below the pavement structure, the boreholes encountered a layer of earth fill material extending to about 0.7 to 1.2 m below grade. The earth fill comprised of a sandy matrix with some silt, and trace amounts of clay and gravel.

The samples obtained from the earth fill were loose to compact with Standard Penetration Test

results ('N' Values) of 9 to 30 blows per 300 mm of penetration.

#### 4.1.2 Glacial Till

Below the earth fill material, undisturbed native glacial till deposit was encountered extending to the full depth of investigation. The composition of the glacial till varied from sandy silt to silty sand with trace to some clay and trace amounts of gravel.

The samples obtained from the native glacial till and sand layers were loose to very dense with Standard Penetration Test results ('N' Values) of 16 to 84 blows per 300 mm of penetration.

It should be noted that the glacial till deposit is likely to contain larger particles (cobbles and boulders) that are not specifically identified in the borehole. The size and distribution of such obstructions cannot be predicted with borings, because the borehole sampler size is insufficient to secure representative samples for particles of this size.

#### 4.2 Groundwater

Groundwater was not encountered in any of the boreholes upon completion of drilling. Installation of monitoring wells was not part of the scope of this assignment.

It should be noted that the groundwater levels may fluctuate seasonally depending on the amount of precipitation and surface runoff. Wet soils may be encountered to about 0.6 m above the groundwater level in the cohesionless silt/sand deposits.

### 5 FOOTING OF THE EXISTING BUILDING

A test pit investigation was conducted to determine the depth, thickness and projection of the footing of the existing building at the site. The investigation included excavation of one (1) test pit adjacent to the north wall of the building near the footprint of the proposed elevator. The test pit location is shown on Figure 2 in Appendix A.

The results of the test pits are summarized in the following table.

Test Pit No.	Groundwater Depth (m)	Under Side of Footing Depth (m)	Footing Thickness (m)	Footing Projection (m)
TP1	NA	1.24	0.20	0.15

## 6 SOIL CHEMISTRY ANALYSIS

Three (3) soil samples (BH1 SS1, BH2 SS3, and BH4 SS2) were selected for analytical testing and submitted to a certified environmental laboratory (Eurofins) retained by GGI. The samples were analyzed for the following parameters:

- Metals and Inorganics
- Volatile Organic Compounds (VOCs)
- Polycyclic Aromatic Hydrocarbons (PAHs)
- Petroleum Hydrocarbons (PHCs F1–F4)
- BTEX (Benzene, Toluene, Ethylbenzene, Xylenes)

The analytical results were compared with the O. Reg. 406/19 – Excess Soil Quality Standards for Full Depth – Residential/Parkland/Institutional/Industrial/Commercial (Table 1). The Certificate of Analysis and Chain of Custody are provided in Appendix D.

Based on the analytical results, all tested parameters met the applicable Table 1 Excess Soil Quality Standards, with the exception of Sodium Adsorption Ratio (SAR) and Electrical Conductivity (EC). Elevated SAR and EC values were observed in all three tested samples.

It should be noted that the analytical results apply only to the soil samples collected from the borehole locations tested. Soil conditions may vary between and beyond the sampled locations. Accordingly, soil materials to be excavated and transported off-site should be monitored for any visual or olfactory indications of contamination, and additional chemical testing may be required depending on the requirements of the receiving site and the applicable regulatory framework.

The soil chemistry analysis carried out as part of this investigation was intended to provide preliminary information regarding the chemical quality of the site soils for excess soil management purposes. This work does not constitute a Phase II Environmental Site Assessment and is not intended to support the filing of a Record of Site Condition (RSC) under the Environmental Protection Act. Additional environmental investigation may be required if an RSC is to be submitted.

### 6.1 Off-Site Soil Disposal

As previously noted, the objective of the soil chemistry analysis carried out on selected borehole soil samples was to obtain preliminary information regarding the chemical quality of the site soils for the purpose of excess soil management.

Based on the analytical results obtained from the tested soil samples, all analyzed parameters meet the applicable Excess Soil Quality Standards under O. Reg. 406/19 – On-Site and Excess Soil Management (Table 1 – Full Depth – Residential/ Parkland/ Institutional/ Industrial/

Commercial), with the exception of Sodium Adsorption Ratio (SAR) and Electrical Conductivity (EC), which exceeded the applicable standard in the tested samples.

It should be noted that elevated SAR and EC values are relatively common in natural soils and are typically associated with the natural mineral composition of the soil rather than anthropogenic contamination. SAR and EC is primarily an indicator of soil sodicity and may affect soil structure and permeability under certain conditions, but it does not generally represent a contamination concern. The exceedance observed in the tested samples is therefore considered to be likely related to natural soil conditions.

It should also be noted that the analytical results apply only to the soil samples collected from the borehole locations tested. Soil conditions may vary between and beyond the sampled locations. Accordingly, additional sampling and analysis may be required during construction to further characterize the soils to be excavated and determine appropriate soil management and disposal options.

It is recommended that a Soil Management Plan be prepared and implemented during construction to further characterize the site soils and assess soil reuse and disposal options in accordance with O. Reg. 406/19 requirements. This plan may include stockpiling and sorting of excavated soils under appropriate supervision, followed by re-sampling and laboratory analysis of representative stockpile samples to confirm soil quality prior to off-site transportation or potential on-site reuse.

If any soils exhibiting unusual staining, hydrocarbon or solvent odours, or containing rubble, debris, cinders, or other visual evidence of potential impact are encountered during excavation, such materials should be segregated and temporarily stockpiled on-site. These soils should not be transported off-site until further assessment and analytical testing has been completed to determine appropriate handling and disposal requirements.

## **7 DISCUSSION AND RECOMMENDATIONS**

The following discussion and recommendations are based on the factual data obtained from this investigation and are intended for use of the owner and the design engineer. Contractors bidding or providing services on this project should review the factual data and determine their own conclusions regarding construction methods and scheduling.

This report is provided based on these terms of reference and the assumption that the design features relevant to the geotechnical analyses will be in accordance with applicable codes, standards, and guidelines of practice. The pertinent sections of Ontario Building Code may require additional considerations above and beyond the recommendations provided in this report. If there are any changes to the site development features, or there is any additional information relevant to the interpretations made of the subsurface information with respect to the geotechnical analyses or other recommendations, then Geomape should be retained to review the implications of these changes with respect to the contents of this report.

### **7.1 Foundations**

Based on the borehole data the site is underlain by undisturbed native glacial till deposit which is competent to support the proposed foundations.

Groundwater was not encountered in the boreholes and test pit at the time of drilling and excavation. However, groundwater levels may rise during wetter periods of the year. Therefore, conservatively, any below-grade elements such as the elevator pit may be designed assuming the potential presence of groundwater. Appropriate waterproofing (tanking) measures should be incorporated into the foundation design to prevent water ingress and to ensure the long-term performance of the structure.

A net geotechnical reaction of 200 kPa at Serviceability Limit States (SLS), and a factored geotechnical resistance of 300 kPa at Ultimate Limit States (ULS), may be used for the design of conventional spread footing foundations (for vertical and concentric loads) supported on the glacial till deposit at a depth of 1.5 m below grade or lower.

For structural design purposes, a modulus of subgrade reaction of 30,000 kN/m<sup>3</sup> may be assumed for slabs or foundations bearing on the recommended native glacial till or engineered fill compacted to 98% Standard Proctor Maximum Dry Density (SPMDD).

All foundations must be designed to bear at least a minimum of 0.3 m into the undisturbed native soil strata. The founding depth noted above accounts for this embedment.

The minimum width of continuous strip footings should be 600 mm, and the minimum size of isolated footings should be 1000 mm x 1000 mm in conjunction with the above bearing pressures



regardless of loading considerations. The footing sizes for institutional buildings are stipulated in the Ontario Building Code (2024), and must be followed.

### **7.1.1 Placement of Footings**

Prior to placing foundation concrete, the foundation subgrade should be stripped of all deleterious materials, including topsoil, fill, softened, disturbed, or caved soils, as well as any standing water. If construction proceeds during freezing weather conditions, adequate temporary frost protection should be provided for both the foundation subgrade and the concrete.

It is recommended that the foundation subgrade be inspected by Geomape or a qualified geotechnical representative to confirm that the soils exposed at the base of excavation are consistent with the soil conditions assumed in the design and are capable of supporting the specified bearing pressures.

All exterior foundations, or foundations located in unheated areas exposed to freezing temperatures (such as footings for fence posts or basketball posts), should be provided with a minimum soil cover of 1.2 m for frost protection, or alternatively be protected with equivalent frost insulation measures.

It should also be noted that the native soils encountered at the site may weather and soften upon prolonged exposure to the atmosphere or surface water. Therefore, if foundation excavations remain open for an extended period, the exposed subgrade should be protected, for example by placing a skim coat of lean concrete, to prevent deterioration prior to construction.

## **7.2 Excavation and Groundwater Control**

Excavations must be carried out in accordance with the Occupational Health and Safety Act and Regulations for Construction Projects.

The earth fill can be considered Type 3 Soil above and Type 4 Soil below the groundwater level, while the glacial till encountered in the boreholes is considered Type 2 Soil under these regulations.

Where workmen must enter excavations advanced deeper than 1.2 m, the trench walls should be suitably sloped and/or braced in accordance with the Occupational Health and Safety Act and Regulations for Construction Projects. The regulation stipulates steepest slopes of excavation by soil type, as follows:

Soil Type	Base of Slope	Maximum Slope Inclination
Type 1	within 1.2 m of bottom of trench	1 horizontal to 1 vertical
Type 2	within 1.2 m of bottom of trench	1 horizontal to 1 vertical
Type 3	from bottom of trench	1 horizontal to 1 vertical
Type 4	from bottom of trench	3 horizontal to 1 vertical

Minimum support system requirements for steeper excavations are stipulated in the Occupational Health and Safety Act and Regulations for Construction Projects, and include provisions for timbering, shoring and movable trench boxes.

Groundwater was not encountered within the boreholes. However, perched groundwater may be present within the earth fill material above the native till layer.

The excavation for the foundations would be above the water table, however, the groundwater seepage may emanate from the perched groundwater generally present in the earth fill materials. Based on the above, the groundwater seepage during the construction for the basement excavation would not be significant (less than 50,000 L/day) which can be controlled by pumping from filtered sumps at the base of the excavation.

### 7.3 Earth Pressure Design Parameters

Walls or bracings subject to unbalanced earth pressures must be designed to resist a pressure that can be calculated based on the following equation:

$$P = K [\gamma (h - h_w) + \gamma' h_w + q] + \gamma_w h_w$$

where:

P = the horizontal pressure at depth, h (m)

K = the earth pressure coefficient,

$h_w$  = the depth below the groundwater level (m),

$\gamma$  = the bulk unit weight of soil, (kN/m<sup>3</sup>)

$\gamma'$  = the submerged unit weight of the exterior soil, (9.81 kN/m<sup>3</sup>)

q = the complete surcharge loading (kPa)

Where the wall backfill can be drained effectively to eliminate hydrostatic pressures on the wall, this equation can be simplified to:

$$P = K [\gamma h + q]$$

This equation assumes that free-draining granular backfill is used and positive drainage is provided to ensure that there is no hydrostatic pressure acting in conjunction with the earth pressure.

Resistance to sliding of earth retaining structures is developed by friction between the base of the footing and the soil. This friction ( $R$ ) depends on the normal load on the soil contact ( $N$ ) and the frictional resistance of the soil ( $\tan \phi$ ) expressed as:  $R = N \tan \phi$ . The factored resistance at ULS is  $0.8R$ .

Passive earth pressure resistance is generally not considered a resisting force against sliding for conventional retaining structure design since a structure must deflect significantly to develop the full passive resistance.

The appropriate values for use in the design of structures subject to unbalanced earth pressures at this site are tabulated as follows:

<u>Parameter</u>	<u>Definition</u>	<u>Units</u>
$\phi$	internal angle of friction	degrees
$\gamma$	bulk unit weight of soil	kN/m <sup>3</sup>
$K_a$	active earth pressure coefficient (Rankin)	dimensionless
$K_o$	at-rest earth pressure coefficient (Rankin)	dimensionless
$K_p$	passive earth pressure coefficient (Rankin)	dimensionless

<b>Stratum/Parameter</b>	<b><math>\phi</math></b>	<b><math>\gamma</math></b>	<b><math>K_a</math></b>	<b><math>K_o</math></b>	<b><math>K_p</math></b>
Earth Fill	30	20	0.33	0.50	3.00
Silty Sand to Sandy Silt Till	36	21	0.26	0.41	3.85
Granular Backfill	32	21	0.31	0.47	3.25

The values of the earth pressure coefficients noted above are for the horizontal retained grade. The earth pressure coefficients for inclined grade will vary based on the inclination of the retained ground surface.

## 7.4 Backfill

The earth fill and native soils encountered at the site may be reused as backfill, provided they are free of excessive organic matter, debris, or other deleterious materials. The selection and

placement of suitable backfill materials should be carried out under the supervision of a geotechnical engineer or qualified representative. Soils containing excessive organic material should not be used as structural backfill but may be stockpiled and reused for landscaping purposes, where appropriate.

The earth fill may be considered suitable for backfill if the moisture content is within approximately  $\pm 3$  percent of the optimum moisture content. It should be noted that native soils located below the groundwater table are expected to have elevated moisture content and may be too wet for effective compaction. Soils with in-situ moisture content exceeding the optimum moisture content by approximately 3 percent or more should be aerated or tilled to reduce the moisture content prior to compaction. Alternatively, excessively wet materials may need to be removed and replaced with imported granular materials that can be readily compacted.

In settlement-sensitive areas, such as beneath floor slabs, backfill should consist of clean, approved fill materials placed in maximum 150 mm thick lifts and compacted to a minimum of 98 percent of the Standard Proctor Maximum Dry Density (SPMDD) at a moisture content close to optimum.

It should also be noted that the native glacial till encountered at the site is not free-draining and may become difficult to handle and compact if exposed to additional moisture from precipitation or groundwater seepage. As a result, earthworks may be more challenging during wet periods of the year, particularly during the spring and fall seasons.

## **7.5 Pavement**

The proposed work may include the construction of a new concrete sidewalk, accessible pathway, and accessible parking space as part of the accessibility improvements.

Based on the anticipated subgrade conditions, a subgrade modulus of resilience of approximately 12,000 kPa/m may be assumed for design purposes. The following flexible pavement structure is recommended for a typical design life of approximately 15 to 20 years under normal parking and light vehicular loading conditions.

Pavement Layer	Compaction Requirements	Thickness
<b>Surface Course</b> - Asphaltic Concrete HL3 (OPSS 1150 and Pertinent City Specifications)	as per OPSS 310	40 mm
<b>Base Course</b> - Asphaltic Concrete HL8 (OPSS 1150 and Pertinent City Specifications)	as per OPSS 310	50 mm
<b>Base Course:</b> Granular 'A' or 19 mm Crusher Run Limestone (OPSS 1010 and Pertinent City Specifications)	98% Standard Proctor Maximum Dry Density (ASTM-D698)	150 mm
<b>Subbase Course:</b> Granular 'B' Type II, or 50 mm Crusher Run Limestone (OPSS 1010 and Pertinent City Specifications)	98% Standard Proctor Maximum Dry Density (ASTM-D698)	200 mm

The existing granular base materials encountered at the site may be reused for engineered fill or pavement subgrade preparation provided they are free of excessive organic matter and other deleterious materials and their in-situ moisture content is within approximately 3 percent of the optimum moisture content. The selection and reuse of these materials should be carried out under the supervision of a geotechnical engineer. The pavement subgrade and granular materials should be compacted to a minimum of 98 percent Standard Proctor Maximum Dry Density (SPMDD).

Prior to placement of new pavement materials, the exposed subgrade should be proof rolled using a heavy rubber-tired vehicle. Any loose, soft, wet, or unstable areas identified during proof rolling should be sub-excavated and replaced with suitable granular fill placed in lifts not exceeding 150 mm and compacted to a minimum of 98 percent SPMDD.

The long-term performance of the pavement structure is highly dependent on the quality and uniformity of the subgrade. Therefore, care should be taken during construction to maintain consistent moisture and density conditions and to avoid disturbance of the prepared subgrade.

## 7.6 Drainage

Proper drainage is essential for satisfactory pavement performance. The pavement subgrade should be graded to promote positive drainage and should be free of depressions that may trap water. Where feasible, pavement subdrains should be installed along the edges of the parking area and connected to nearby catch basins to facilitate drainage of the subgrade and granular layers. The subdrain invert should be maintained at least 0.3 m below the pavement subgrade.

For the proposed sidewalk and accessible pathway, the granular base beneath concrete walkways should extend to provide a continuous drainage path toward the pavement subdrains to facilitate subgrade drainage and reduce the potential for slab heaving. Concrete sidewalk and entrance slabs should be supported on a minimum of 1.2 m of non-frost-susceptible material (Granular 'A' and 'B', OPSS 1010) with provision of a subdrain with a positive outlet to minimize frost-related heave. Where achieving this depth is impractical, installation of a frost-protected slab system should be considered.

Regular inspection and testing during construction are recommended to confirm material quality, layer thicknesses, and adequate compaction.

## 7.7 Earthquake Design Parameters

The Ontario Building Code (2024) outlines the requirements for earthquake design analysis in Division B, Section 4.1.8. The type of seismic analysis required depends on the importance category of the structure, the spectral response acceleration values, and the seismic site classification.

The parameters for determining the Seismic Site Classification are provided in Table 4.1.8.4.A of the Ontario Building Code (2024). The site classification is primarily based on the average shear wave velocity ( $V_s$ ) within the upper 30 m of the site stratigraphy where shear wave velocity measurements are available. Alternatively, the classification may be estimated based on a rational assessment of the undrained shear strength ( $S_u$ ) of cohesive soils or Standard Penetration Test (SPT) N-values obtained during the geotechnical investigation.

Based on the borehole data obtained during the investigation (to a maximum explored depth of approximately 5.0 m below existing grade), the subsurface conditions at the site consist of undisturbed native glacial till deposits of typically very dense relative density. Assuming that the deeper stratigraphy is at least as competent as the lowest proven strata encountered in the boreholes, the weighted average SPT N-value for seismic design purposes may conservatively be taken as greater than 50 blows per 300 mm.

Based on the above considerations, the preliminary seismic site classification for the site is Site Class C, in accordance with Table 4.1.8.4.A of the Ontario Building Code (2024). The corresponding acceleration-based and velocity-based site coefficients for seismic design are provided in Tables 4.1.8.4.B and 4.1.8.4.C of the same code.

Site Class	Values of $F_a$ (acceleration-based site coefficient)				
	$S_a(0.2) \leq 0.25$	$S_a(0.2) \leq 0.5$	$S_a(0.2) \leq 0.75$	$S_a(0.2) \leq 1.00$	$S_a(0.2) \leq 1.25$
C	1.0	1.0	1.0	1.0	1.0

Site Class	Values of $F_v$ (velocity-based site coefficient)				
	$S_a(1.0) \leq 0.1$	$S_a(1.0) \leq 0.2$	$S_a(1.0) \leq 0.3$	$S_a(1.0) \leq 0.4$	$S_a(1.0) \leq 0.5$
C	1.0	1.0	1.0	1.0	1.0

It should be noted that the above site seismic designation is estimated based on rational analysis of the limited penetration resistance (N-Values) information obtained from the boreholes advanced at the site to a maximum depth of about 20 m below grade, and with assumed 'N-Values' for the soil stratigraphy beneath the investigation depth.

Alternatively, a site-specific Multichannel Analysis of Surface Waves (MASW) may be conducted to determine the average shear wave velocity within the upper 30 m of the site stratigraphy. GGI can provide this service if required. The results of this analysis may allow for a more refined seismic site classification and could potentially lead to more favourable seismic design parameters compared to those associated with a Site Class C designation, which may in turn reduce structural design requirements.

## **8 LIMITATIONS AND USE OF REPORT**

It must be recognized that there are special risks whenever engineering or related disciplines are applied to identify subsurface conditions. A comprehensive sampling and testing program implemented in strict accordance with the most stringent level of care may fail to detect certain conditions. Geomape has assumed for the purpose of providing advice, that the conditions that exist between sampling points are similar to those found at the sample locations. The conditions that Geomape has interpreted to exist between sampling points can differ from those that exist. It must also be recognized that the passage of time, natural occurrences, and direct or indirect human intervention at or near the site have the potential to alter subsurface conditions.

The discussion and recommendations provided here are based on the factual data obtained from the investigation and are intended for use by the owner and its retained designers in the design phase of the project. Since the project is still in the design stage, all aspects of the project relative to the subsurface conditions cannot be anticipated. Geomape should review the design drawings and specifications prior to the construction of this work. If there are changes to the project scope and development features, the interpretations made of the subsurface information, the geotechnical design parameters and comments relating to constructability issues and quality control may not be relevant to the revised project scope. Geomape should be retained to review the implications of these changes with respect to the contents of this report.

The investigation at this site was conceived and executed to provide information for the slope stability study and the geotechnical design. It may not be possible to drill a sufficient number of boreholes, or samples and report them in a way that would provide all the subsurface information that could influence construction costs, techniques, equipment, and scheduling. Contractors bidding on or undertaking work on this project should therefore, in this light, be directed to decide on their own investigations, as well as their own interpretations of the factual investigation results. They should be cognizant of the risks implicit in subsurface investigation activities so that they may draw their own conclusions as to how the subsurface conditions may affect them.

This report was prepared for the express use of Toronto District School Board and its retained design consultants. It is not for use by others. This report is copyright of Geomape Geotechnics Inc., and no part of this report may be reproduced by any means, in any form, without the prior written permission of Geomape Geotechnics Inc. and Toronto District School Board, who are the authorized users.

It is recognized that the regulatory agencies in their capacities as the planning and building authorities under Provincial statutes, will make use of and rely upon this report, cognizant of the limitations thereof, both expressed and implied.



## 9 CLOSURE

We trust the foregoing information is sufficient for your present requirements. If you have any questions, or if we can be of further assistance, please do not hesitate to contact us.

Yours truly,

**Geomaple Geotechnics Inc.**

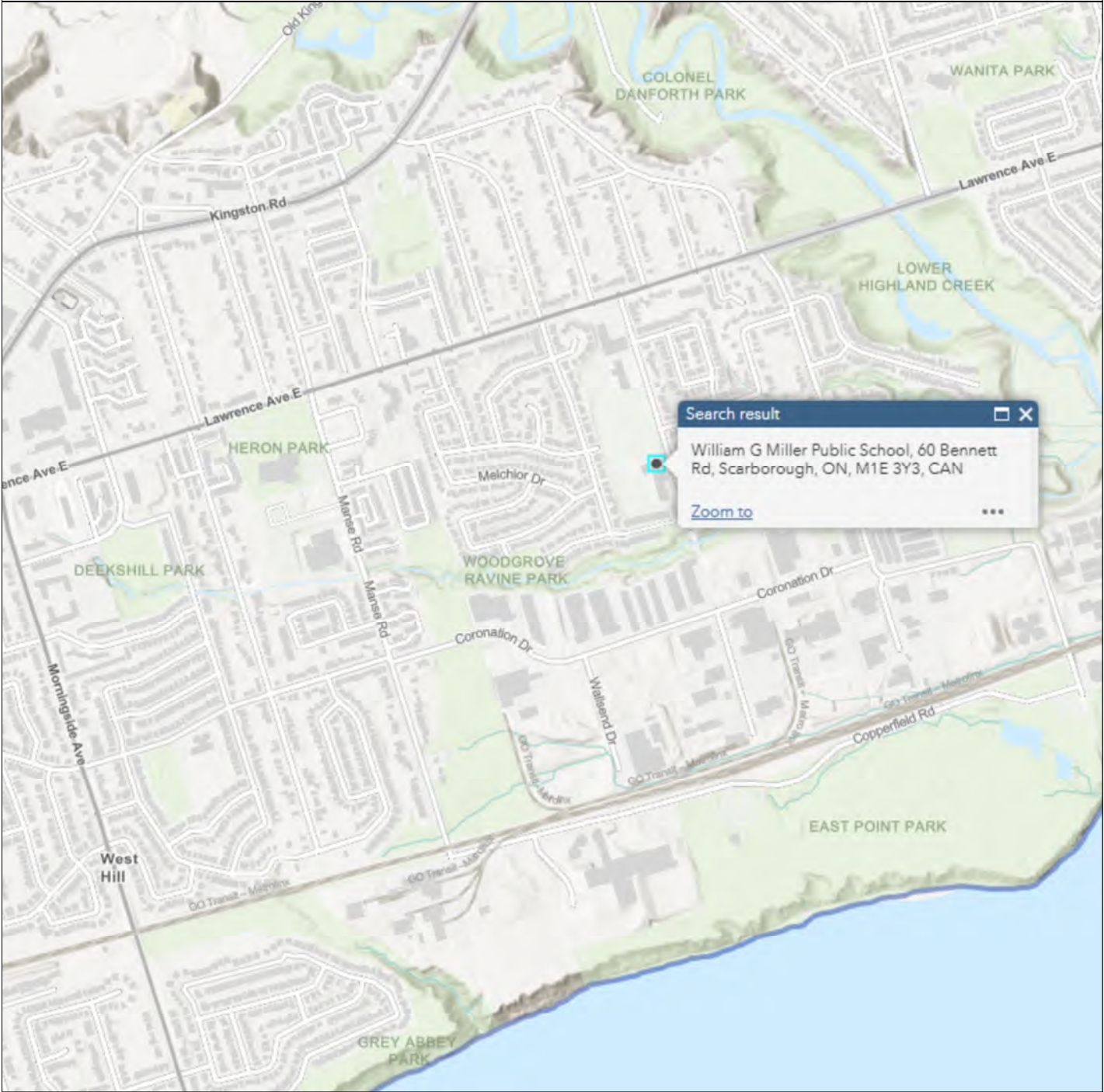



Navid Hatami, M.Eng, P.Eng  
Senior Engineer

# APPENDICES

# APPENDIX A

## FIGURES



 Geomaple Geotechnics Inc.	60 Green Lane, Unit 12A Thornhill, Ontario L3T 7P5  Phone: (416) 444 1200 Fax: (416) 444 1200	No.	Revision	Date	William G. Miller Public School
			Site Location Plan		
			Project No.: 2026-10-107		
			Date: March 2026		
			Drawn by: EL		
			Checked by: NH		
			Figure 1		
			Scale: NA		



Phone: (416) 444 1200  
Fax: (416) 444 1200

**Legend:**

[illegible]

Project

William G. Miller  
Public School

## Site Plan

Project Number	2026-10-107
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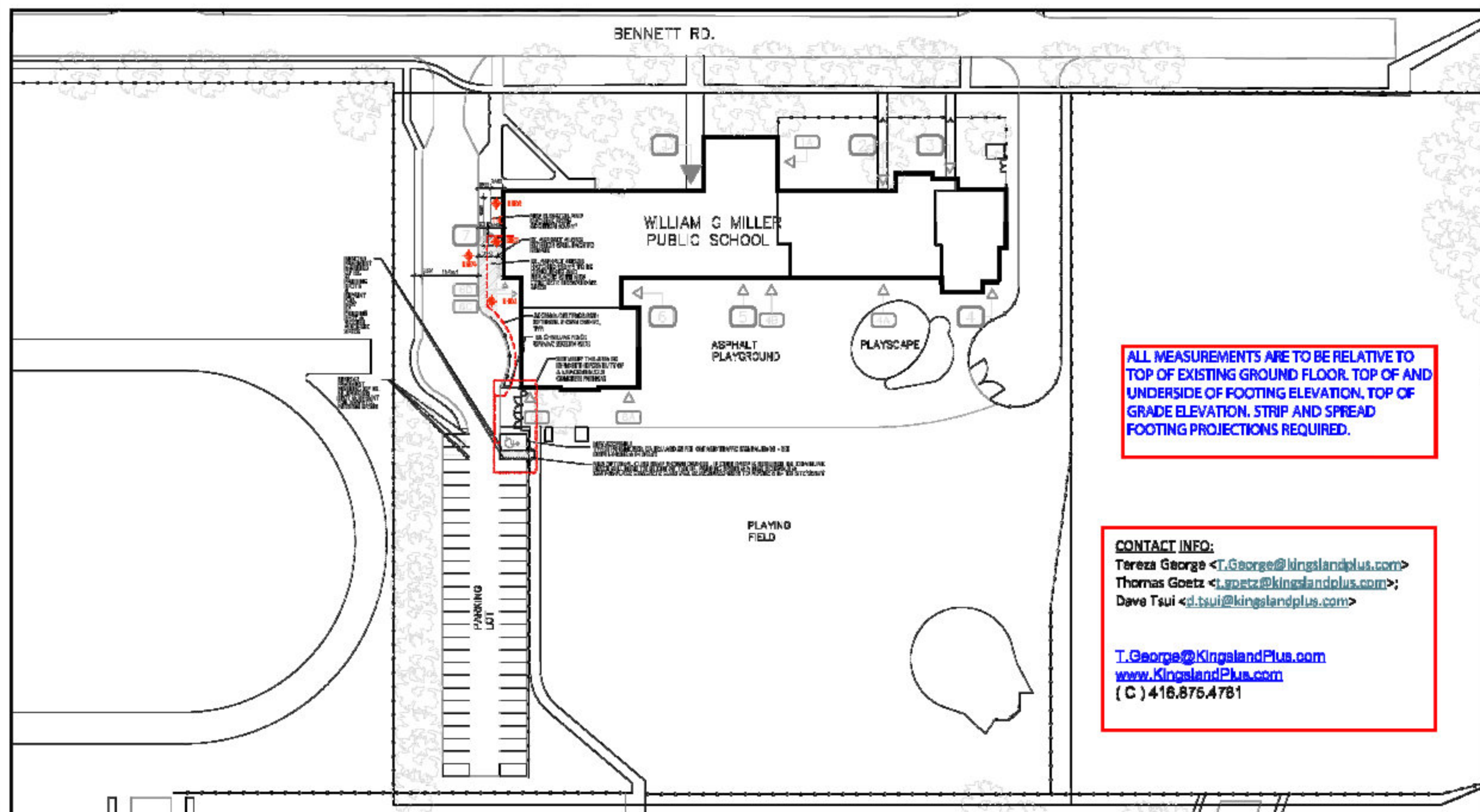
Date	March 2026
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Drawn By	EL
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Checked By	NH
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Figure 2

Scale As Shown



**ALL MEASUREMENTS ARE TO BE RELATIVE TO TOP OF EXISTING GROUND FLOOR. TOP OF AND UNDERSIDE OF FOOTING ELEVATION, TOP OF GRADE ELEVATION, STRIP AND SPREAD FOOTING PROJECTIONS REQUIRED.**

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**William G Miller PS**  
OVERALL SITE PLAN W/BH & TP LOCATIONS

PROJECT: A25006                      DATE: January 26 2026  
SCALE: 1:750

**KINGSLAND + ARCHITECTS INC.**  
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Kingsland  
ARCHITECTS INC. 

# APPENDIX B

## BOREHOLE LOGS



## RECORD OF BOREHOLE 1

PAGE 1 OF 1

**PROJECT:** William G. Miller Public School  
**LOCATION:** 60 Bennett Road, Toronto, Ontario  
**PROJECT NO:** 2026-10-107

**CLIENT:** Toronto Distict School Board  
**DRILLING DATE:** 2/17/2026

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	STANDARD PENETRATION TEST▲ RESISTANCE PLOT		PLASTIC LIMIT   NATURAL MOISTURE CONTENT   LIQUID LIMIT w <sub>p</sub>		
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ONTARIO MOT 2026-10-107 WILLIAM PS - BH LOG.GPJ ONTARIO MOT.GDT 2/26/26





## RECORD OF BOREHOLE 2

PAGE 1 OF 1

**PROJECT:** William G. Miller Public School  
**LOCATION:** 60 Bennett Road, Toronto, Ontario  
**PROJECT NO:** 2026-10-107

**CLIENT:** Toronto Distict School Board  
**DRILLING DATE:** 2/17/2026

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	STANDARD PENETRATION TEST RESISTANCE PLOT		PLASTIC LIMIT   NATURAL MOISTURE CONTENT   LIQUID LIMIT			UNIT WEIGHT  <b>γ</b>  kN/m <sup>3</sup>	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa		W <sub>P</sub> W                      W <sub>L</sub>				
100.0								20   40   60   80   100						
99.8	ASPHALT 150 mm							○ UNCONFINED      + FIELD VANE		WATER CONTENT (%)				
99.7	GRANULAR BASE 180 mm							● QUICK TRIAXIAL      × LAB VANE						
0.3	EARTH FILL sand, some silt, trace to some gravel, compact, brown, moist.		1	SS	20			20   40   60   80   100		10   20   30				
99.2														
0.8	SILTY SAND TO SANDY SILT TILL trace to some clay, some gravel, compact to very dense, brown, moist.		2	SS	24		99							
			3	SS	51		98							
			4	SS	84		97			○				12   54   30   4
			5	SS	87		96							
	... sand lense													
95.0			6	SS	84		95							
5.0	END OF BOREHOLE													
	The borehole was open and dry upon completion of drilling.													

ONTARIO MOT 2026-10-107 WILLIAM PS - BH LOG.GPJ ONTARIO MOT.GDT 2/26/26





## RECORD OF BOREHOLE 3

PAGE 1 OF 1

**PROJECT:** William G. Miller Public School  
**LOCATION:** 60 Bennett Road, Toronto, Ontario  
**PROJECT NO:** 2026-10-107

**CLIENT:** Toronto Distict School Board  
**DRILLING DATE:** 2/17/2026

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	STANDARD PENETRATION TEST▲ RESISTANCE PLOT		PLASTIC LIMIT w <sub>p</sub>	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w <sub>L</sub>	UNIT WEIGHT γ kN/m <sup>3</sup>	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE						
100.0								20 40 60 80 100						
99.9	CONCRETE SLAB 100 mm													
99.8	GRANULAR BASE 120 mm													
0.2	EARTH FILL sand, some silt, trace to some gravel, compact, brown, moist.		1	SS	16									
99.3	SILTY SAND TO SANDY SILT TILL trace to some clay, some gravel, dense to very dense, brown, moist.		2	SS	36									22 30 37 11
0.7														
			3	SS	54									
			4	SS	61									
			5	SS	92/ 210mm									
	... sand lense		6	SS	80/ 230mm									
95.1	END OF BOREHOLE  The borehole was open and dry upon completion of drilling.													
5.0														

ONTARIO MOT 2026-10-107 WILLIAM PS - BH LOG.GPJ ONTARIO MOT.GDT 2/26/26



## RECORD OF BOREHOLE 4

PAGE 1 OF 1

**PROJECT:** William G. Miller Public School  
**LOCATION:** 60 Bennett Road, Toronto, Ontario  
**PROJECT NO:** 2026-10-107

**CLIENT:** Toronto Distict School Board  
**DRILLING DATE:** 2/17/2026

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	STANDARD PENETRATION TEST RESISTANCE PLOT		PLASTIC LIMIT   NATURAL MOISTURE CONTENT   LIQUID LIMIT			UNIT WEIGHT  γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa		W <sub>P</sub>	W	W <sub>L</sub>		
100.0								20	40	60	80	100		
99.8	ASPHALT 150 mm							20	40	60	80	100		
99.7	GRANULAR BASE 180 mm							20	40	60	80	100		
0.3	EARTH FILL sand, some silt, trace to some gravel, compact, brown, moist.		1	SS	30			20	40	60	80	100		
99.2								20	40	60	80	100		
0.8	SILTY SAND TO SANDY SILT TILL trace to some clay, some gravel, dense to very dense, brown, moist.		2	SS	39		99	20	40	60	80	100		
								20	40	60	80	100		
			3	SS	71/ 290mm		98	20	40	60	80	100		
								20	40	60	80	100		
			4	SS	63			20	40	60	80	100		
								20	40	60	80	100		
			5	SS	50		97	20	40	60	80	100		
								20	40	60	80	100		
	... sand lense		6	SS	80/ 290mm		96	20	40	60	80	100		
95.0							95	20	40	60	80	100		
5.0	END OF BOREHOLE							20	40	60	80	100		
	The borehole was open and dry upon completion of drilling.							20	40	60	80	100		

# APPENDIX C

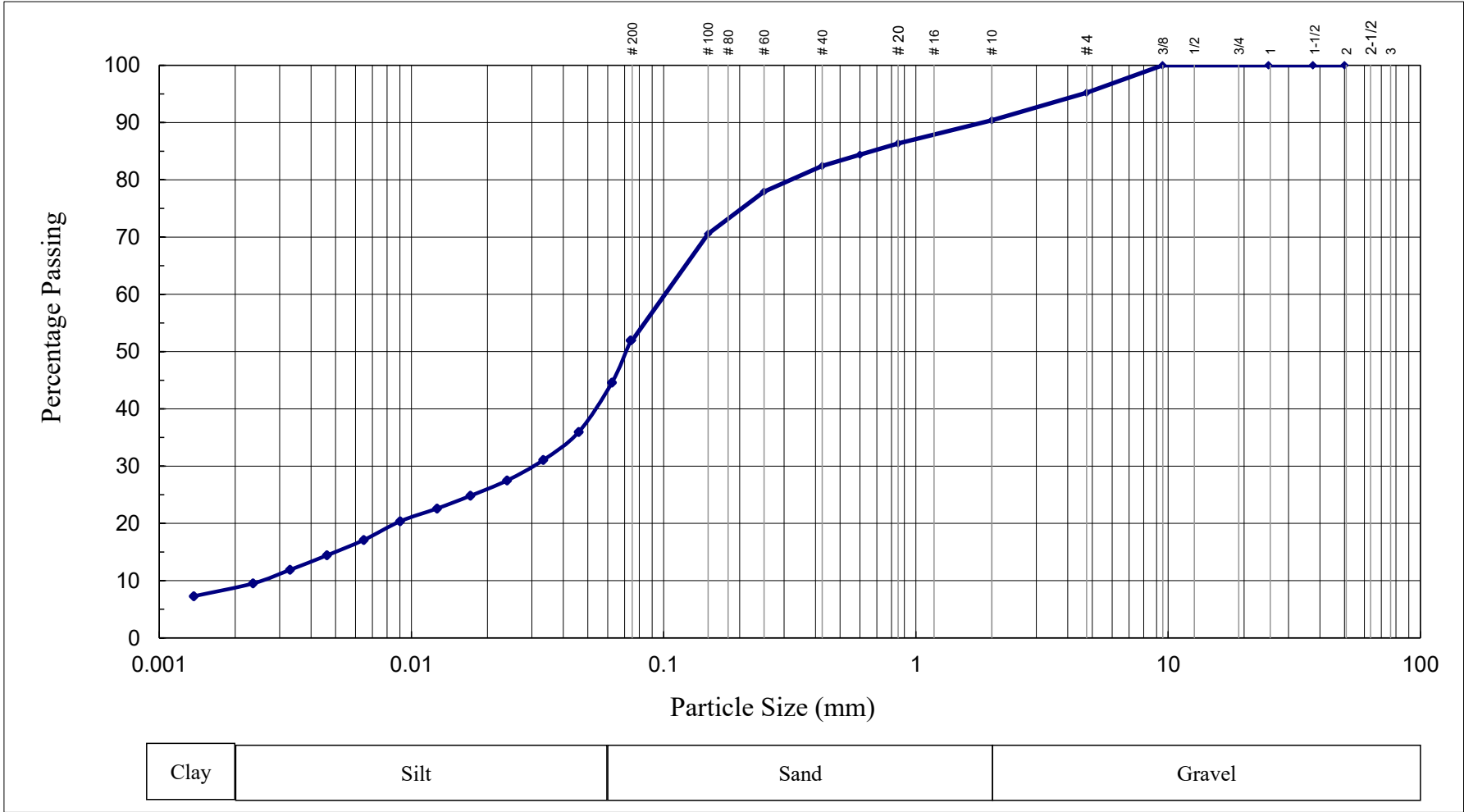
## GEOTECHNICAL LABORATORY TEST RESULTS



# Sieve & Hydrometer Analysis

Lab#: 100994

Project Name: William G Miller PS		Project No: 2026-10-107	
Order No:	Test Date: February 24, 2026	Client:	TDSB
Borehole No: BH1	Borehole Location: Figure2	Lead Consultant:	
Sample No: SS3	Sample Depth: 1.75	moisture content: 8.8%	



Clay:

9

Silt:

34

Sand:

47

Gravel:

10

LL:

PL:

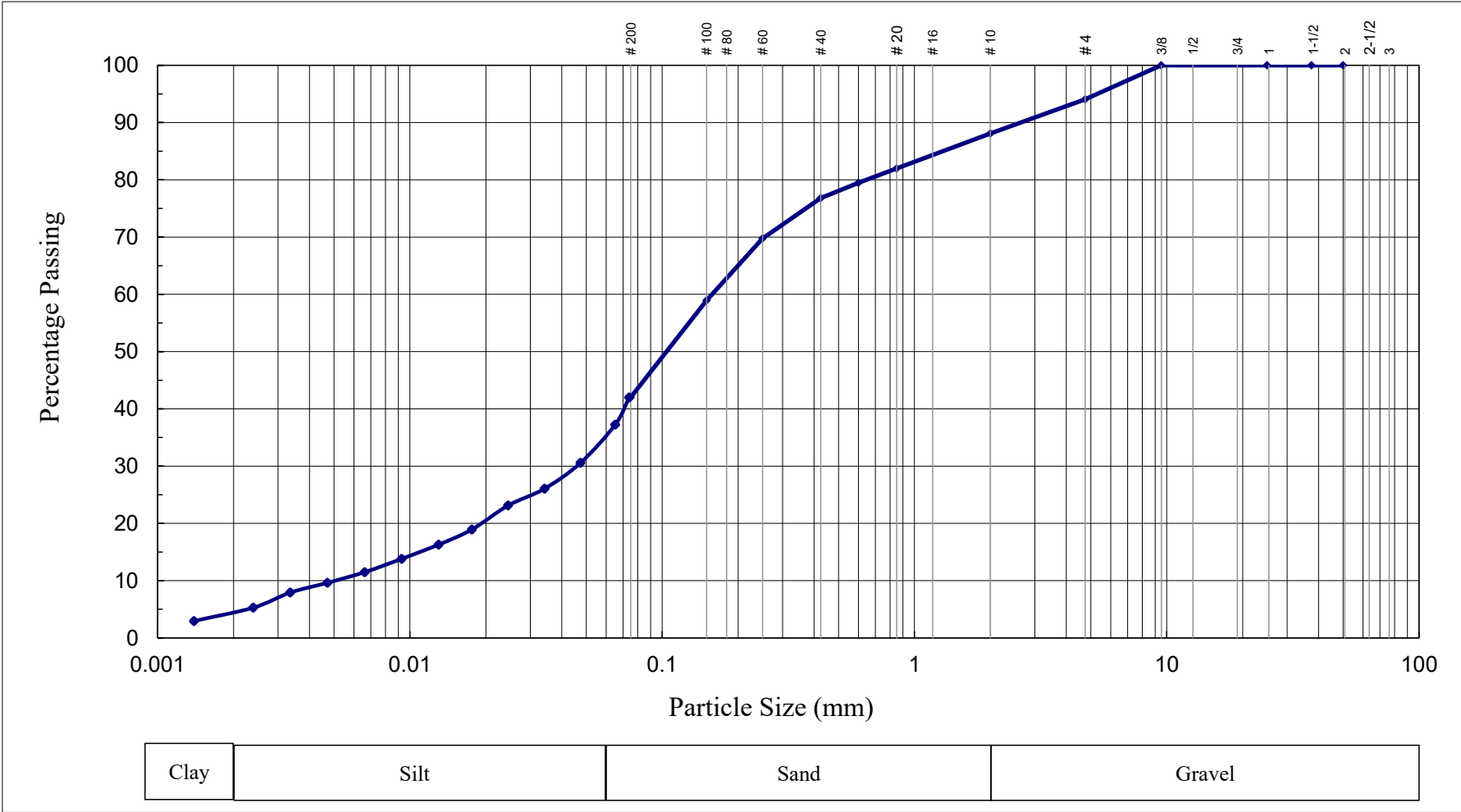
PI:



# Sieve & Hydrometer Analysis

Lab#: 100995

Project Name: William G Miller PS		Project No: 2026-10-107	
Order No:	Test Date: February 24, 2026	Client:	TDSB
Borehole No: BH2	Borehole Location: Figure2	Lead Consultant:	
Sample No: SS4	Sample Depth: 2.52	moisture content: 6.4%	



Clay:

4

Silt:

30

Sand:

54

Gravel:

12

LL:

PL:

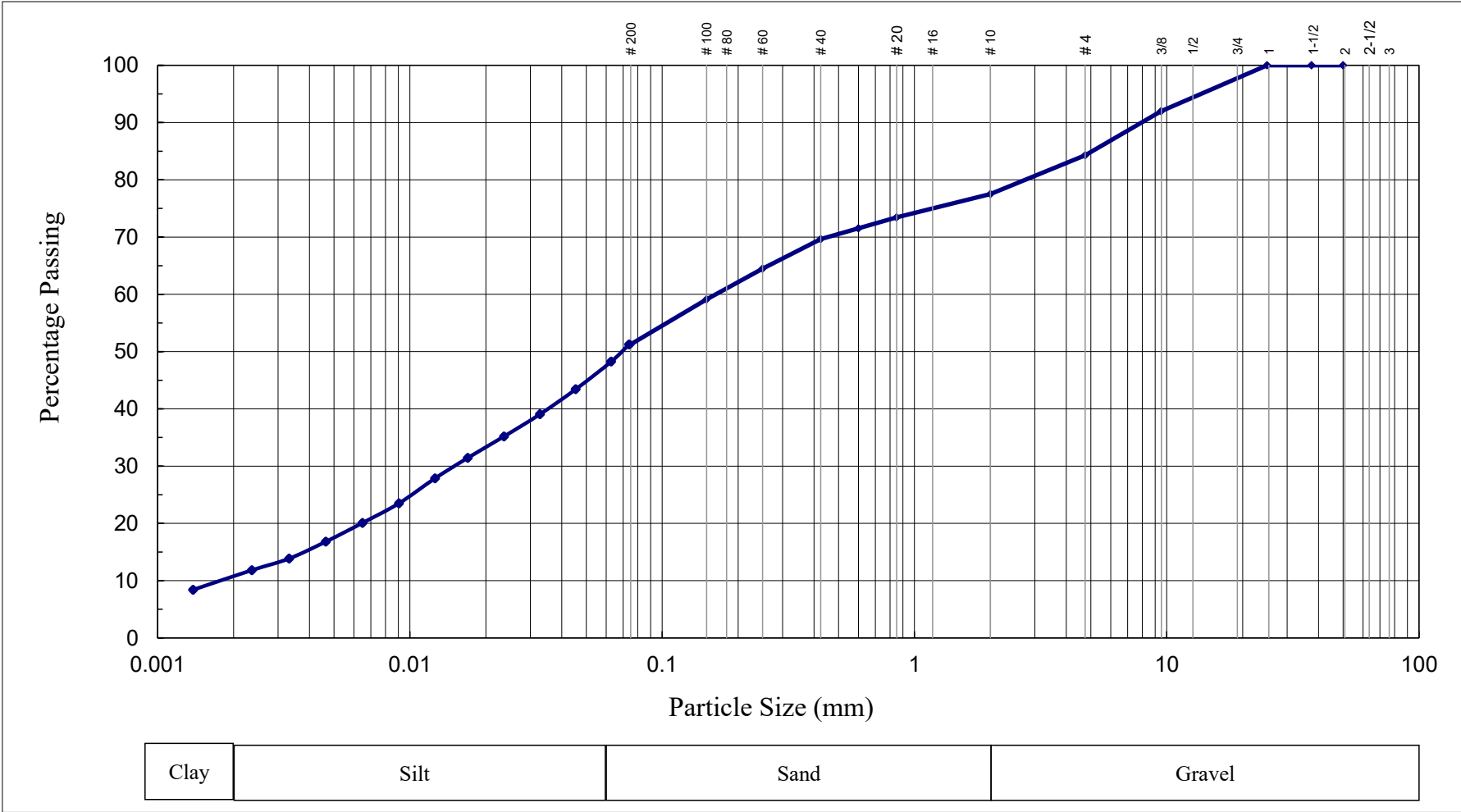
PI:

# Sieve & Hydrometer Analysis



Lab#: 100996

Project Name: William G Miller PS		Project No: 2026-10-107	
Order No:	Test Date: February 24, 2026	Client:	TDSB
Borehole No: BH3	Borehole Location: Figure2	Lead Consultant:	
Sample No: SS2	Sample Depth: 0.99	moisture content: 7.4%	



Clay:

11

Silt:

37

Sand:

30

Gravel:

22

LL:

PL:

PI:

# APPENDIX D

## Analytical Test Results

**OFFICIAL CERTIFICATE OF ANALYSIS : 4616033**
**WORK REQUEST : 100416099**
**Report Date : 2026-02-26**
**Geomaple Geotechnics**

60 Green Lane, Unit 12A  
Thornhill, Ontario  
L3T 7P5  
Attention : Navid Hatami

Reception Date : 2026-02-19  
Project : William G Miller PS  
Sampler : NA  
PO Number : Not Applicable  
Temperature : 10 °C

Analysis	Quantity	External Method
Boron, HWS (Soil, OES)	3	Modified from MECP E3470 and Gupta, 1967.
Chromium, Hexavalent (Soil, FAA)	3	Modified from EPA 3060A, USGS I-1232-85
Conductivity (Soil, Manual Meter)	3	Modified from MECP E3530
Cyanide, Free (Soil, Colorimetry)	3	Modified from MECP E3015
Hexavalent Chromium (Soil, IC)	3	Modified from SM 3500-CR C and EPA 3060A
Metals Scan (Soil, ICP/MS)	3	Modified from EPA 3050, EPA 200.8
Moisture (Soil, Gravimetric)	3	Modified from ASTM D2216
PAH, O. Reg. 153/04 (Soil, GC/MS)	3	Modified from EPA 8270
pH (Soil, 1:2 CaCl2, Manual Meter)	3	Modified from MECP E3530
PHC F1-BTEX (Soil, Calculation)	3	CCME Petroleum Hydrocarbons in Soil, Tier 1 Method
PHCs F1 (Soil, GC-FID)	3	CCME Petroleum Hydrocarbons in Soil, Tier 1 Method
PHCs F2-F4 (Soil, GC-FID)	3	CCME Petroleum Hydrocarbons in Soil, Tier 1 Method
SAR (Calculation, Soil)	3	O.Reg. 153/04, Analytical Protocol
VOCs, O.Reg. 153/04 (Soil, GC/MS)	3	Modified from EPA 8260

**Criteria :**

**A :** O. Reg 406/19 - Excess Soil - Full Depth - Res/Park/Ins/Ind/Comm - Table 1

**Sample status upon receipt :**

9429115 9429116 9429117

**Compliant**

**Certificate Comments :**

9429115 9429116 9429117

**Bromomethane spike recovery is outside of acceptable range.**

**Notes :**

- All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise stated.
- Eurofins Environment Testing Canada Inc. is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at <https://directory.cala.ca/>
- Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline or regulatory limits listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official guideline or regulation as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

**Legend :**

RL : Reporting limit

N/A : Not applicable

\* : Analysis conducted by external subcontracting

QC : Reference material (QC)

1 : Results in annex

^ : Analysis not accredited



## OFFICIAL CERTIFICATE OF ANALYSIS - EXCEEDENCE SUMMARY

Client : Geomape Geotechnics

Project : William G Miller PS

Reception Date : 2026-02-19

Eurofins Sample No	Client Sample Identification	Analyte	Result	Units	Exceeded Criteria		
					A	B	C
Conductivity (Soil, Manual Meter)							
9429115	BH4-SS2	Electrical Conductivity	1.37	mS/cm	0.57		
9429116	BH2-SS3	Electrical Conductivity	1.44	mS/cm	0.57		
9429117	BH1-SS1	Electrical Conductivity	1.34	mS/cm	0.57		
SAR (Calculation, Soil)							
9429115	BH4-SS2	Sodium Absorption Ratio (SAR)^a	25.0		2.4		
9429116	BH2-SS3	Sodium Absorption Ratio (SAR)^a	19.7		2.4		
9429117	BH1-SS1	Sodium Absorption Ratio (SAR)^a	29.9		2.4		

## OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Geomaple Geotechnics  
Project : William G Miller PS

Reception Date: 2026-02-19

Eurofins Sample No :				9429115	9429116	9429117		
Matrix :				Soil 153	Soil 153	Soil 153		
Sampling Date :				2026-02-17	2026-02-17	2026-02-17		
Client Sample Identification :				BH4-SS2	BH2-SS3	BH1-SS1		
General Chemistry	RL	Unit	Criteria					
			A	B	C			
Boron (Hot Water Soluble)	0.25	ug/g				<0.25	<0.25	0.26
Electrical Conductivity	0.05	mS/cm	0.57			1.37	1.44	1.34
Cyanide (Free)	0.005	ug/g	0.051			<0.005	<0.005	<0.005
pH (1:2 CaCl2)	1					8.02	8.05	8.05
Sodium Absorption Ratio (SAR)^	0.01		2.4			25.0	19.7	29.9

Eurofins Sample No :				9429115	9429116	9429117		
Matrix :				Soil 153	Soil 153	Soil 153		
Sampling Date :				2026-02-17	2026-02-17	2026-02-17		
Client Sample Identification :				BH4-SS2	BH2-SS3	BH1-SS1		
Metals	RL	Unit	Criteria					
			A	B	C			
Hexavalent Chromium	0.2	ug/g	0.66			0.55	0.26	<0.20
<b>Metals Scan (Soil, ICP/MS)</b>								
Antimony	1	ug/g	1.3			<1	<1	<1
Arsenic	1	ug/g	18			3	3	2
Barium	1	ug/g	220			38	37	26
Beryllium	1	ug/g	2.5			<1	<1	<1
Boron	5	ug/g	36			6	<5	<5
Cadmium	0.4	ug/g	1.2			<0.4	<0.4	<0.4
Chromium	1	ug/g	70			15	14	14
Cobalt	1	ug/g	21			7	7	2
Copper	1	ug/g	92			16	16	5
Lead	1	ug/g	120			9	9	8
Mercury	0.1	ug/g	0.27			<0.1	<0.1	<0.1
Molybdenum	1	ug/g	2			<1	<1	<1
Nickel	1	ug/g	82			17	16	8
Selenium	0.5	ug/g	1.5			<0.5	<0.5	<0.5
Silver	0.2	ug/g	0.5			<0.2	<0.2	<0.2
Thallium	1	ug/g	1			<1	<1	<1
Uranium	0.5	ug/g	2.5			0.5	0.5	<0.5
Vanadium	2	ug/g	86			23	23	17
Zinc	2	ug/g	290			57	28	30

## OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Geomaple Geotechnics  
Project : William G Miller PS

Reception Date: 2026-02-19

Eurofins Sample No :				<b>9429115</b>	<b>9429116</b>	<b>9429117</b>		
Matrix :				Soil 153	Soil 153	Soil 153		
Sampling Date :				2026-02-17	2026-02-17	2026-02-17		
Client Sample Identification :				BH4-SS2	BH2-SS3	BH1-SS1		
Petroleum Hydrocarbons	RL	Unit	Criteria					
			A	B	C			
F1 minus BTEX	10	ug/g	25			<10	<10	<10
F1 (C6 to C10)	10	ug/g	25			<10	<10	<10
<b>PHCs F2-F4 (Soil, GC-FID)</b>								
F2 (C10 to C16)	2	ug/g	10			2	<2	<2
F3 (C16 to C34)	20	ug/g	240			<20	<20	<20
F4 (C34 to C50)	20	ug/g	120			<20	<20	<20
5-alpha-Androstane (surrogate)	1	%				87	84	70

Eurofins Sample No :				<b>9429115</b>	<b>9429116</b>	<b>9429117</b>		
Matrix :				Soil 153	Soil 153	Soil 153		
Sampling Date :				2026-02-17	2026-02-17	2026-02-17		
Client Sample Identification :				BH4-SS2	BH2-SS3	BH1-SS1		
Sample Preparation	RL	Unit						
			A	B	C			
Moisture	0.1	%	8.8	7.7	8.0			

Eurofins Sample No :					9429115	9429116	9429117		
Matrix :					Soil 153	Soil 153	Soil 153		
Sampling Date :					2026-02-17	2026-02-17	2026-02-17		
Client Sample Identification :					BH4-SS2	BH2-SS3	BH1-SS1		
Semivolatile Organic Compounds	RL	Unit	Criteria						
			A	B	C				
PAH, O. Reg. 153/04 (Soil, GC/MS)									
1 + 2-Methylnaphthalene	0.05	ug/g	0.59			<0.05	<0.05	<0.05	
1-Methylnaphthalene	0.05	ug/g				<0.05	<0.05	<0.05	
2-Methylnaphthalene	0.05	ug/g				<0.05	<0.05	<0.05	
Acenaphthene	0.05	ug/g	0.072			<0.05	<0.05	<0.05	
Acenaphthylene	0.05	ug/g	0.093			<0.05	<0.05	<0.05	
Anthracene	0.05	ug/g	0.16			<0.05	<0.05	<0.05	
Benzo(a)anthracene	0.05	ug/g	0.36			<0.05	<0.05	<0.05	
Benzo(a)pyrene	0.05	ug/g	0.3			<0.05	<0.05	<0.05	
Benzo(b)fluoranthene	0.05	ug/g	0.47			<0.05	<0.05	<0.05	
Benzo(g,h,i)perylene	0.05	ug/g	0.68			<0.05	<0.05	<0.05	
Benzo(k)fluoranthene	0.05	ug/g	0.48			<0.05	<0.05	<0.05	
Chrysene	0.05	ug/g	2.8			<0.05	<0.05	<0.05	
Dibenzo(a,h)anthracene	0.05	ug/g	0.1			<0.05	<0.05	<0.05	
Fluoranthene	0.05	ug/g	0.56			<0.05	<0.05	<0.05	
Fluorene	0.05	ug/g	0.12			<0.05	<0.05	<0.05	
Indeno(1,2,3-c,d)pyrene	0.05	ug/g	0.23			<0.05	<0.05	<0.05	
Naphthalene	0.013	ug/g	0.09			<0.013	<0.013	<0.013	
Phenanthrene	0.05	ug/g	0.69			<0.05	<0.05	<0.05	
Pyrene	0.05	ug/g	1			<0.05	<0.05	<0.05	
p-Terphenyl-d14 (surrogate)	0	%				113	104	111	

## OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Geomaple Geotechnics  
Project : William G Miller PS

Reception Date: 2026-02-19

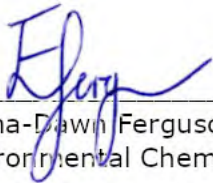
Eurofins Sample No :  Matrix :  Sampling Date :  Client Sample Identification :						9429115	9429116	9429117		
Volatile Organic Compounds	RL	Unit	Criteria							
			A	B	C					
VOCs, O.Reg. 153/04 (Soil, GC/MS)										
1,1,1,2-Tetrachloroethane	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
1,1,1-Trichloroethane	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
1,1,2,2-Tetrachloroethane	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
1,1,2-Trichloroethane	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
1,1-Dichloroethane	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
1,1-Dichloroethylene	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
1,2-Dibromoethane	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
1,2-Dichlorobenzene	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
1,2-Dichloroethane	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
1,2-Dichloropropane	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
1,3-Dichlorobenzene	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
1,3-Dichloropropene, cis + trans	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
1,4-Dichlorobenzene	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
Acetone	0.5	ug/g	0.5			<0.5	<0.5	<0.5		
Benzene	0.0068	ug/g	0.02			<0.0068	<0.0068	<0.0068		
Bromodichloromethane	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
Bromoform	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
Bromomethane	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
Carbon tetrachloride	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
Chloroform	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
cis-1,2-Dichloroethene	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
cis-1,3-Dichloropropene	0.05	ug/g				<0.05	<0.05	<0.05		
Dibromochloromethane	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
Dichlorodifluoromethane	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
Dichloromethane	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
Ethylbenzene	0.018	ug/g	0.05			<0.018	<0.018	<0.018		
Hexane	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
m/p-Xylene	0.05	ug/g				<0.05	<0.05	<0.05		
Methyl ethyl ketone (MEK)	0.5	ug/g	0.5			<0.5	<0.5	<0.5		
Methyl isobutyl ketone (MIBK)	0.5	ug/g	0.5			<0.5	<0.5	<0.5		
Methyl tert-butyl ether (MTBE)	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
Monochlorobenzene	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
o-Xylene	0.05	ug/g				<0.05	<0.05	<0.05		
Styrene	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
Tetrachloroethylene (PCE)	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
Toluene	0.08	ug/g	0.2			<0.08	<0.08	<0.08		
trans-1,2-Dichloroethene	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
trans-1,3-Dichloropropene	0.05	ug/g				<0.05	<0.05	<0.05		
Trichloroethylene (TCE)	0.01	ug/g	0.05			<0.01	<0.01	<0.01		
Trichlorofluoromethane	0.05	ug/g	0.25			<0.05	<0.05	<0.05		
Vinyl chloride	0.02	ug/g	0.02			<0.02	<0.02	<0.02		
Xylene (Total)	0.05	ug/g	0.05			<0.05	<0.05	<0.05		
1,2-dichloroethane-d4 (surrogate)	0	%				130	128	128		
4-bromofluorobenzene (surrogate)	0	%				77	80	75		
Toluene-d8 (surrogate)	0	%				81	88	91		

**OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS**

Client : Geomaple Geotechnics  
Project : William G Miller PS

Reception Date: 2026-02-19

Approved by : \_\_\_\_\_

  
Emma-Dawn Ferguson, M.Sc.  
Environmental Chemist

## OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Geomape Geotechnics

Project : William G Miller PS

Reception Date: 2026-02-19

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
Boron, HWS (Soil, OES)									
Method : Boron, hot water soluble (Soil, ICP/OES). Internal method: AMEBORE2.									
Boron (Hot Water Soluble)	ug/g	0.25	<0.25	112	43-157	106	70-130	-	0-40
Associated Samples : 9429115, 9429116, 9429117								Prep Date: 2026-02-23 Analysis Date: 2026-02-26	
Conductivity (Soil, Manual Meter)									
Method : Conductivity (soil, manual meter). Internal method: AMPHCNX2.									
Electrical Conductivity	mS/cm	0.05	<0.05	102	70-130			17	0-40
Associated Samples : 9429115, 9429116, 9429117								Prep Date: 2026-02-24 Analysis Date: 2026-02-24	
Cyanide, Free (Soil, Colorimetry)									
Method : Cyanide (Soil, Colorimetry). Internal method: OTT-I-CN-WI46209.									
Cyanide (Free)	ug/g	0.005	<0.005	84	77-122	100	70-130	-	0-20
Associated Samples : 9429115, 9429116, 9429117								Prep Date: 2026-02-22 Analysis Date: 2026-02-23	
Hexavalent Chromium (Soil, IC)									
Method : Chromium, Hexavalent (Solids, IC). Internal method: OTT-I-IC-WI69883.									
Hexavalent Chromium	ug/g	0.2	<0.20	64	60-140	77	70-130	-	0-35
Associated Samples : 9429115, 9429116, 9429117								Prep Date: 2026-02-22 Analysis Date: 2026-02-25	
Metals Scan (Soil, ICP/MS)									
Method : Metals (Soil, Digested, ICP/MS). Internal method: OTT-I-MET-WI48349.									
Antimony	ug/g	1	<1	171	20-203	120	70-130	-	0-30
Arsenic	ug/g	1	<1	102	70-130	100	70-130	-	0-30
Barium	ug/g	1	<1	116	71-130	100	70-130	1	0-30
Beryllium	ug/g	1	<1	96	70-130	100	70-130	-	0-30
Boron	ug/g	5	<5	93	70-130	120	70-130	-	0-30
Cadmium	ug/g	0.4	<0.4	119	70-130	116	70-130	-	0-30
Chromium	ug/g	1	<1	117	70-130	120	70-130	0	0-30
Cobalt	ug/g	1	<1	112	70-130	110	70-130	0	0-30
Copper	ug/g	1	<1	113	70-130	90	70-130	5	0-30
Lead	ug/g	1	<1	103	70-130	110	70-130	0	0-30
Mercury	ug/g	0.1	<0.1	93	70-130	110	70-130	-	0-30
Molybdenum	ug/g	1	<1	114	70-130	120	70-130	-	0-30
Nickel	ug/g	1	<1	114	70-130	100	70-130	0	0-30
Selenium	ug/g	0.5	<0.5	115	70-130	104	70-130	-	0-30
Silver	ug/g	0.2	<0.2	102	70-130	100	70-130	-	0-30
Thallium	ug/g	1	<1	103	70-130	110	70-130	-	0-30
Uranium	ug/g	0.5	<0.5	99	70-130	113	70-130	-	0-30
Vanadium	ug/g	2	<2	115	70-130	130	70-130	0	0-30
Zinc	ug/g	2	<2	112	70-130	80	70-130	0	0-30
Associated Samples : 9429115, 9429116, 9429117								Prep Date: 2026-02-25 Analysis Date: 2026-02-25	

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Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
PAH, O. Reg. 153/04 (Soil, GC/MS)									
Method : Semi-volatile organic compounds (Soil, GC/MS). Internal method: OTT-O-SEMI-WI45239.									
1 + 2-Methylnaphthalene	ug/g	0.05	<0.05	99	50-140		-	-	0-50
1-Methylnaphthalene	ug/g	0.05	<0.05	86	50-140	56	50-140	-	0-50
2-Methylnaphthalene	ug/g	0.05	<0.05	111	50-140	54	50-140	-	0-50
Acenaphthene	ug/g	0.05	<0.05	95	50-140	63	50-140	-	0-50
Acenaphthylene	ug/g	0.05	<0.05	91	50-140	53	50-140	-	0-50
Anthracene	ug/g	0.05	<0.05	93	50-140	58	50-140	-	0-50
Benzo(a)anthracene	ug/g	0.05	<0.05	93	50-140	57	50-140	-	0-50
Benzo(a)pyrene	ug/g	0.05	<0.05	85	50-140	54	50-140	-	0-50
Benzo(b)fluoranthene	ug/g	0.05	<0.05	92	50-140	68	50-140	-	0-50
Benzo(g,h,i)perylene	ug/g	0.05	<0.05	85	50-140	52	50-140	-	0-50
Benzo(k)fluoranthene	ug/g	0.05	<0.05	99	50-140	57	50-140	-	0-50
Chrysene	ug/g	0.05	<0.05	99	50-140	69	50-140	-	0-50
Dibenzo(a,h)anthracene	ug/g	0.05	<0.05	78	50-140	55	50-140	-	0-50
Fluoranthene	ug/g	0.05	<0.05	96	50-140	54	50-140	-	0-50
Fluorene	ug/g	0.05	<0.05	87	50-140	51	50-140	-	0-50
Indeno(1,2,3-c,d)pyrene	ug/g	0.05	<0.05	81	50-140	53	50-140	-	0-50
Naphthalene	ug/g	0.013	<0.013	93	50-140	63	50-140	-	0-50
Phenanthrene	ug/g	0.05	<0.05	96	50-140	66	50-140	-	0-50
Pyrene	ug/g	0.05	<0.05	95	50-140	57	50-140	-	0-50
Associated Samples : 9429115, 9429116, 9429117								Prep Date: 2026-02-24 Analysis Date: 2026-02-26	
pH (Soil, 1:2 CaCl2, Manual Meter)									
Method : pH (soil, 1:2 CaCl2, Manual meter). Internal method: AMPHCNX2.									
pH (1:2 CaCl2)		1	6.97	100	98-101			0	0-40
Associated Samples : 9429115, 9429116, 9429117								Prep Date: 2026-02-23 Analysis Date: 2026-02-24	
PHCs F1 (Soil, GC-FID)									
Method : Petroleum Hydrocarbons (Soil, GC-FID). Internal method: OTT-O-PHC-WI45386.									
F1 (C6 to C10)	ug/g	10	<10	116	70-130	103	70-130	-	0-30
Associated Samples : 9429115, 9429116, 9429117								Prep Date: 2026-02-22 Analysis Date: 2026-02-24	
PHCs F2-F4 (Soil, GC-FID)									
Method : Petroleum Hydrocarbons (Soil, GC-FID). Internal method: OTT-O-PHC-WI45386.									
F2 (C10 to C16)	ug/g	2	<2	110	80-120	78	60-140	-	0-30
F3 (C16 to C34)	ug/g	20	<20	110	80-120	78	60-140	-	0-30
F4 (C34 to C50)	ug/g	20	<20	110	80-120	78	60-140	-	0-30
Associated Samples : 9429115, 9429116, 9429117								Prep Date: 2026-02-24 Analysis Date: 2026-02-26	

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Client : Geomape Geotechnics

Project : William G Miller PS

Reception Date: 2026-02-19


Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
VOCs, O.Reg. 153/04 (Soil, GC/MS)									
Method : Volatile Organic Compounds (Soil, GC/MS). Internal method: AMVOMSE8.									
1,1,1,2-Tetrachloroethane	ug/g	0.05	<0.05	129	60-130	121	50-140	-	0-30
1,1,1-Trichloroethane	ug/g	0.05	<0.05	103	60-130	99	50-140	-	0-30
1,1,2,2-Tetrachloroethane	ug/g	0.05	<0.05	114	60-130	119	50-140	-	0-30
1,1,2-Trichloroethane	ug/g	0.05	<0.05	126	60-130	126	50-140	-	0-30
1,1-Dichloroethane	ug/g	0.05	<0.05	118	60-130	118	50-140	-	0-30
1,1-Dichloroethylene	ug/g	0.05	<0.05	102	60-130	92	50-140	-	0-30
1,2-Dibromoethane	ug/g	0.05	<0.05	118	60-130	121	50-140	-	0-30
1,2-Dichlorobenzene	ug/g	0.05	<0.05	108	60-130	111	50-140	-	0-30
1,2-Dichloroethane	ug/g	0.05	<0.05	130	60-130	126	50-140	-	0-30
1,2-Dichloropropane	ug/g	0.05	<0.05	110	60-130	115	50-140	-	0-30
1,3-Dichlorobenzene	ug/g	0.05	<0.05	114	60-130	116	50-140	-	0-30
1,3-Dichloropropene, cis + trans	ug/g	0.05	<0.05				-		-
1,4-Dichlorobenzene	ug/g	0.05	<0.05	116	60-130	121	50-140	-	0-30
Acetone	ug/g	0.5	<0.5	127	50-140	122	50-140	-	0-30
Benzene	ug/g	0.0068	<0.0068	119	60-130	120	50-140	-	0-30
Bromodichloromethane	ug/g	0.05	<0.05	98	60-130	95	50-140	-	0-30
Bromoform	ug/g	0.05	<0.05	95	60-130	86	50-140	-	0-30
Bromomethane	ug/g	0.05	<0.05	123	60-130	37	50-140	-	0-30
Carbon tetrachloride	ug/g	0.05	<0.05	105	60-130	98	50-140	-	0-30
Chloroform	ug/g	0.05	<0.05	118	60-130	117	50-140	-	0-30
cis-1,2-Dichloroethene	ug/g	0.05	<0.05	113	60-130	118	50-140	-	0-30
cis-1,3-Dichloropropene	ug/g	0.05	<0.05	74	60-130	77	50-140	-	0-30
Dibromochloromethane	ug/g	0.05	<0.05	104	60-130	96	50-140	-	0-30
Dichlorodifluoromethane	ug/g	0.05	<0.05	82	60-130	77	50-140	-	0-30
Dichloromethane	ug/g	0.05	<0.05	125	60-130	99	50-140	-	0-30
Ethylbenzene	ug/g	0.018	<0.018	119	60-130	119	50-140	-	0-30
Hexane	ug/g	0.05	<0.05	105	60-130	103	50-140	-	0-30
m/p-Xylene	ug/g	0.05	<0.05	124	60-130	124	50-140	-	0-30
Methyl ethyl ketone (MEK)	ug/g	0.5	<0.5	107	50-140	127	50-140	-	0-30
Methyl isobutyl ketone (MIBK)	ug/g	0.5	<0.5	108	50-140	102	50-140	-	0-30
Methyl tert-butyl ether (MTBE)	ug/g	0.05	<0.05	95	60-130	99	50-140	-	0-30
Monochlorobenzene	ug/g	0.05	<0.05	129	60-130	130	50-140	-	0-30
o-Xylene	ug/g	0.05	<0.05	115	60-130	119	50-140	-	0-30
Styrene	ug/g	0.05	<0.05	114	60-130	115	50-140	-	0-30
Tetrachloroethylene (PCE)	ug/g	0.05	<0.05	110	60-130	105	50-140	-	0-30
Toluene	ug/g	0.08	<0.08	117	60-130	118	50-140	-	0-30
trans-1,2-Dichloroethene	ug/g	0.05	<0.05	118	60-130	117	50-140	-	0-30
trans-1,3-Dichloropropene	ug/g	0.05	<0.05	78	60-130	79	50-140	-	0-30
Trichloroethylene (TCE)	ug/g	0.01	<0.01	103	60-130	102	50-140	-	0-30
Trichlorofluoromethane	ug/g	0.05	<0.05	123	60-130	95	50-140	-	0-30
Vinyl chloride	ug/g	0.02	<0.02	98	60-130	110	50-140	-	0-30
Xylene (Total)	ug/g	0.05	<0.05				-		-
Associated Samples : 9429115, 9429116, 9429117									
Prep Date: 2026-02-22 Analysis Date: 2026-02-24									

Where RPD % is reported as "-" the calculation is not available because one or both of the duplicates is within 5 times the RL.



**Notes:**

- 1) The laboratory method complies with CCME Tier 1 reference method for PHC in soil. It is validated for laboratory use.
- 2) Where the F1 fraction (C6 to C10) and BTEX are both measured, F1-BTEX is reported.
- 3) Where the F2 fraction (C10 to C16) and naphthalene are both measured, F2-naphthalene is reported.
- 4) Where the F3 fraction (C16 to C34) and PAHs\* are both measured, F3-PAH is reported.
- 5) F4G is analyzed if the chromatogram does not descend to baseline before C50. Where F4 (C34 to C50) and F4G are both reported, the higher result is compared to the standard.
- 6) Unless otherwise stated in the sample comments, the following criteria have been met where applicable:
  - nC6 and nC10 response factors within 30% of response factor for toluene;
  - nC10, nC16, and nC34 response factors within 10% of each other;
  - C50 response factors within 70% of nC10 + nC16 + nC34 average; and,
  - Linearity is within 15%.
- 7) Unless otherwise stated in the sample comments, sampling requirements and analytical holding times have been met.
- 8) Gravimetric heavy hydrocarbons (F4G) cannot be added to the C6 and C50 hydrocarbons.
- 9) \*PAHs = phenanthrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-c,d)pyrene and pyrene.
- 10) Where F4G-sg is reported, the F4G extract has been cleaned with silica gel.

CLIENT INFORMATION				INVOICE																			
Company: <b>Geomaple Geotechnics Inc.</b>				Company: <b>100416099</b>																			
Contact: <b>David Hataami</b>				Contact: 																			
Address: <b>60 Green Lane, Unit 12A, Thornhill, ON</b>				Address: <b>Printed On : 2026-02-19 13:21:44</b>																			
Telephone: <b>647 897 3820</b>		Cell:		PO #:																			
Email: #1: <b>e.lavi@geomaple.ca</b>				<b>REGULATION/GUIDELINE REQUIRED</b> <input type="checkbox"/> Sanitary Sewer, City: _____ <input type="checkbox"/> Storm Sewer, City: _____ <input type="checkbox"/> ODWSOG (Use DW COC if samples are for human consumption) <input type="checkbox"/> PWQO <input type="checkbox"/> O.Reg. 347 (TCPL) <input type="checkbox"/> Other: _____ <input type="checkbox"/> O. Reg. 153/04 Table # _____ Coarse / Fine, Surface / subsurface The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04. Analysis of full parameter list only Yes <input type="checkbox"/> No <input type="checkbox"/> <input checked="" type="checkbox"/> O. Reg. 406 Excess Soils Table # <b>1</b> Full depth/Strat/Ceiling/mSPLP Leachate Type: Com-Ind / Res-Park / Agri / All Other Category: Surface / Subsurface																			
Email: #2: <b>geotechnics@geomaple.ca</b>																							
Project: <b>William &amp; Miller PS</b>		Quote #:																					
<b>TURN-AROUND TIME (Business Days)</b> <input type="checkbox"/> 1 Day* (100%) <input type="checkbox"/> 2 Day** (50%) <input type="checkbox"/> 3-5 Days (25%) <input checked="" type="checkbox"/> 5-7 Days (Standard) Please contact Lab in advance to determine rush availability. *For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%. **For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%. TCPL, SPLP, PFAS, and NP/NPE the rush surcharges are 100% (3 day) and 50% (4 day). For farm soils the rush surcharge is 100% (3-5 days). Regular TAT is 10 days.																							
The optimal temperature conditions during transport is 4 - 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. This COC must not be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a \$25 surcharge if required information is missing (required fields are shaded in grey).				<b>Sample Details</b> Field Filtered -->																			
Occasionally, situations arise in which Eurofins Environment Testing Canada (Ottawa) is unable to process a sample after receipt. By signing this chain-of-custody form, the client agrees that Eurofins Environment Testing Canada (Ottawa) may subcontract samples to a laboratory that is similarly accredited. This subcontracted laboratory will perform the same analysis using the same or similar methodology. Agreements made in advance to subcontract to a specific laboratory will be honored.																							
Sample ID		Date/Time Collected		Sample Matrix		# of Containers		PHC F1 - F4		BTEX		VOCs		PAHs		PCBs		Metals + Inorganics		Metals only		RN# (Lab Use Only)	
BH4-SS2		Feb 17, 2026						✓		✓		✓		✓				✓				9429115	
BH2-SS3		Feb 17, 2026						✓		✓		✓		✓				✓				16	
BH1-SS1		Feb 17, 2026						✓		✓		✓		✓				✓				17	