Terraprobe

Consulting Geotechnical & Environmental Engineering
Construction Materials Inspection & Testing

HYDROGEOLOGICAL ASSESSMENT
PROPOSED NEW LONG TERM CARE BUILDING
6360 REGIONAL ROAD 25
MILTON, ONTARIO

Prepared For: **Thomas Robert Colbeck**
7050 Appleby Line
Milton, Ontario
L9E 0M5

Attention: Mr. Rob Colbeck

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1.0 INTRODUCTION

Terraprobe Inc. was retained by Thomas Robert Colbeck to conduct a hydrogeological assessment for the property with municipal address 6360 Regional Road 25, in Town of Milton, Ontario hereinafter referred to as the Property or Site. The Property is located southwest quadrant of the intersection of Regional Road 25 and Louis St Laurent Avenue. The general location of the Site is shown on **Figure 1**.

Based on the request for quotation, it is understood that the proposed development will include the construction of an 8 storey Long Term Care Home structure with the potential of one level of underground parking and services that would cover most of the site, parking areas and driveways/access routes. The purpose of this report is to assess local and regional hydrogeological conditions and the potential impacts of the proposed development on the groundwater system.

2.0 SCOPE OF WORK

The scope of work for the study consisted of the following:

- **Review of available background information:** Available background information for the site and the project was reviewed. This included the results of geotechnical and environmental investigations of the property, and available information regarding the proposed design and construction concepts for the development. In addition, information from public sources including geologic mapping and MECP well record.
- **Detailed Site Inspection:** An inspection of the property was conducted to review existing Site conditions including identification of any hydrogeological features such as significant areas of potential groundwater recharge or areas of groundwater discharge. The topographic survey of the Site provided to Terraprobe was reviewed in order to provide a discussion regarding drainage conditions.
- **Borehole Drilling:** Prior to the commencement of drilling, the locations of underground utilities; including telephone, natural gas and electrical lines were marked out by local locating companies and individual borehole locations were cleared by private utility locating service providers. The field investigation was conducted from June 13 to 17, 2022 and consisted of drilling and sampling a total of sixteen (16) boreholes extending to depths varying from about 9.2 to 9.4 m below existing ground surface.
- **Well Installation:** To measure the groundwater level and investigate the quality of groundwater, select eight (8) boreholes (BH1, BH4, BH7, BH9, BH10, BH13, BH15 & BH16) were instrumented with a monitoring well. The monitoring well consisted of a 50 mm diameter PVC screen with a length of PVC riser pipe, 10-ft slotted screen. Upon installation, an elevation survey of the monitoring wells, relative to a local datum, was completed so that relative groundwater flow direction can be assessed. The information obtained from the boreholes was used for the hydrogeological assessment.
- **Completion of hydraulic conductivity testing:** Single well response tests (Bail Tests) were conducted in the all eight (8) monitoring wells to assess hydraulic conductivity of the screened strata.

- **Hydrogeology Report**: Following completion of the above-noted study, a detailed engineering report was prepared regarding the Site hydrogeology. The report provides the following information:
    - Presentation of all the factual information gathered during the study including the background information and results of site subsurface investigation;
    - Provision of a conceptual site model for local and regional hydrogeologic conditions. The conceptual site model will be used as a basis to assess impacts to local surface and groundwater features;
    - Finite Element Model Analysis will be conducted to estimate the volume of seepage and ground water flow into the excavation area of the proposed development, as well as permanent sub.
    - Impact assessment and mitigation measures to maintain the hydrogeological functions;

3.0 APPLICABLE REGULATIONS AND POLICIES

3.1 Conservation Halton (CH) Policies and Regulations (O. Reg. 179/06)

Under Section 28 of the Conservation Authorities Act, local conservation authorities are mandated to protect the health and integrity of the regional greenspace system and to maintain or improve the hydrological and ecological functions performed by valley and stream corridors. The CH, through its regulatory mandate, is responsible for issuing permits under Ontario Regulation **(Ont. Reg. 179/06)**, *Development, Interference with Wetlands and Alterations to Shorelines and Watercourses* for development proposal or Site alteration work to shorelines and watercourses within the regulated areas.

CH Regulated Area online mapping was reviewed as shown in **Appendix A** by Terraprobe. It is our understanding that the proposed development will only include the construction of an 8 Storey building with the potential for 1 level of underground parking and services, new site layout with green space, vehicle circulation and parking surfaces. Based on the extent of development, it is our understanding the property is not located within an CH Regulated Area.

3.2 Clean Water Act 2006

The MECP mandates the protection of existing and future sources of drinking water under the Clean Water Act, 2006 (CWA). Initiatives under the CWA include the delineation of Wellhead Protection Areas (WHPAs), Significant Groundwater Recharge Areas (SGRAs) and Highly Vulnerable Aquifers (HVAs), as well as the assessment of drinking water quality and quantity threats within Source Protection Regions. Source Protection Plans are developed under the CWA and include the restriction and prohibition of certain types of activities and land uses within WHPAs. This plan dictates that any site within the Lake Simcoe Watershed of South Georgian Bay (SGBLS) region can be rated in terms of score indicating vulnerability to drinking water quality and quantity threats. Based on the review of MECP's Source Protection Information Atlas and Conservation Halton (CH) regulated area mapping, the following information was obtained related to the subject property:

Associated Policy Area	Applicability
Conservation Authority	Conservation Halton
Source Protection Area	Halton Region Source Protection Area
Watershed	Sixteen Mile Creek – Credit River Watershed
Subwatershed	Sixteen Mile Creeks
LSRCA Regulated Area	Not Regulated as per CH interactive regulation mapping.
Wellhead Protection Area (WHPA)	No
Significant Groundwater Recharge Area (SGRA).	No
Highly Vulnerable Aquifer (HVA)	No
Wellhead Protection Areas (WHPA - Q) or Recharge Management Area	No

Associated Policy Area	Applicability
Intake Protection Zone	No
Intake Protection Zone Q	No
Oak Ridges Moraine (ORM)	The area of proposed development is not located within the Oak Ridges Moraine (ORM)
Niagara Escarpment Plan Area	No
Greenbelt Protection Act Area	The area of proposed development is not located within the Greenbelt Protection Act Area

Refer to **Appendix A** for associated regulatory mapping details.

3.3 Permit to Take Water (PTTW) Section 34 of the Ontario Water Resource Act

For construction dewatering, water takings of more than 50,000L/day but less than 400,000L/day should be registered on the Environmental Activity and Sector Registry (EASR), while water takings of more than 400,000L/day require a Category 3 PTTW issued by the MECP. If it is identified that an EASR or PTTW is required for the Site, a hydrogeological report will need to be submitted in support of the application.

MECP website was reviewed for any active PTTW application records within a 1.0 km radius of the Site on December 14, 2022. Record review indicates that there are no active PTTW within 1.0 km from the Site. There are no other records of water extraction activities within 1 km of the Site, with the exception of the above noted municipal well activities.

3.4 Hydrogeological Assessment Submission Guidelines 2013

The Conservation Authority Guidelines for Development Applications (June 2013) was reviewed as a part of this assessment. This guidance document provides a list of recommended requirements for hydrogeological investigations. Conservation Halton (CH) has adopted these guidelines for hydrogeological assessments.

4.0 DESCRIPTION OF SITE CONDITIONS

4.1 Site Location and Description

The Property is located southwest quadrant of the intersection of Regional Road 25 and Louis St Laurent Avenue. The general location of the Site is shown on **Figure 1**. It is understood that the proposed development will include the construction of an 8 Storey building with the potential for 1 level of underground parking and services, new site layout with green space, vehicle circulation and parking surfaces. The proposed development will be municipally serviced for water and sewer.

4.2 Site Topography and Drainage

Based on the boreholes advanced the Site elevation varies from approximately 192.94 ± masl to 192.14 ± masl (meters above sea level) towards south/ southeast. Furthermore, based on the review of Oak Ridges Moraine Groundwater Program (OGRMP), it is also indicated that the Site slopes southeast towards Sixteen Mile Creek trends in a northwest-southeast direction, located approximately 300 m east from the area of proposed addition. The topography of the Site is indicated in **Appendix A**.

The nearest surface water features are Sixteen Mile Creek located approximately 300 m east and a tributary of Sixteen Mile Creek at about 400 m west of the proposed development. Both Creeks flow southeastward following local topography towards Lake Ontario. Regional and local groundwater flow direction is the expected to flow southeast towards Lake Ontario.

4.3 Regional Geology and Physiography

The surficial geology of the area is representative of massive to well laminated fine textured 5d: Glaciolacustrine-derived silty to clayey till (5d) with significant amounts of sand. The mapped surficial geology for the Site and the surrounding area is provided in Appendix A.

From a regional perspective, the Site is situated within the physiographic feature known as the Peel Plain (33) and within the physiographic landform known as the 8 Bevelled Till Plains (6). The Peel Plain occupies a central position in the expanded western portion of the South Slope and is separated from the Iroquois shoreline by the Trafalgar Moraine and a strip of fluted till plain. It is generally level-to-undulating with elevations from 150 to 230 masl with a gradual and fairly uniform slope toward Lake Ontario encompassing the majority of the watershed. The plain extends across the contact of the grey and red shales of the Georgian Bay and Queenston Formations, respectively. Consequently, the till is reddish in colour and somewhat lower in lime than the clay in the eastern end of the plain (Chapman, 2007). The underlying Bedrock of the plain is Queenston Formation Shale, limestone, dolostone, siltstone Queenston Formation (55a). The location of the Site within the regional physiography map is provided in Appendix A.

4.4 Regional Hydrogeology

The stratigraphy of the surficial deposits within the Sixteen Mile Creek subwatershed is complex as a result of the glacial history. Based on the review of Oak Ridge Moraine Groundwater Program (ORMGP) cross-section tool: the subsurface hydrostratigraphy within the Sixteen Mile Creeks watershed comprises of the following units.

Geological Unit	Brief Description
Recent Glaciolacustrine Deposits	Recent glaciolacustrine deposits are present at the ground surface, which comprise of sandy silt to silt matrix, moderate to high matrix carbonate content, clast content moderate to high Pleistocene deposits. These surficial deposits generally have low to moderate permeabilities and function as an aquitard.
Halton/Kettleby Till	Underlying the recent glaciolacustrine deposits is the Halton/ Kettleby Till which comprises of silt to clayey silt till. The Halton/ Kettleby Till has low permeabilities and functions as an aquitard.
Oak Ridges Aquifer Complex (ORAC) - Regional Aquifer	Underlying the Halton/Kettleby Till is the ORAC, the shallowest aquifer in the region. It predominantly comprises of granular sediments with interlaid finer materials. The ORAC is generally comprised of soils with medium to high permeabilities.
Newmarket Till	Underlying the ORAC is the Newmarket Till, which acts as an aquitard. The Newmarket till comprises of dense sandy silt to clayey silt and generally has a low permeability.

Bedrock was not contacted over the current subsurface investigation. Bedrock in the area is the Queenston shale. Based on the Sixteen Mile Creek Study (2013), The upper 5 m of the shale can be weathered and fractured. The bedrock cap on top of the Milton Outlier consists of the fractured and relatively permeable dolostone of the Guelph-Amabel Formation. The existence of the Queenston shale at or near the surface east of the escarpment has given rise to historical and potential extraction operations.

The thickness of the overburden below the escarpment ranges from 3 to 25 m. The overburden can contain lenses of more permeable sand and gravel. Channelized deposits of sand gravel occur in the lower portion of the subwatershed. These deposits may range from 1.5 to 6 m thick and may be continuous. . Based on the review of Oak Ridges Moraine Groundwater Program (OGRMP) cross section tool, bedrock lies at an elevation of approximately 173.5 masl, and depth to bedrock at the Site is approximately 15 m below ground surface.

4.5 Watershed Setting

The Sixteen Mile Creek watershed is one of 18 watershed areas of Conservation Halton, with one for each the creeks and streams that enter Lake Ontario. The Sixteen Mile Creek watershed is about 360 square kilometres of land that includes parts of Milton, Halton Hills, Oakville and Mississauga, and drains into Lake Ontario. (CH, 2022).

4.6 Local Groundwater Resources

MECP Water Well Records (WWRs) were reviewed for the registered wells located at the Site and within 500 m radius of the Site boundaries (study area). Information contained in these records provides data for determining the nature and use of local groundwater resources. A total of 41 well records were found. The locations of the well records in the Study Area are presented on **Figure 3,** with the details for each well summarized in **Appendix B**. A summary of data obtained from these MECP records is presented in Table below:

Total Number of Wells	**41**
Depth Ranges	
50 ft. or less	12 (29%)
51 ft. to 100 ft.	2 (5%)
Greater than 100 ft.	0 (0%)
Unknown	27 (66%)
Water Use	
Domestic Water Supply	10 (25%)
Public/ Municipal Water Supply	0 (0%)
Commercial Water Supply	1 (2%)
Monitoring/Test Holes	8 (20%)
Not Used/ Abandoned	19 (46%)
Unknown	3 (7%)

The above summary indicates that approximately 25 % of the well records indicate the wells being used for domestic purposes. It is noted that the Site is situated within residential area that is likely serviced by municipal water supply. However, it is expected that there might still be an active use of groundwater for domestic purposes in the vicinity of the Site.

Based on the review of the well records, it is indicated that ten (10) active water supply well were found within 500 m radius of the area of proposed development. The locations of the well records in the Study Area are presented on **Figure 3**. The water supply well record is summarized in the table below, and respective well log is provided in the **Appendix B**.

Map ID	MECP Well ID	Well Depth (m)	Static Water Level (m)	Well Use	Construction Date	Approx. Distance from the Site (m)
4	2804131	10.4	4.6	Domestic	1972-05-26	335
5	2808260	25.6	7.9	Domestic	1993-04-27	295
9	2802505	20.1	7.6	Domestic	1963-05-24	300
12	2802481	10.7	7.6	Domestic	1962-10-28	100
26	2802504	13.7	3.7	Commercial	1956-04-25	155
27	2806272	7.9	0.3	Domestic	1984-05-18	310

31	2809874	10.7	6.0	Domestic	2003-12-10	350
35	2806271	7.9	0.3	Domestic	1984-04-19	390
37	2807518	16.8	9.1	Domestic	1989-11-18	375
38	2802792	11.0	1.2	Domestic	1968-11-09	400
39	2803361	14.0	3.1	Domestic	1970-04-14	400

The area is situated in an urban portion of Milton. The Town of Milton is serviced with piped municipal water. There will be future use of the groundwater resources in the area for water supply purposes. However, based on the record review and nature of the proposed development, it is unlikely that impacts from the proposed development will affect local water resources within the vicinity of the Site.

4.7 Property Inspection to Assess Hydrogeologic Features

The Site was assessed for the presence of features which are significant from a hydrogeologic viewpoint to understand the hydrogeologic dynamics of the subject area. In particular, the property was inspected to assess the following:

- Areas of visible groundwater discharge, springs or seepage at the property or in the vicinity of the on-property water courses.
- Areas of potential enhanced groundwater recharge such as closed drainage features or depressions or large flat areas which may allow for significant groundwater infiltration.
- Inspection of swales and drainage courses for evidence of groundwater seepage or springs.
- Evidence of phreatophytic vegetation, which may indicate seasonally high groundwater levels and/or groundwater discharge and seepage.

No significant areas of groundwater recharge (such as depression or kettles) were identified on the subject property.

4.8 Local Surface Water and Natural Heritage Features

Mapping from the Ontario Ministry of Natural Resources and Forestry (MNRF) was to determine if water bodies, wetland and woodland features were present on the Property and within the Study Area. The Ontario Ministry of Natural Resources National Heritage Information Centre database for listings of Areas of Natural or Scientific Interest (ANSIs) was reviewed. The natural heritage map is presented in **Figure 6**. The information is summarized below.

Water Bodies	**Property**	• No waterbodies are present on the Property
	Study Area	• The nearest surface water features are Sixteen Mile Creek and one of its tributaries located approximately 300 m east and at about 400 m west of the proposed development. Both Sixteen Mile Creek and its tributary flow southeastward following local topography towards Lake Ontario.
Wetlands	**Property**	<u>Provincially Significant Evaluated Wetland</u> • No Provincially Significant wetlands are present on the Property <u>Non- Provincially Significant Evaluated Wetland</u> • No Non- Provincially Significant wetlands are present on the Property. <u>Unevaluated Wetland</u> • No wetland features are present within the area of proposed development.
	Study Area	<u>Provincially Significant Evaluated Wetland</u> • The closest Provincially Significant Evaluated Wetland is present approximately 1.2 km northeast from the area of proposed development <u>Non- Provincially Significant Evaluated Wetland</u> • The closest Non-Provincially Significant Evaluated Wetland is present approximately 2.0 km southwest from the area of proposed development <u>Unevaluated Wetland</u> • Unevaluated wetland feature is present within the close proximity of the northeast perimeter of the Property which is located approximately 20 m northeast of the area of proposed development.
Woodlands	**Property**	• Woodland areas are identified on the Property. However, no woodland areas are present within the area of proposed development.
	Study Area	• The closest woodland area was identified in close proximity of the Property along the north and south perimeter.
ANSIs	**Property**	<u>Provincially Significant Life Science ANSI</u> • No Life Science ANSIs were identified on the Property. <u>Provincially Significant Earth Science ANSI</u> • No Earth Science ANSIs were identified on the Property.
	Study Area	<u>Provincially Significant Life Science ANSI</u> • No Life Science ANSIs were identified in the Study Area. <u>Provincially Significant Earth Science ANSI</u> • No Provincially Significant Earth Science ANSIs were identified in the Study Area

5.0 RESULTS OF SUBSURFACE INVESTIGATION

The field investigation was conducted from June 13 to 17, 2022 and consisted of drilling and sampling a total of sixteen (16) boreholes extending to depths varying from about 9.2 to 9.4 m below existing ground surface.

To measure the groundwater level and investigate the quality of groundwater, eight (8) boreholes (BH1, BH4, BH7, BH9, BH10, BH13, BH15 & BH16) were instrumented with a monitoring well. The locations of boreholes and monitoring wells are shown on the attached **Figure 2**.

The boreholes were drilled by a specialist drilling contractor using truck/track-mounted drilling rigs equipped with power augers. The borings were advanced using continuous flights of solid stem augers and were sampled at 0.75 m interval with conventional 50 mm diameter split barrel samplers. The drilling was conducted under the full-time supervision of a member of our field staff, who logged the borings and examined the samples as they were obtained. All samples obtained during the investigation were sealed into plastic jars, and transported to our geotechnical testing laboratory for detailed inspection and testing.

5.1 Local Site Setting

Based on the review of the geotechnical report **File No. 1-22-0209-01**; the subsurface soil stratigraphy is indicated below. The following stratigraphy is based on the borehole findings, as well as the geotechnical laboratory testing conducted on selected representative soil samples. The stratigraphic boundaries indicated on the Borehole Logs are inferred from non-continuous samples and observations of drilling resistance and typically represent a transition from one soil type to another. These boundaries should not be interpreted to represent exact planes of geological change. The subsurface conditions have been confirmed in a series of widely spaced boreholes and will vary between and beyond the borehole locations.

5.1.1 Surficial Topsoil/ Earth Fill Material

A surficial layer of **topsoil** was encountered at all borehole locations, and its thickness ranged from 90 mm to 150 mm. The topsoil was underlain by weathered/disturbed native soil in boreholes BH1, BH2, BH3, BH4, BH7, BH12, BH14 and BH16. A zone of earth fill materials was encountered in boreholes BH5, BH6, BH8, BH9, BH10, BH11, BH13 and BH15 and extended to a depth of 0.8 m below grade. The earth fill materials consisted of
clayey silt, trace gravel, trace sand, trace organics. The fill material indicated a soft to stiff relative density with moist condition.

5.1.2 Native Soils

Undisturbed native soil deposits underlie the topsoil / earth fill deposits, which extended to the full depth of investigation are as follows:

- **Clayey Silt Till**, with varying amount of sand (some sand to sandy) and trace amounts of gravel was encountered below the fill material in each borehole. Clayey silt till extended to depths of about 3.0 to 6.1 m below grade indicating a moist condition.

- **Sandy Silt to Sand and Silt Till**, with varying amount of clay and gravel (trace to some) was encountered below the clayey silt till layer in each borehole. The cohesionless till extended to the full depth of investigation (about 9.2 to 9.4 m depth below grade), indicating a moist to wet condition.

The detailed stratigraphic conditions are presented on the accompanying borehole logs provided in **Appendix C**. A subsurface profile of Site is provided in **Figure 4**. Geotechnical characterization of the various soil types, including grain size analysis, was conducted and is presented in **Appendix D**. Additional information pertaining to soil stratigraphy is discussed in the geotechnical report by Terraprobe under a separate cover (**File No. 3-22-0209-01**).

5.2 Monitoring Well Installation

Monitoring wells were installed in eight (8) boreholes (BH1, BH4, BH7, BH9, BH10, BH13, BH15 and BH16) for groundwater monitoring and to investigate groundwater quality. The monitoring wells were constructed using 50-mm diameter PVC riser pipes and screens, which were installed in each of the selected geotechnical boreholes in accordance with Ontario Regulation (O. Reg.) 903. Filter sand was placed around the well screen to approximately 0.6 m above the top of the screen. The wells were then backfilled with bentonite to approximately 0.3 m below ground surface. All monitoring wells were surveyed using an R10 Trimble GPS relative to a geodetic datum. The details are provided below:

Well ID	Well Diameter (mm)	Ground Surface Elevation (masl)	Top of Screen		Bottom of Screen		Screened Geological Units
			Depth (mbgs)	Elev. (masl)	Depth (mbgs)	Elev. (masl)	
BH 1	50	192.04	6.1	185.94	9.1	182.9	Sandy Silt to Sand & Silt Till
BH 4	50	192.6	6.1	186.49	9.1	183.44	Sandy Silt to Sand & Silt Till
BH 7	50	192.7	6.1	186.6	9.1	183.55	Sandy Silt to Sand & Silt Till
BH 9	50	192.5	6.1	186.4	9.1	183.35	Sandy Silt to Sand & Silt Till
BH 10	50	192.9	6.1	186.77	9.1	183.72	Sandy Silt to Sand & Silt Till

Well ID	Well Diameter	Ground Surface	Top of Screen		Bottom of Screen		Screened Geological Units
BH 13	50	192.4	6.1	186.28	9.1	183.23	Sandy Silt to Sand & Silt Till
BH 15	50	192.2	6.1	186.13	9.1	183.08	Sandy Silt to Sand & Silt Till
BH116	50	192.2	6.1	186.15	9.1	183.1	Sandy Silt to Sand & Silt Till

Note: masl: meters above sea level, mbgs: meters below ground surface

Additional details of the monitoring well installation is presented on the enclosed borehole logs provided in **Appendix C**.

5.3 Groundwater Level Monitoring

Water levels was measured in the installed monitoring wells on the site on one event at the time of hydrogeological testing at the Site. The depth to groundwater measured on July 14, 2022 is provided below.

Monitoring Well	Ground Surface Elevation (masl)	July 14, 2022	
		Groundwater Depth (mbgs)	Groundwater Elevation (masl)
BH 1	192.0	6.71	185.33
BH 4	192.6	6.95	185.64
BH 7	192.7	7.36	185.34
BH 9	192.5	6.88	185.62
BH 10	192.9	7.13	**185.73**
BH 13	192.4	6.77	185.60
BH 15	192.2	7.14	185.09
BH16	192.2	7.33	184.92

Note: masl: meters above sea level, mbgs: meters below ground surface

Based on the water level recordings, it is noted that groundwater level in the overburden varies from 184.9 ± masl to 185.7 ± masl (6.7 to 7.4 mbgs).

It is noted that regional and local groundwater flow direction is expected to mimics the surface topography appears to be in the southeast towards Lake Ontario located approximately 16 km southeast from the area of proposed development. The groundwater flow direction is shown in **Figure 5**.

It should be noted that the groundwater levels noted above may fluctuate seasonally depending on the amount of precipitation and surface runoff. Further, long term groundwater monitoring will be required to capture the seasonal groundwater flow fluctuations.

The monitoring wells installed at the Site need to be maintained in accordance with Ontario Water Resources Act, O. Reg. 903/90. When the wells are no longer required for monitoring or sampling purposes, these wells will need to be appropriately decommissioned by a licensed well contractor as outlined in the Regulation.

5.4 Estimation of Hydraulic Conductivity

5.4.1 Estimation from Grain Size

In order to estimate the hydraulic conductivity (*K*) from the grain size distribution curves an excel based tool/program HydrogeoSieveXL (Devlin, J.F. 2015) is used that calculates the hydraulic conductivity from grain size distribution curves using 15 different methods. HydrogeoSieveXL was found to calculate K values essentially identical to those reported in the literature, using the published grain-size distribution curves. This program is developed by J.F Devlin, Department of Geology, University of Kansas (Developed April 29, 2014, most recent update September, 2016). HydrogeoSieveXL presents the completed data table, a grain size distribution curve, an extensive list of grain size characteristics from which effective grain diameters are calculated, a histogram of grain size distribution presented in terms of conventional grain size classes and 15 estimates of *K* calculated from the formulas. Geometric and arithmetic means of the estimated K values are also calculated. The complete report for each sample is provided in along with the grain size results in **Appendix E**. The results of the estimates are summarized below:

Borehole No./Sample ID	Sampling Depth (mbgs)	Sampling Elevation (masl)	Soil Description (Native)	Estimated Hydraulic Conductivity (m/s) (Geometric Mean)
Borehole 1, Sample 8	7.7	184.4	Sandy Silt to Sand & Silt Till	9.9×10^{-9}
Borehole 4, Sample 6	4.8	187.8	Clayey Silt Till	1.5×10^{-9}
Borehole 10, Sample 5	3.4	189.5	Clayey Silt Till	2.2×10^{-9}
Borehole 13, Sample 7	6.2	186.1	Sandy Silt to Sand & Silt Till	1.0×10^{-8}
Borehole 16, Sample 9	9.2	183.1	Sandy Silt to Sand & Silt Till	3.1×10^{-7}

Note: masl: meters above sea level, mbgs: meters below ground surface

Based on the grain size distribution analysis, the hydraulic conductivity of the upper cohesive clayey silt till deposit is estimated in order of 10^{-9} m/s. Moreover, the hydraulic conductivity of the lower sandy silt glacial till is estimated in order ranging from 10^{-7} m/s to 10^{-8} m/s.

5.4.2 Estimation from In-situ Hydraulic Testing

The hydraulic conductivity was also determined based on single well response tests (Bail Tests) performed on all monitoring wells (BH1, BH4, BH7, BH9, BH10, BH13, BH15 and BH16). The monitoring wells were developed in advance. Well development involves the purging and removal of

groundwater from the monitoring wells to remove remnants of clay, silt and other debris introduced into the monitoring well during construction, and to induce the flow of formation groundwater through the well screens, thereby improving the transmissivity of the subsoil strata formation at the well screen depths.

The static water level was measured prior to the test. The Solinst Datalogger was programmed to record the water levels at one (1) second of the interval throughout each test. The data from the tests were analysed using Bouwer and Rice method (1967) included in the Aquifer Test V.7 software Package. The results of the analysis are presented in **Appendix E**. The hydraulic properties of the strata applicable to the Site are as follows:

Monitoring Well ID	Top of Well Screen Elevation (masl)	Bottom of Well Screen Elevation (masl)	Screened Geological Units	Hydraulic Conductivity (m/s)
BH 1	185.94	182.9	Sandy Silt to Sand & Silt Till	3.1×10^{-8}
BH 4	186.49	183.44	Sandy Silt to Sand & Silt Till	1.84×10^{-6}
BH 7	186.6	183.55	Sandy Silt to Sand & Silt Till	3.78×10^{-7}
BH 9	186.4	183.35	Sandy Silt to Sand & Silt Till	3.51×10^{-8}
BH 10	186.77	183.72	Sandy Silt to Sand & Silt Till	2.99×10^{-8}
BH 13	186.28	183.23	Sandy Silt to Sand & Silt Till	1.18×10^{-8}
BH 15	186.13	183.08	Sandy Silt to Sand & Silt Till	1.67×10^{-7}
BH16	186.15	183.1	Sandy Silt to Sand & Silt Till	3.49×10^{-7}

Note: masl: meters above sea level, mbgs: meters below ground surface

Based on the in-situ hydraulic testing, the hydraulic conductivity of the native soils is estimated in order ranging majorly from of 10^{-6} m/s to 10^{-8} m/s, indicating moderate permeabilities

5.4.3 Estimation from Literature

According to Freeze and Cherry (1979), the typical hydraulic conductivity of the strata investigated at the site are:

Soil Unit	Estimated Hydraulic Conductivity Range (m/s)
Earth Fill	10^{-6}
Glacial Till (Native)	10^{-6} - 10^{-12}

Based on the analyses, the hydraulic conductivity calculated from the single well response testing and grain size analyses are consistent with the published values associated with the geological material tested.

5.5 Assessment of Groundwater Quality

One (1) unfiltered groundwater sample was collected by Terraprobe and analyzed by a Canadian laboratory accredited and licensed by Standards Council of Canada and or Canadian Association for Laboratory Accreditation. The sample was collected directly from monitoring well BH 16 on July 15, 2022. The monitoring well BH 16 was developed and purged prior to sample collection.

Upon sampling, all of the bottles were placed in ice and packed in a cooler for shipment to the analytical laboratory. Sample analysis was performed by AGAT Laboratories, a laboratory accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA).

The sample was compared to the following:

- Halton Sanitary and Combined Sewer Standards

In summary, the results indicate the following:

- The groundwater sample **meets** the permissible limits for Halton Sanitary & Combined Sewer Guideline values are for all the parameters analyzed.

The results of the groundwater analysis indicate the unfiltered groundwater sample analyzed meet the limits for Region of Halton Sanitary and Combined Sewer Discharge.

The groundwater quality test results and the certificate of analysis are presented in **Appendix F**.

6.0 IMPACT ASSESSMENT

The impact assessment details that are applicable to the Property are discussed below:

6.1 Groundwater Control and Dewatering Requirements

6.1.1 Construction Requirements and Methodology

The following drawing set was provided to Terraprobe and reviewed in preparation of this engineering report:

- *"Site Plan – Proposed Borehole Locations, Careswell Milton, 6360 Regional Rd 25"*, by Salterpilon, dated February 04, 2022, File No.: 21040.

The proposed development consists of comprised of an 8 storey Long Term Care Home structure with the potential of one level of underground parking and services that would cover most of the site, parking areas and driveways/access routes.

Based on the geotechnical investigation report by Terraprobe **File No. 1-22-0209-01** (September 2022), the proposed finished floor elevation (FFE) would be set at about at about 4.0 m depth below grade (Elev.188.5 ± m). The underside of footing level would likely be set at about 1 ± m (Elev.**187.5** ± m) below P1 slab.

Based on the review of the geotechnical investigation report prepared by Terraprobe **File No. 1-22-0209-01**, proposed buildings will be supported on conventional spread footing foundations on the native, undisturbed very stiff to hard clayey silt till deposit. Based on the above stabilized groundwater level recordings on July 14, 2022, it is noted that groundwater level varies from 184.9 ± m to 185.73 ± m across the property. The highest groundwater level that will be used in the FEM 186.73 masl applying a 1m fluctuation above the groundwater level recorded during the month of July 2022. This indicates that the the foundation excavations will extend above the prevailing groundwater table at the Site. According to the Geotechnical report, for excavations extending near or below the prevailing groundwater level (e.g. elevator pit), it may be necessary to lower the groundwater level and maintain it at least 1 m below the excavation base prior to and during the subsurface construction. Excavations for foundations will extend a nominal 1.0 m below FFE, and the design dewatering target will be set 1.2 m below the lowest excavation level. As such, it will be necessary to positively depressurize the wet native soil prior to construction for any excavations extending below Elev. 186.3 ± m.

The permanent drainage system is intended to collect passive groundwater seepage flow from the surrounding soils. For the purpose of dewatering (long term) assessment, the sub drainage system is assumed to be at about 1 foot (0.3 m) below the slab of lowest underground parking, approximately Elev.188.2 ± m, which is 1.5 m above the design groundwater level.

Note: For further details on the geotechnical design considerations and constructability please refer to geotechnical report prepared by Terraprobe under a separate cover (**File No. 1-22-0209-01**)

6.1.2 Groundwater Extraction and Discharge Requirements

A finite element numerical analysis utilizing computer software (Slide 7.014, developed by Rocscience Inc.) was conducted to assess the water taking requirements (short term and long term) in support of the proposed development. The hydraulic parametrization of the generalized numerical model is based on the grain size analyses, field hydraulic testing and published data that incorporates the permeability of different strata encountered during the investigation. The final shoring system and construction method were unknown at this stage. As such, a permeable shoring was assessed for preliminary estimate. The finite element model results are presented in **Appendix G**. For the purpose of accessing groundwater seepage rates, following considerations were made:

- Underside of the foundations set to 1.0 m below the lowest FFE;
- Design water level of Elev. 186.73 ± m, 1m above the measured groundwater level to account for the highest observed water table elevation;

- Design dewatering target set 1.2 m below the foundation's underside;
- Safety factor S.F of 2 is applied on the groundwater flow with the inclusion of 27 mm design rainfall event based on of Intensity-duration-frequency (IDF) curves (Ontario Ministry of Transportation) for 2-hour period for a 2-year event;
- Steady State simulation was performed for dewatering assessment; and
- Hydraulic conductivity for earth fill, native clayey silt glacial till, and sandy silt till assigned as 1 x 10^{-6} m/s, 2.2 x 10^{-9} m/s, and 1.84 x 10^{-6} m/s respectively.

The short-term control of ground water should take into account stormwater management from rainfall events. A dewatering system should take into account the removal of rainfall from the excavation. A value of 27 mm rainfall over a 2-hour period for a 2-year event was used to determine the incidental precipitation volumes to the proposed excavations based on the review of Intensity-duration-frequency (IDF) curves (Ontario Ministry of Transportation). The water taking requirements at the Property are as follows:

Conventional Drained Foundations - Construction (Short Term) – F.S. 2.0						
Scenario	**Groundwater Seepage S.F. 1.5 Used**		**27 mm Design Rainfall Event**		**Total Volume (1)**	
	L/day	**L/min**	**L/day**	**L/min**	**L/day**	**L/min**
Short Term (Permeable Shoring)	28,500	19.8	48,500	33.7	**77,000**	**53.5**
Short Term (Impermeable Shoring)	6,500	4.5	48,500	33.7	**55,000**	**38.2**
Conventional Drained Foundations - Permanent (Long Term) – F.S. 1.5						
Long Term (Permeable Shoring)	0	0	3,000	2.1	**3,000**	**2.1**
Long Term (Impermeable Shoring)	0	0	3,000	2.1	**3,000**	**2.1**

Notes:
(1) – Total volume is rounded up to the nearest thousand

As required by Ontario Regulation 63/16, a plan for discharge must consider the conveyance of stormwater from a 100-year storm. The additional volume based on the excavation area of either Block A/B, C/D or E/F that will be generated in the occurrence of a 100-year storm event (100 mm) is approximately 183,500 L/day (127.4 L/min).

The finite element model results are presented in **Appendix E**.

6.1.3 Permitting Requirements

The Ministry of Environment, Conservation and Parks (MECP) regulates construction water taking over 50,000 L/day and less than 400,000 L/day to obtain an Environmental Activity Sector Registry (EASR) Posting the MECP prior to any construction dewatering activities. EASR Registration is required if the taking of water is more than 50,000 liters of ground water, storm water or a combination of ground water and storm water on at least one day during the life of the construction project. Based on the maximum estimated dewatering volumes of 77,000 L/day, an Environmental Activity Sector Registry (EASR) Posting from the MECP prior to the dewatering activities for the proposed works will be required. a short-term permit to take water PTTW will not be required from the MECP prior to the dewatering activities for the proposed works., completed using permeable and impermeable shoring. However, a Sewer Discharge Agreement must be obtained to permit discharge into the City's sewers prior to any temporary construction dewatering discharge.

Furthermore, as the estimated dewatering volumes in long term is larger than 50,000 L/day, a long-term permit to take water PTTW will not be required. However, a Sewer Discharge Permit must be obtained to permit discharge into the City's sewers. It will be necessary to confirm the location of the discharge points, and the capacity of the receiving sewer as part of the permit application. The permit will provide conditions for monitoring of flow and analysis of ground water quality. However, if the proposed development is designed water tight structure, then a private water drainage system will not be required. In such a scenario, the structure must then be designed to resist hydrostatic pressure and uplift forces.

Groundwater taking estimates are based on the assumed excavation dimensions and methodology, therefore should there be changes in these items, there will be a requirement to revise the groundwater taking volumes. It is contractor's responsibility to determine the type and extent of the dewatering system required. It should be noted that the actual required dewatering effort will depend on several factors, including excavation depth, sequencing, season and weather conditions and the length of time the excavation is left open. It should be noted that the interpretation of the dewatering estimates presented in this report and selection of an appropriate dewatering program is the responsibility of contractor.

6.1.4 Zone of Influence (ZOI)

The Zone of Influence (ZOI) for dewatering, also known as Radius of Influence (R_o) with respect to maximum drawdown required was calculated based on the estimated groundwater taking rate and the hydraulic conductivity of the unit from which the groundwater will be taken at the Property. The ZOI was calculated using the Sichart's equation below:

Equation: $R_o = 3000 * dH * \sqrt{K}$

Where:

dH is the dewatering thickness (m) = Highest Observed Water level (m) - Dewatering Target (m)

K is the hydraulic conductivity (m/s) of water bearing deposit

The ZOI for the proposed building excavation with respect to groundwater at the Property is estimated as ± 1.75 m for short term dewatering.

The above ZOI is estimated by considering the hydraulic conductivity of 1.84×10^{-6} m/sec for the native sandy silt to silt and sand glacial till deposit.

If an impermeable shoring system is considered for the proposed excavation and construction, the ZOI will be limited to the excavation box.

6.2 Surface Water Impact

The nearest surface water features are Sixteen Mile Creek located approximately 300 m east and a tributary of Sixteen Mile Creek at about 400 m west of the proposed development. Both Creeks flow southeastward following local topography towards Lake Ontario. Regional and local groundwater flow direction is the expected to flow southeast towards Lake Ontario. Any groundwater that will be taken from the site will be discharged (if required) into the City's sewer systems and not into any natural water body. As such, there will be no impact to surface water features as a result of proposed development.

6.3 Groundwater Quality Impact

The area of the proposed development is not located in the Highly Vulnerable Aquifer (HVA). HVAs are those areas where an aquifer may be more prone to contamination. The infiltration of rooftop runoff and vegetated surfaces may be permitted if current site conditions demonstrate no existing contamination. Depending on the land use, runoff from urban developments may contain a variety of dilute contaminants such as suspended solids, chloride from road salt, oil and grease, metals, pesticide residues, bacteria and viruses. For groundwater, generally with the exception of the dissolved constituents such as nitrogen and salt, most contaminants are attenuated by filtration during groundwater flow through the soils. Under proposed development, the quality of water directed to pervious areas for infiltration is not expected to contain any contaminant of concerns.
Considering the nature of proposed development, it is anticipated that there will not be any contributing contaminants that may affect the background ground water quality in the area. Phase One and Phase Two Environmental Assessments (ESAs) were completed at the Property. Based on the findings of these studies, no contaminants exceeding the applicable site condition standards were identified at the Property.

6.4 Anthropogenic Transport Pathways

No significant anthropogenic transport pathways were identified during investigations conducted on the Property. Eight (8) monitoring wells were installed during site investigation conducted by Terraprobe to gather information regarding the groundwater quality and elevation at the Property. These are all installed in the shallow groundwater, and are therefore not considered to be a risk to the groundwater resource; however, the

wells will be abandoned when no longer in use for monitoring. All monitoring wells will be abandoned prior to the earth works of the proposed development at the Property.

The existence of groundwater transmission pathways is based on the interpretation made solely from the soil type encountered during the subsurface investigation. If any ground water transmission pathways are present on the property, all precautions must be taken to ensure that there is no disruption to the groundwater flow and hydrogeologic functions.

6.5 Dewatering Impacts to Natural Environment

There are no provincially significant, evaluated, surface water features and/or unevaluated wetlands within the close proximity of the Site or within the estimated zone of influence. Furthermore, if the excavation works will be advanced using an impermeable shoring system (caisson wall), the zone of influence will be limited to the excavation box. Any groundwater that will be taken from the site will be discharged (if required) into the Town's sewer systems and not into any natural water body. As such, there will be no impact to the natural environment caused by the water takings at the Property

6.6 Local Wells and Zone of Influence

The Site is located in a developed area of the Town of Milton. A review of MECP well records (Section 4.5) indicates that there is a total of 11 water supply wells located within the study area. The water supply wells in the area are predominantly used for domestic water supply (10 records), however there are wells reportedly also used for commercial (1 records) water supply. The closest domestic water supply well (Well ID: 2802481) is located approximately 100 m northeast of the Site. As discussed in Section 7.0, the ZOI from the temporary groundwater control and dewatering activities is expected to be limited in its lateral extent to 1.75 ± m from the edge of excavation. During the period of groundwater control and dewatering, impacts to nearby users of the groundwater resources in the area is considered unlikely. As such, it is expected that there would be no impact to local groundwater resources in the area.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the investigation, the following conclusions and recommendations are provided:

1. The property is not located within an CH Regulated Area;
2. The property is not located within Wellhead Protection Area and Highly Vulnerable Aquifer (HVA);
3. The area of proposed development is not located within Greenbelt Protection Act Area and Oak Ridges Moraine (ORM);

4. In summary, the boreholes advanced encountered a surficial topsoil cover underlain by a zone of weathered/disturbed native soil and/or earth fill materials and extended to the depth of 0.8 m below grade respectively. The earth fill materials consisted of consisting of clayey silt, with trace gravel, trace sand, trace organics. Cohesive clayey silt till deposit, with trace to some amounts of sand and gravel was encountered beneath the weathered/disturbed soil/ earth fill zone and extended to depths varying from 3.0 m to about 6.1 m below grade, with low permeability estimated in order of 10^{-8} m/s to 10^{-9} m/s, followed by cohesionless sandy silt to sand and silt till, with varying amount of clay and gravel extending to the full depth of investigation (about 9.2 to 9.4 m depth below grade). The permeability cohesionless sandy silt till estimated in order of 10^{-6} m/s to 10^{-7} m/s, indicating moderate permeabilities

5. The hydraulic conductivity of the underlying soil stratum at the Site were estimated by completing in-*situ* single well response testing and using the results of the grain size analysis. Based on the results, the hydraulic conductivities of the underlying soil ranged from 10^{-6} m/sec to 10^{-9} m/sec.

6. Based on the available water level recordings till date, it is noted that groundwater level in the overburden varies from 184.9± masl to 185.7 ± masl (6.7 mbgs to 7.4 mbgs). The site visit on July 14, 2022 indicates that shallower groundwater recorded is 185.7 ± masl. It is noted that regional and local groundwater flow direction is expected to mimics the surface topography appears to be in the southeast towards Sixteen Mile Creek tributary located approximately 300 m east from the area of proposed addition. It should be noted that the groundwater levels noted above may fluctuate seasonally depending on the amount of precipitation and surface runoff. Further, long term groundwater monitoring will be required to capture the seasonal groundwater flow fluctuations;

7. The results of the analytical testing indicated that the quality of groundwater meets the permissible limits for Region of Halton Sanitary and Combined Sewer Discharge for all the parameters analyzed.

8. Based on the results of the finite element analysis, the total temporary and permanent groundwater control and dewatering is estimated as follows:

    a. Short Term, Permeable – 77,000 L/day (53.5 L/min)
    b. Short Term, Impermeable – 55,000 L/day (38.2 L/min)
    c. Long Term, Permeable – 3,000 L/day (2.1 L/min)
    d. Long Term, Impermeable – 3,000 L/day (2.1 L/min)

8.0 CLOSURE

We trust this report meets with your requirements. Should you have any questions regarding the information presented, please do not hesitate to contact our office.

Yours truly,

Terraprobe Inc.

Muna MO Mirghani, P.Eng.
Project Manager

Muhammad I Shahid, P. Geo., QP_{ESA}
Senior Project Manager

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13. Terraprobe Inc., (January, 2023) Geotechnical Investigation Proposed Long Term Care Home, 6360 Regional Road 25, Town of Milton, Ontario, File No, 1-22-0209-01
14. Terraprobe Inc. (December 2022), Phase One Environmental Site Assessment, 6360 Regional Road 25, Town of Milton, Ontario. File No, 1-22-0209-41
15. Terraprobe Inc. (March 2023), Phase Two Environmental Site Assessment, 6360 Regional Road 25, Town of Milton, Ontario. File No, 1-22-0209-42

LIMITATIONS

This report was prepared by Terraprobe Inc. for the use of **Thomas Robert Colbeck**, and is intended to provide an assessment of the hydrogeological condition on the property located at **6360 Regional Road 25, Milton, ON**. The report was prepared for the purpose of identifying the groundwater conditions at the property and any potential groundwater flow cause by either short term construction dewatering or long-term permanent drainage of proposed buildings or structures. 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 such third parties. Terraprobe accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report, including consequential financial effects on transactions or property values, or requirements for follow-up actions and costs.

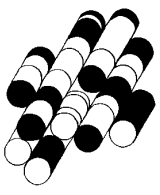
The assessment should not be considered a comprehensive audit that eliminates all risks. The information presented in this report is based on information collected during the completion of the subsurface investigation conducted by Terraprobe Inc. It is based on conditions at the property at the time of the site inspection. The subsurface conditions were assessed based on information collected at specific borehole and monitoring well locations. The actual subsurface conditions between the sampling points may vary.

There is no warranty expressed or implied by this report regarding the condition of the property. Professional judgment was exercised in gathering and analyzing information collected by our staff, as well as that submitted by others. The conclusions presented are the product of professional care and competence, and cannot be construed as an absolute guarantee.

In the event that during future work new information regarding the condition of the property is encountered, or the proposed development is changed from that which was provided to Terraprobe with respect to the property, Terraprobe should be notified in order that we may re-evaluate the findings of this assessment and provide amendments, as required.

FIGURES

TERRAPROBE INC.



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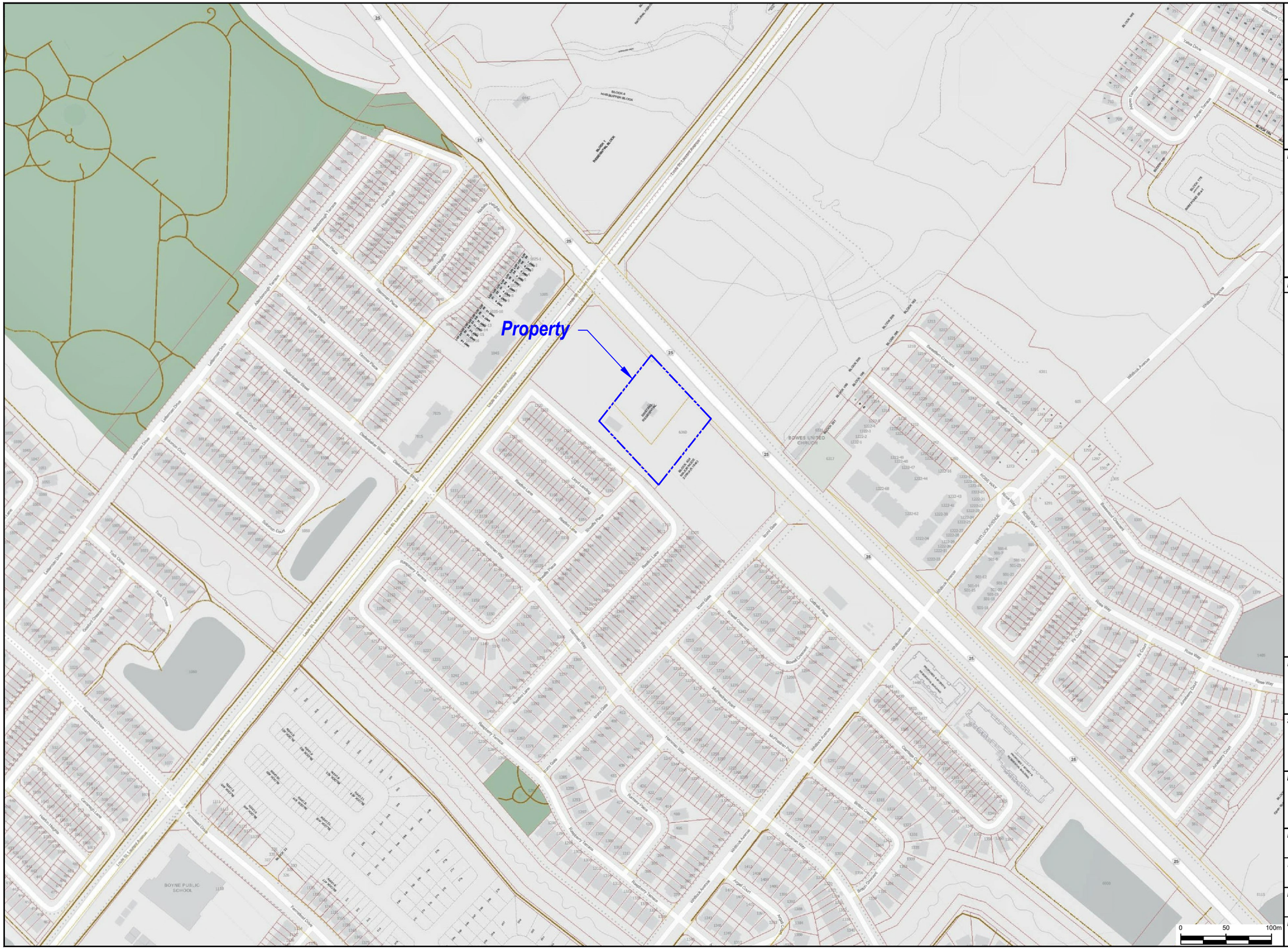

Terraprobe Inc.
Consulting Geotechnical & Environmental Engineering
Construction Materials, Inspection & Testing
11 Indell Lane - Brampton Ontario L6T 3Y3 (905) 796-2650

Reference:
Milton GIS

Notes:

Legend:

-·-·-	Property Boundary

Project Title:
Hydrogeological Assessment

Site Location:
6360 Regional Road 25, Milton, Ontario

Figure Title:
Property Location

Designed By: AQ

Drawn By: AA

Reviewed By: MS

Date: g 2022

File No.: 1-22-0209-46

Scale: As Shown

Figure No.: 1

Terraprobe Inc.
Consulting Geotechnical & Environmental Engineering
Construction Materials, Inspection & Testing
11 Indell Lane - Brampton Ontario L6T 3Y3 (905) 796-2650

Reference:
Milton GIS

Notes:

Legend:
- Property Boundary
- Borehole Location Monitoring
- Well Location

Project Title:
Hydrgeological Assessment

Site Location:
6360 Regional Road 25, Milton, Ontario

Figure Title:
Borehole/Monitoring Well Location Plan

Designed By: AQ	***File No.:*** 1-22-0209-46
Drawn By: AA	***Scale:*** As Shown
Reviewed By: MS	***Figure No.:***
Date: December 2022	

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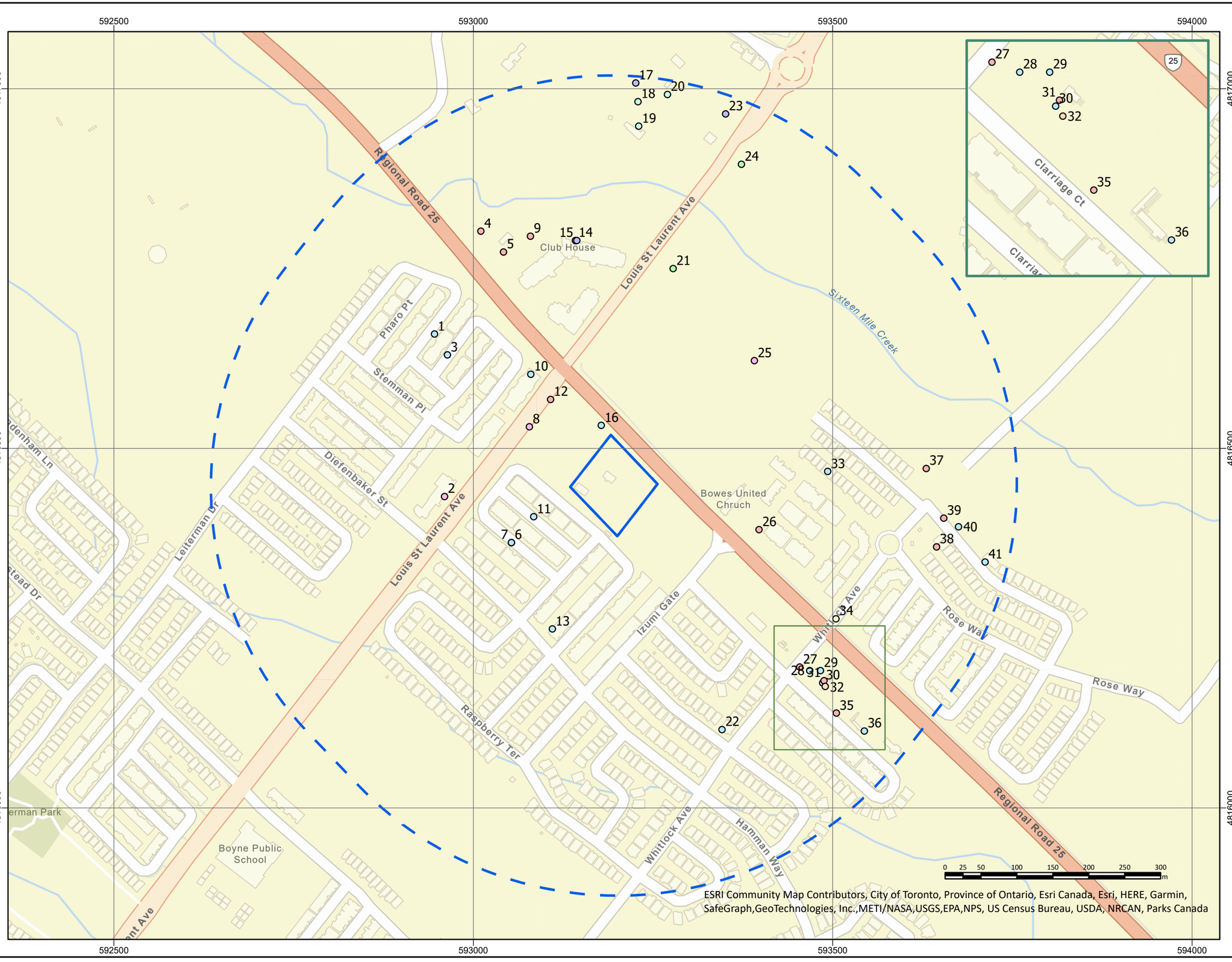

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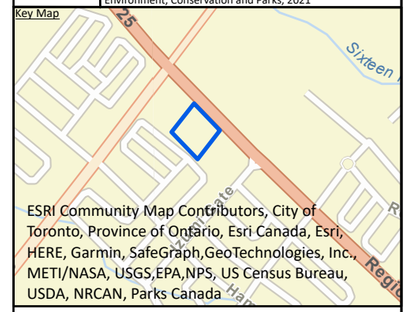
References:

ESRI, DigitalGlobe, GeoEye, EarthstarGeographics, CNES/Airbus Ds, USDA,USGS, AeroGRID, IGN and the GIS User Community produced by Englobe Copyright (c) Queen's Printer 2020. Water Well Information System Ministry of the Environment, Conservation and Parks, 2021

Key Map



ESRI Community Map Contributors, City of Toronto, Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph,GeoTechnologies, Inc., METI/NASA, USGS,EPA,NPS, US Census Bureau, USDA, NRCAN, Parks Canada

Notes:

Legend:

- Approximate Site Boundary
- 500 m Study Area

MECP Wells-Final Status

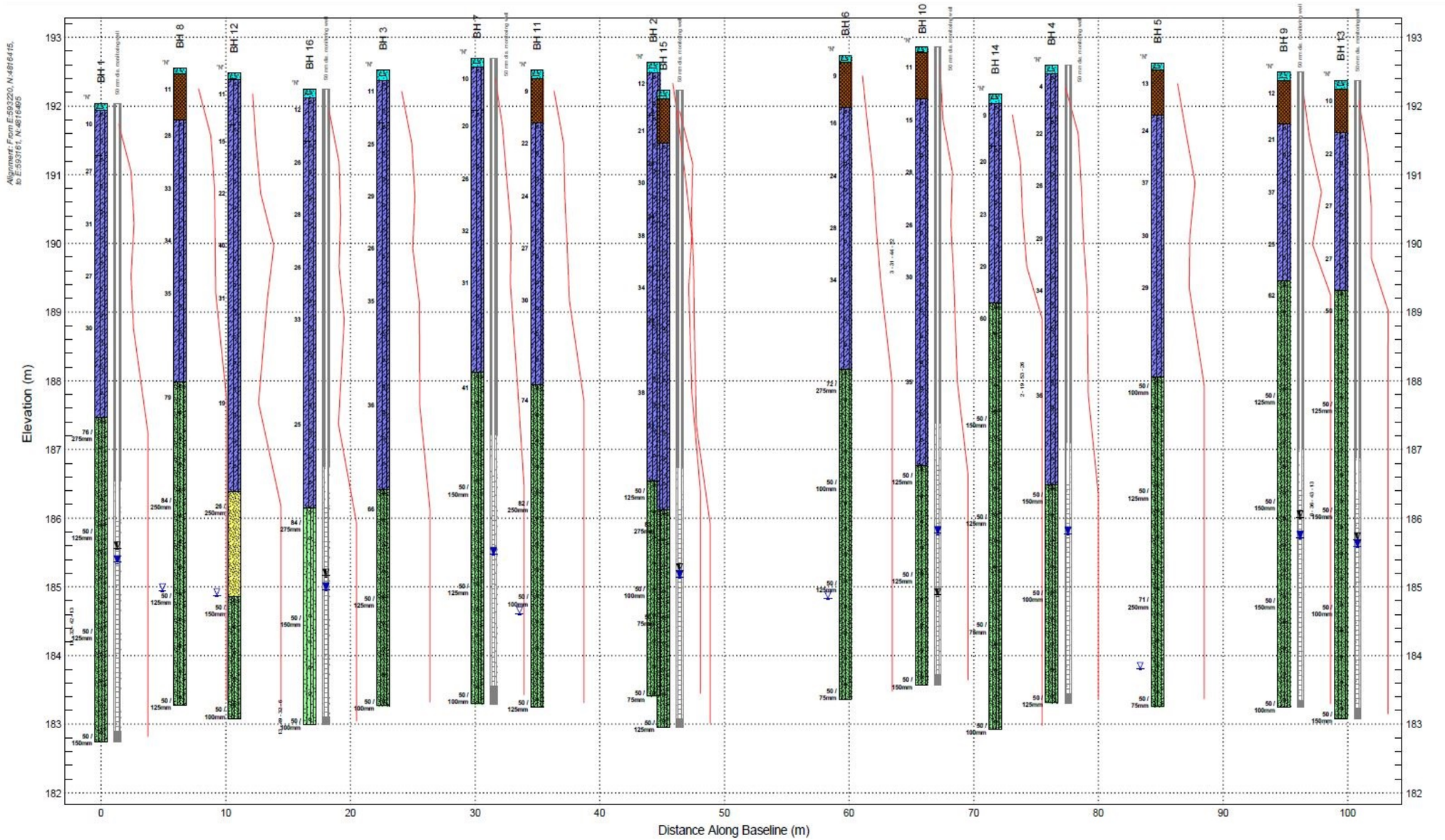
- Unknown
- Abandoned Monitoring and Test Hole
- Abandoned-Other
- Abandoned-Supply
- Monitoring and Test Hole
- Observation Wells
- Test Hole
- Water Supply

Project Title:
Hydrogeological Assessment

Site Location:
6360 Regional Road 25
Milton, Ontario

Figure Title:
MECP Well Records Map

Designed By: MM	*File No.:* 1-22-0209-46
Drawn By: HK	*Scale:* As Shown
Reviewed By: MS	*Figure No.:* 3
Date: Dec 2022	



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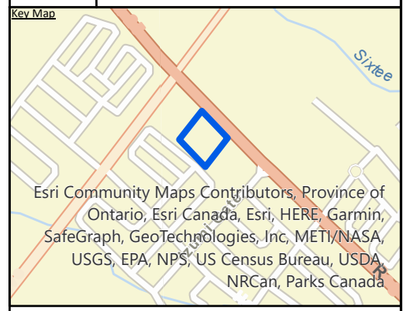
References:

Key Map



Notes:

Legend:

Approximate Site Location

LITHOLOGY GRAPHIC LEGEND

Topsoil
Sand
Clayey Silt Till
Sandy Silt Till
Sand and Silt Till
Fill

INTERPRETIVE LEGEND

WL on completion of drilling
Stabilized WL, most recent

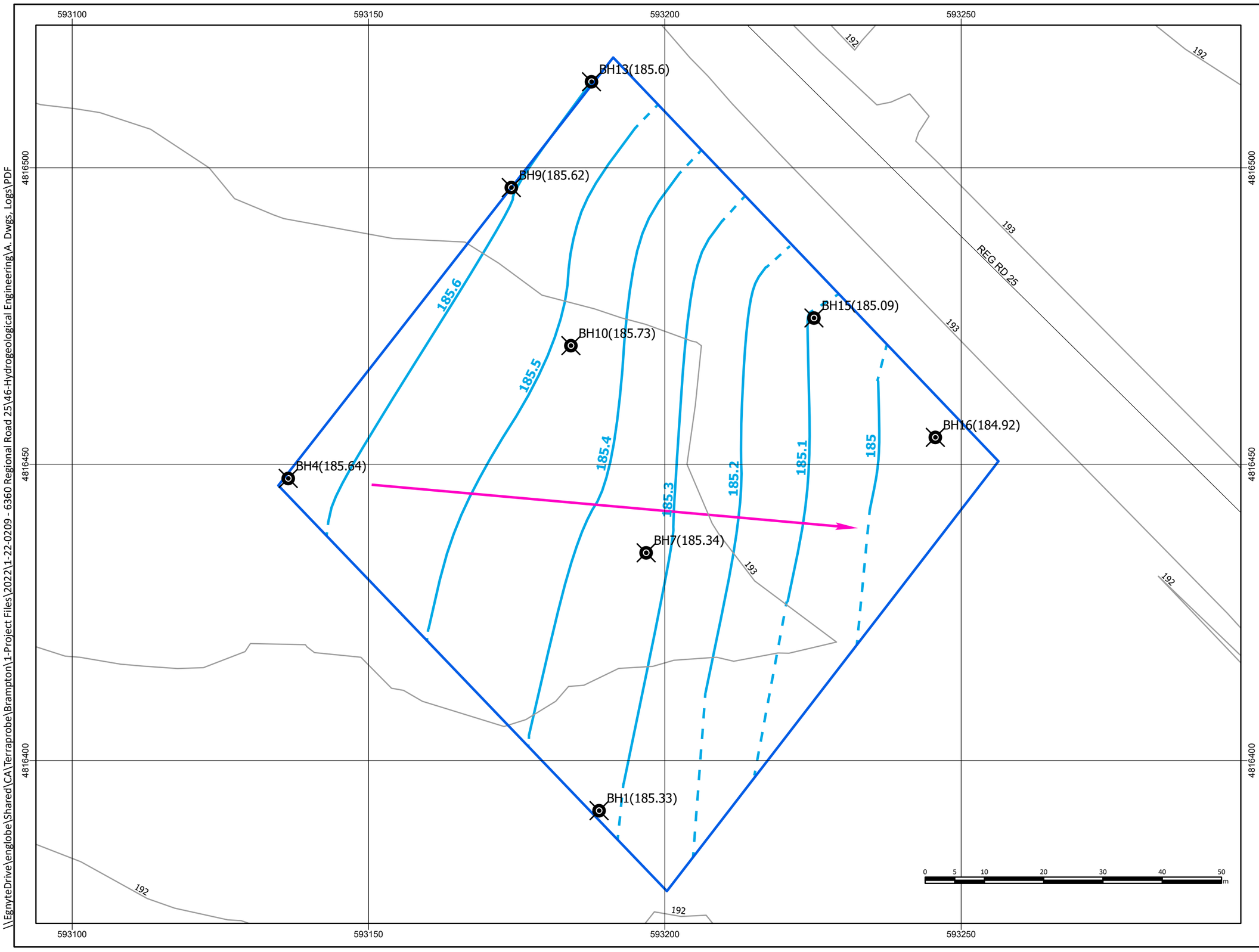
FILL
GRAVELS (gravel to gravelly sand)
SILT TO SAND (not till)
COHESIONLESS TILLS
COHESIVE SOILS (clayey silt to clay, incl. tills)
DISTURBED/REWORKED SOILS

Project Title:
Hydrogeological Investigation

Site Location:
6360 Regional Road 25
Milton, Ontario

Figure Title:
Subsurface Profile

Designed By: MM	*File No.:* 1-22-0209-46
Drawn By: HK	*Scale:* As Shown
Reviewed By: MS	*Figure No.:* 4
Date: Dec 2022	



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ENGLOBE

References:

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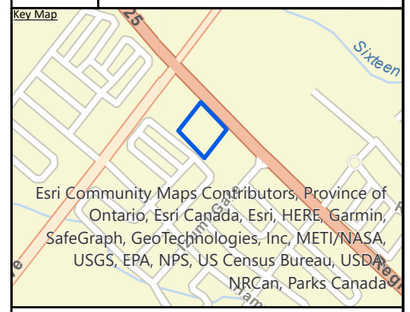
Key Map



Notes:

Legend:

- Approximate Site Location
- Interpreted Groundwater Flow Direction
- Inferred Groundwater Contours
- Interpreted Groundwater Contours

Roads Type

- Collector
- Town of Milton; Topographic Contours
- Approximate Monitoring Wells Location ; Groundwater Elevations July 14, 2022 (masl)

Project Title:
Hydrogeological Assessment

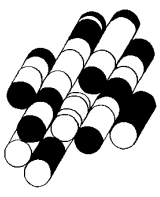
Site Location:
6360 Regional Road 25
Milton, Ontario

Figure Title:
Groundwater Flow Direction

Designed By: MM	*File No.:* 1-22-0209-46
Drawn By: HK	*Scale:* As Shown
Reviewed By: MS	*Figure No.:* 5
Date: Dec 2022	

APPENDIX A

TERRAPROBE INC.



Conservation Halton Regulation Mapping

8/8/2022, 10:13:43 PM

- Parcels
- Approximate Regulation Limit
- Shoreline 100 year Flood Elevation Hazard
- Shoreline Dynamic Beach Hazard
- Shoreline Hazard
- Stable Top of Bank (STOB) Hazard
- Wetland Hazard
- Spill Zone Hazards
- Floodplain Hazard
- Headwater Floodplain Hazard
- Meander Belt Hazard
- Consult Conservation Halton
- Spill Arrows
- Spill Lines

1:2,257

0 0.01 0.03 0.05 mi

0 0.02 0.04 0.08 km

Conservation Halton, 2022

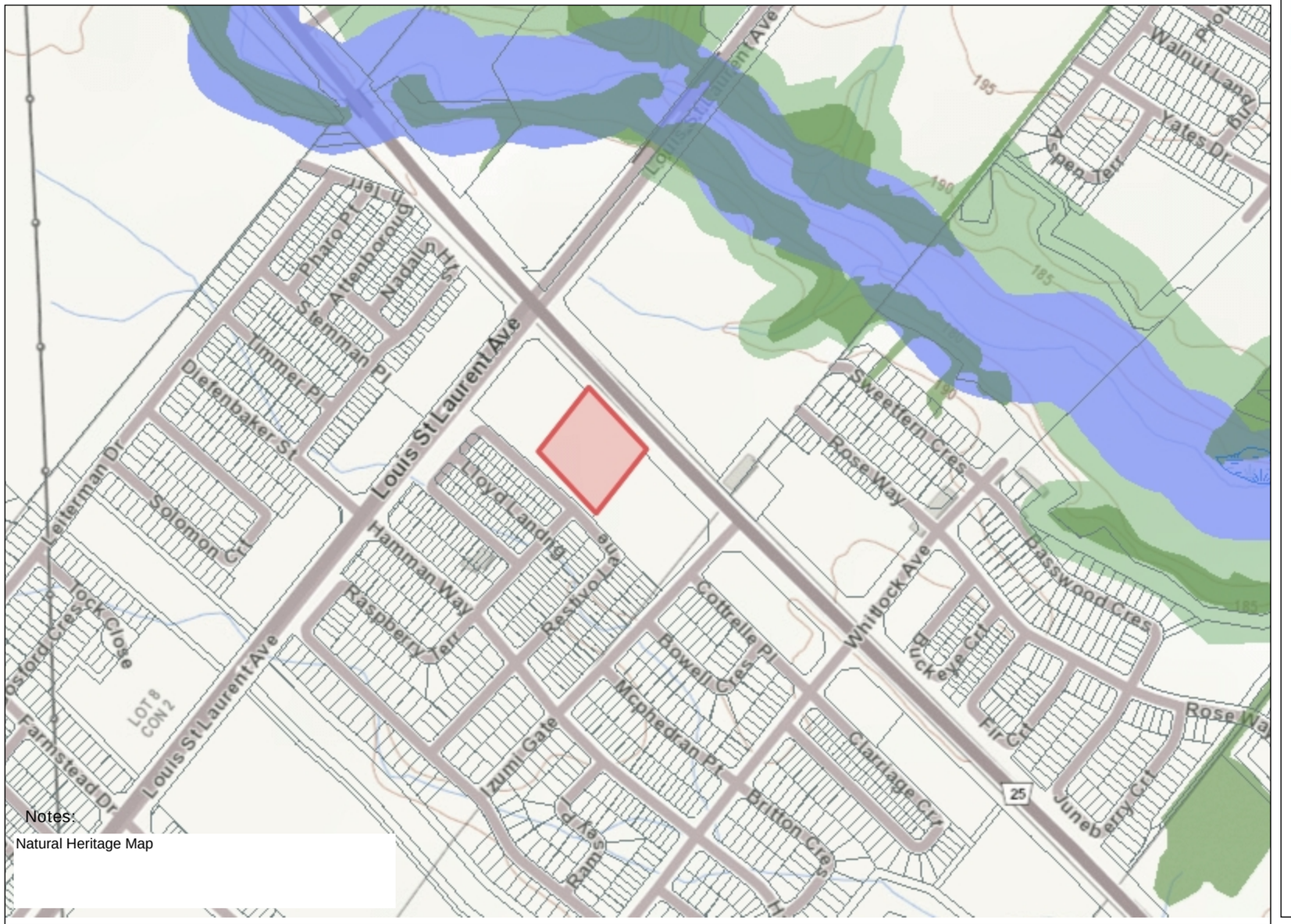
Ontario

Ministry of Natural Resources and Forestry

Make-a-Map: Natural Heritage Areas

Enter map title

Map created:8/8/2022



Notes:

Natural Heritage Map

Legend

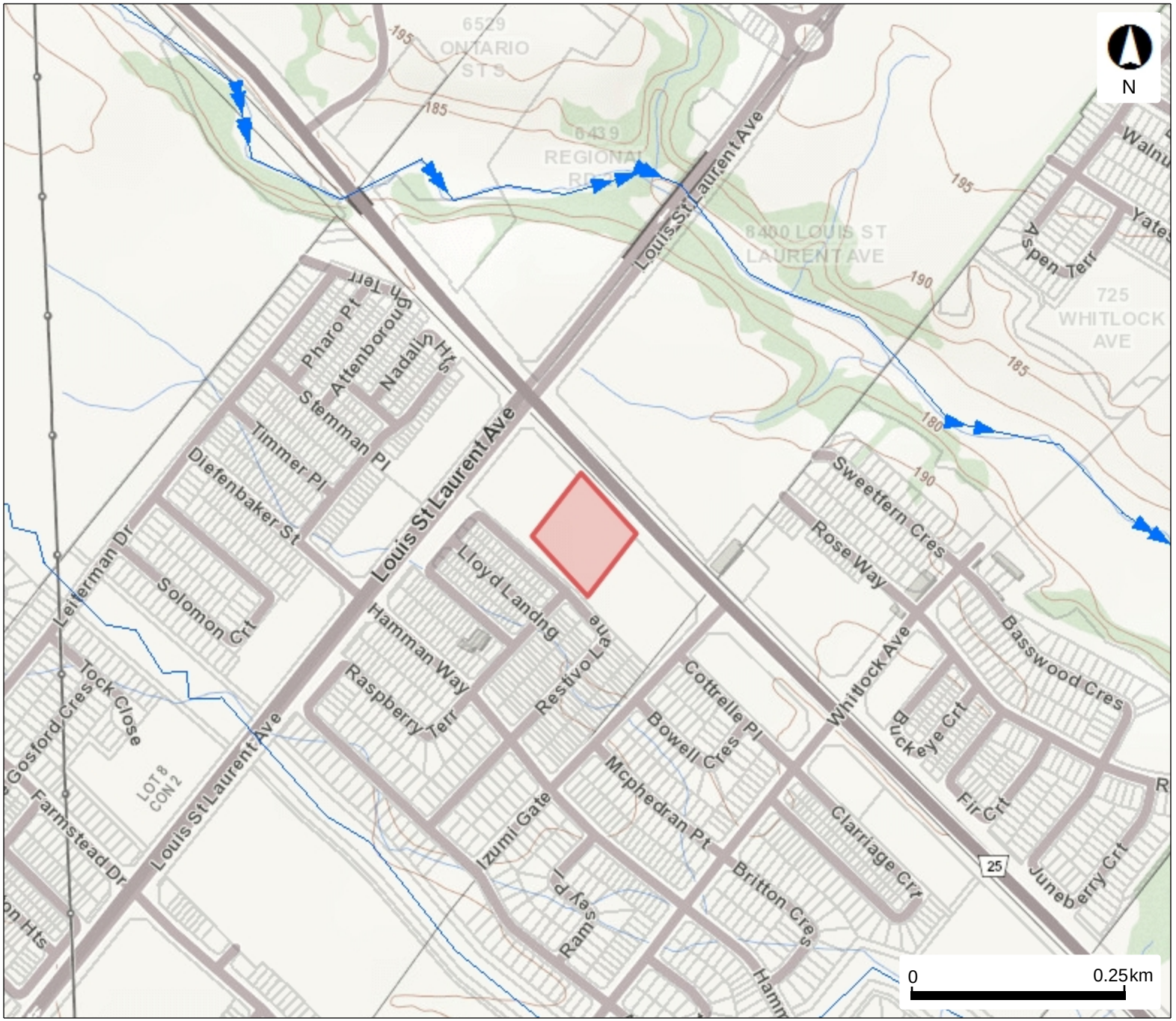
- Assessment Parcel
- Evaluated Wetland
- Provincially Significant/considérée d'importance provinciale
- Non-Provincially Significant/non considérée d'importance provinciale
- Unevaluated Wetland
- Woodland
- Conservation Reserve
- Natural Heritage System
- Greenbelt Land Use Designation
- Protected Countryside/campagne protégé
- Urban River Valley/vallée fluviale urbaine

0.3 0 0.17 0.3 Kilometres

Absence of a feature in the map does not mean they do not exist in this area.

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Natural Resources and Forestry(OMNRF) shall not be liable in any way for the use of, or reliance upon, this map or any information on this map.

Source Water Protection Map



Legend

- Watercourse Direction
- Assessment Parcel with Addre

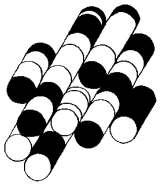
This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Environment, Conservation and Parks (MECP) shall not be liable in any way for the use or any information on this map. of, or reliance upon, this map.

Ontario

Map Created: 8/8/2022
Map Center: 43.49541 N, -79.84728 W

APPENDIX B

TERRAPROBE INC.



MECP Well Records Summary

WELL ID	MECP* WWR ID	Construction Method	Well Depth (m)**	Well Usage		Water Found (mbgs)**	Static Water Level (mbgs)**	Top of Screen Depth (mbgs)**	Bottom of Screen Depth (mbgs)**	Date Completed
				Final Status	First Use					
1	7199036		2.5	Abandoned-Other						
2	7343126									29/05/2019
3	7159099			Abandoned-Other						30/11/2010
4	2804131	Boring		Water Supply	Domestic	6.1	4.6			26/05/1972
5	2808260	Cable Tool		Water Supply	Domestic	22.9	7.9			27/04/1993
6	7243822			Abandoned-Other						10/06/2015
7	7243291			Abandoned-Other						10/06/2015
8	7171558									31/07/2011
9	2802505	Cable Tool		Water Supply	Domestic	19.5	7.6			24/05/1963
10	7153622			Abandoned-Other						02/09/2010
11	7243290			Abandoned-Other			7.0			10/06/2015
12	2802481	Boring		Water Supply	Domestic	9.2	7.6			28/10/1962
13	7253736			Abandoned-Other						29/11/2015
14	7303444	Boring	7.6	Monitoring and Test Hole	Test Hole			4.6	7.6	29/08/2017
15	7303447	Boring	3.8	Monitoring and Test Hole	Test Hole			2.3	3.8	29/08/2017
16	7253737			Abandoned-Other						29/11/2015
17	7303446	Boring	6.1	Monitoring and Test Hole	Test Hole			3.0	6.1	28/08/2017
18	2808294	Cable Tool		Test Hole						18/11/1994
19	2808295	Cable Tool		Test Hole						16/11/1994
20	2808297	Cable Tool		Test Hole						15/12/1994
21	7136532		Abandoned Monitoring and Tes		Monitoring	5.3				27/11/2009
22	7273737			Abandoned-Other						12/10/2016
23	7303445	Boring	7.6	Monitoring and Test Hole	Test Hole			4.6	7.6	30/08/2017
24	7136533		Abandoned Monitoring and Tes		Monitoring	5.7				30/11/2009
25	7158986									29/11/2010
26	2802504	Cable Tool		Water Supply	Commerical	13.7	3.7			25/04/1956
27	2806272	Boring		Water Supply	Domestic	4.3	0.3			18/05/1984
28	7243289			Abandoned-Other			6.1			10/06/2015
29	7253735			Abandoned-Other						29/11/2015
30	7253742			Abandoned-Other						29/11/2015
31	2809874	Cable Tool	10.7	Water Supply	Domestic	10.0	6.0			10/12/2003
32	2809813	Boring		Abandoned-Supply	Not Used					08/09/2003
33	7301919			Abandoned-Other						28/11/2017
34	2803410	Cable Tool	22.0	Observation Wells	Not Used	12.2	3.4	21.4	22.0	08/04/1970
35	2806271	Boring		Water Supply	Domestic	4.6	0.3			19/04/1984
36	7273736			Abandoned-Other						12/10/2016
37	2807518	Rotary (Convent.)		Water Supply	Domestic	10.4	9.2			18/11/1989
38	2802792	Boring		Water Supply	Domestic	7.6	1.2			09/11/1968
39	2803361	Boring		Water Supply	Domestic	13.4	3.1			14/04/1970
40	7301920			Abandoned-Other						28/11/2017
41	7301921			Abandoned-Other						28/11/2017

UTM 17 Z 5 9 3 0 9 3 E 30M5F

5 R 4 8 1 6 3 4 5 N

Elev. 4 R 0 6 3 4

Basin 24

The Ontario Water Resources Commission Act

WATER WELL RECORD

28 No. 2481

GROUND WATER BRANCH
AUG 11 1963
ONTARIO WATER RESOURCES COMMISSION

County or District: Halton (Lot 8) — Township, Village, Town or City: Oakville

Con. 2 (GLEN) — Lot ~~7~~ 8 — Date completed: 28 (day) Oct (month) 1962 (year)

Owner: [redacted] (print in block letters) — Address: Milton.

Casing and Screen Record

Inside diameter of casing	30"
Total length of casing	35'
Type of screen	
Length of screen	
Depth to top of screen	
Diameter of finished hole	30"

Pumping Test

Static level	25'
Test-pumping rate	2 G.P.M.
Pumping level	30'
Duration of test pumping	24
Water clear or cloudy at end of test	clear
Recommended pumping rate	2 G.P.M.
with pump setting of	33' feet below ground surface

Well Log / Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
Brown clay	0	5		
Blue clay	5	35'	30'	fresh

For what purpose(s) is the water to be used? Domestic

Is well on upland, in valley, or on hillside? upland

Drilling or Boring Firm: J. Moore

Address: Davis Drive, Newmarket

Licence Number

Name of Driller or Borer: J. Moore.

Address: Davis Drive, Newmarket

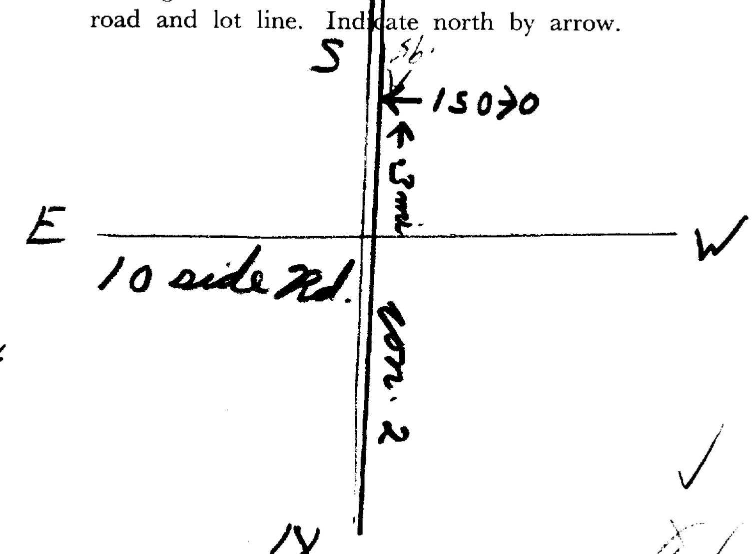
Date: Nov 8/62.

J. Moore

(Signature of Licensed Drilling or Boring Contractor)

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



Form 7 15M Sets 60-5930

OWRC COPY

CSS.S8

UTM 17 Z 593383 E

9 R 4816164 N

Elev. 4 R 0635

Basin

NEW SURVEY

Con. II

L 8

C14

30M5+

28 No 2504

RECEIVED
JUN 26 1953
GEOLOGICAL BRANCH
DEPARTMENT of MINES

ONTARIO

The Water-well Drillers Act, 1954

Department of Mines

Water-Well Record

County or Territorial District HALTON ~~Township, Village~~, Town ~~or City~~ OAKVILLE ~~TRAFALGAR~~

[redacted] Village, Town or City)

[redacted] ddress Milton Ont.

[redacted]

(day) (month) (year)

Pipe and Casing Record		Pumping Test	
Casing diameter(s)	6 ¼"	Static level	12'
Length(s)	46'	Pumping rate	2 g.p.m
Type of screen		Pumping level	43'
Length of screen		Duration of test	30 min.

Well Log / **Water Record**

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, or sulphur)
Clay	0	25			
sand & fine gravel	25	45	45	33'	~~Clear~~ fresh
~~[illegible]~~	~~45~~				

For what purpose(s) is the water to be used? Masonic Lodge

Is water clear or cloudy? Clear

Is well on upland, in valley, or on hillside? Upland

Drilling firm R. P. Cox

Address Box 442 Milton Ont.

Name of Driller

Address

Licence Number 431

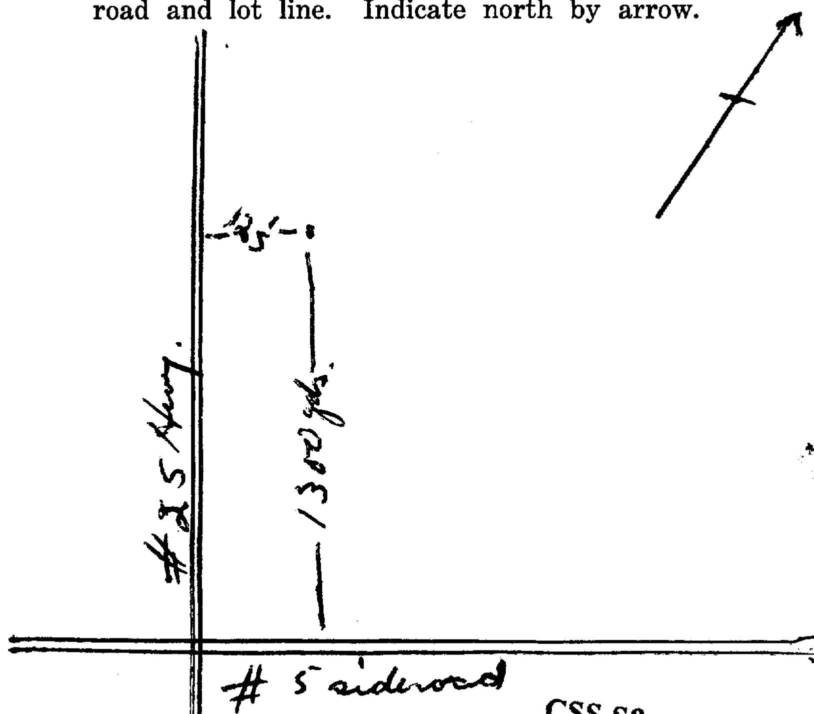
I certify that the foregoing statements of fact are true.

Date 431 (signature) R P Cox

Signature of Licensee

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



CSS.S8

Form 5

UTM 17 Z 5 9 3 0 6 5 E
5 R 4 8 1 6 5 7 1 2 N
Elev. 4 R 0 6 1 0
Basin 24

30M54

No 2505

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District Halton Township, Village, Town or City Esquesing

Con. 3 Lot 8 Date completed 24 (day) May (month) 1963 (year)

[redacted]ress 287 Jones St., Bronte

Casing and Screen Record

Inside diameter of casing 6 in.

Total length of casing 62 ft.

Type of screen

Length of screen

Depth to top of screen

Diameter of finished hole 6 in.

Pumping Test

Static level 25 ft.

Test-pumping rate $2\frac{1}{2}$ G.P.M.

Pumping level 25 ft.

Duration of test pumping 1 hour

Water clear or cloudy at end of test clear

Recommended pumping rate 2½ G.P.M.

with pump setting of 64 feet below ground surface

Well Log / Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
Grey clay	0	51		
Brown clay and gravel	51	56		
Red clay	56	61		
Red shale	61	66	64 ft.	fresh

For what purpose(s) is the water to be used? Domestic

Is well on upland, in valley, or on hillside? Upland

Drilling or Boring Firm J. B. Ruttan

Address R.R.#2,
Milton, Ont.

Licence Number 1013

Name of Driller or Borer Same

Address "

Date May 25/63

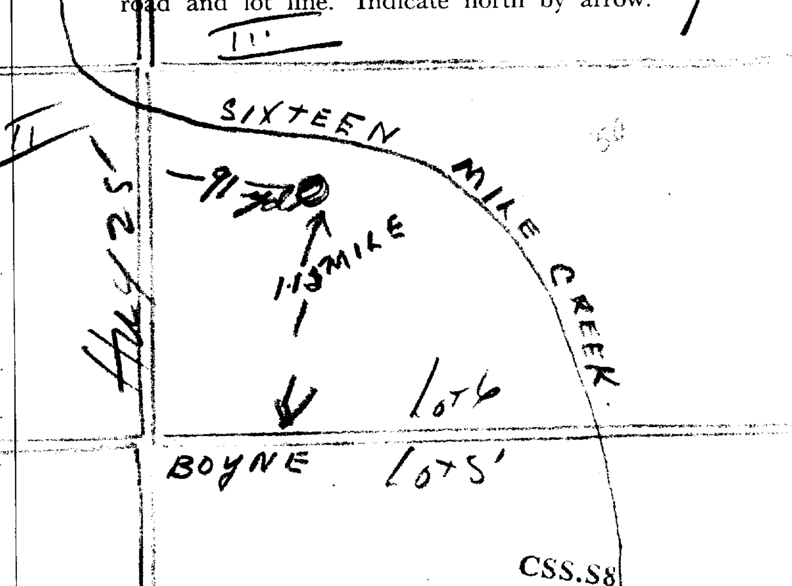
Burton Ruttan
(Signature of Licensed Drilling or Boring Contractor)

Form 7 10M-62-1152

OWRC COPY

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



Con III N S Lot 7

UTM 17 Z 5927 CODED 3 9

4 R 4811 ST94

Elev. 4 R 96 30

Basin 21 4

2802792

DIVISION OF WATER RESOURCES
DEC 18 1968
ONTARIO WATER RESOURCES COMMISSION

C.B.

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or ~~District~~ HALTON ~~Township, Village~~, Town ~~or City~~ OAKVILLE

Con III NS Lot 7 Date completed 9 (day) NOV. month 1968 year)

[redacted] ess MILTON R.R.

Casing and Screen Record

Inside diameter of casing	30"
Total length of casing	37'
Type of screen	—
Length of screen	—
Depth to top of screen	—
Diameter of finished hole	30"

Pumping Test

Static level	4'
RECOVERY ~~Test pumping~~ rate	1/2 G.P.M.
Pumping level	~~33'~~
Duration of test pumping	~~ONE HOUR~~
Water clear or cloudy at end of test	CLEAR
Recommended pumping rate	3 G.P.M.
with pump setting of	33 feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
TOP SOIL	0	2	25'	FRESH
GREY AND BLUE CLAY	2	24		
BROWN CLAY WITH BOULDERS	24	36		

For what purpose(s) is the water to be used? DOMESTIC

Is well on upland, in valley, or on hillside? UPLAND

Drilling or Boring Firm MILTON WELL BORING

Address 6751 WALKERS LINE R.R. #2 MILTON

Licence Number

Name of Driller or Borer M PELTIER

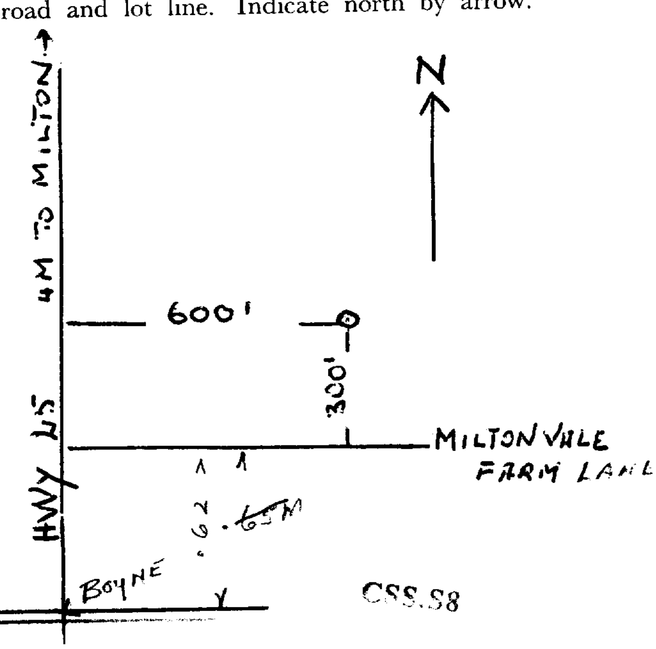
Address SAME AS ABOVE

Date Dec. 18, 1968

(Signature of Licensed Drilling or Boring Contractor)

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



CSS.S8

Form 7 15M-60-4138

36

OWRC COPY

30M5F

The Ontario Water Resources Commission Act

WATER WELL RECORD

Water management in Ontario

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 | 2803361 | MUNICIP. 28605 | CON. NS ~~CON~~ | 03

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
[redacted]	OAKVILLE	III New Survey	007

DATE COMPLETED: DAY 14 MO. 04 ~~APR.~~ YR. 70

[redacted] R. I MILTON

	RC.	ELEVATION	RC.	BASIN CODE
16180	4	0622	4	24

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH – FEET FROM	TO
BLACK	TOPSOIL			0	1
BROWN	CLAY		HARD	1	16
GREY	CLAY	STONES	HARD	16	21
BROWN	CLAY	STONES	HARD	21	42
RED	SHALE		HARD	42	46

31 | 0001802 | 0016605 | 0021205 12 | 0042605 12 | 0046717

32 |

41 WATER RECORD

WATER FOUND AT – FEET	KIND OF WATER
0044	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH – FEET FROM	TO
30	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☒ CONCRETE 4 ☐ OPEN HOLE	3	0	0046 ~~48~~
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.) | DIAMETER INCHES | LENGTH FEET

MATERIAL AND TYPE | DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT – FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER

~~PUMPING~~ RATE ~~RECOVERY~~ GPM. | DURATION OF PUMPING ~~15-16~~ HOURS ~~17-18~~ MINS.

STATIC LEVEL	WATER LEVEL END OF PUMPING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
010 FEET	046 ~~045~~ FEET	046 FEET	046 FEET	046 FEET	046 ~~456~~ FEET

WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY

IF FLOWING, GIVE RATE: GPM. | PUMP INTAKE SET AT: FEET | WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP | RECOMMENDED PUMP SETTING: 043 FEET | RECOMMENDED PUMPING RATE: 0003 GPM.

______ GPM./FT. SPECIFIC CAPACITY

FINAL STATUS OF WELL

1 ☒ WATER SUPPLY
2 ☐ OBSERVATION WELL
3 ☐ TEST HOLE
4 ☐ RECHARGE WELL
5 ☐ ABANDONED, INSUFFICIENT SUPPLY
6 ☐ ABANDONED, POOR QUALITY
7 ☐ UNFINISHED

WATER USE 01

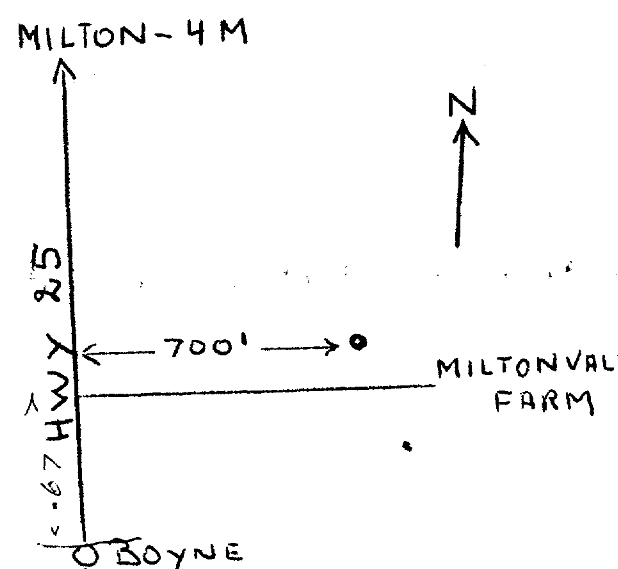
1 ☒ DOMESTIC
2 ☐ STOCK
3 ☐ IRRIGATION
4 ☐ INDUSTRIAL
☐ OTHER
5 ☐ COMMERCIAL
6 ☐ MUNICIPAL
7 ☐ PUBLIC SUPPLY
8 ☐ COOLING OR AIR CONDITIONING
9 ☐ NOT USED

METHOD OF DRILLING

1 ☐ CABLE TOOL
2 ☐ ROTARY (CONVENTIONAL)
3 ☐ ROTARY (REVERSE)
4 ☐ ROTARY (AIR)
5 ☐ AIR PERCUSSION
6 ☒ BORING
7 ☐ DIAMOND
8 ☐ JETTING
9 ☐ DRIVING

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

CONTRACTOR

NAME OF WELL CONTRACTOR: MILTON WELL BORING | LICENCE NUMBER: 3637

ADDRESS: 6751 WALKERS LINE R.R.2 MILTON

NAME OF DRILLER OR BORER: M. PELTIER | LICENCE NUMBER: 3637

SIGNATURE OF CONTRACTOR: [signature] | SUBMISSION DATE: DAY 20 MO. APR. YR. 70

OFFICE USE ONLY

DATA SOURCE: 1 | CONTRACTOR: 3637 | DATE RECEIVED: 210570

DATE OF INSPECTION: | INSPECTOR:

REMARKS:

CSS.S8

OWRC COPY

MINISTRY OF THE ENVIRONMENT

The Ontario Water Resources Act

WATER WELL RECORD

30M / 5F

ONTARIO

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 | 2804131 | MUNICIP. 28605 | CON. NS | C | 03

COUNTY OR DISTRICT: HALTON

TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: OAKVILLE now Milton Trafalgar VII

CON., BLOCK, TRACT, SURVEY, ETC.:

LOT: 009

[redacted] 25 Hwy 4

DATE COMPLETED: DAY 26 MO JUNE YR 22

UTM: 16579 | RC: 4 | ELEVATION: 0600 | RC: 4 | BASIN CODE: 24

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
BLACK	TOPSOIL			0	1½"
BROWN	CLAY	STONES		1½	12
RED	"	STONES		12	17
"	SHALE	GREEN SHALE		17	34

OWRC P-9

31: 00028 02 | 00126 05 12 | 00177 05 12 | 00347 17

32:

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0020	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
0030	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
30	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☒ CONCRETE 4 ☐ OPEN HOLE	2½	0	0034
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET

MATERIAL AND TYPE: GRAVEL PAK

DEPTH TO TOP OF SCREEN: FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
10-13	14-17	
18-21	22-25	
26-29	30-33	

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER

PUMPING RATE: Recovery 0001 GPM

DURATION OF PUMPING: HOURS MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☐ PUMPING 2 ☒ RECOVERY	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
015 FEET	FEET		034 FEET	033 FEET	033 FEET	032 FEET

IF FLOWING, GIVE RATE: GPM

PUMP INTAKE SET AT: 33 FEET

WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP

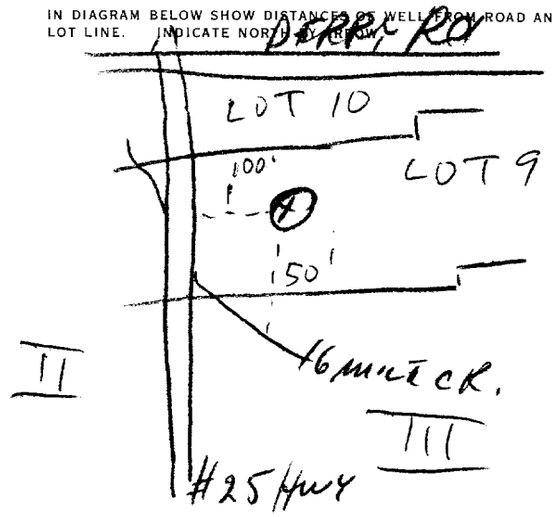
RECOMMENDED PUMP SETTING: 033 FEET

RECOMMENDED PUMPING RATE: 0004 GPM

GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL

1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE 01

1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF DRILLING

1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☒ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: MILTON WELL BORING | LICENCE NUMBER: 3637

ADDRESS: 6751 WALKERS LINE RR2 MILTON

NAME OF DRILLER OR BORER: MARCEL PELTIER | LICENCE NUMBER: 3637

SIGNATURE OF CONTRACTOR: Marcel Peltier | SUBMISSION DATE: DAY 15 MO MAR YR 23

MINISTRY OF THE ENVIRONMENT COPY

OFFICE USE ONLY

DATA SOURCE: 1 | CONTRACTOR: 3637 | DATE RECEIVED: 100579

DATE OF INSPECTION: | INSPECTOR:

REMARKS: CSS.S8

P JP

WI

FORM 7 07-091

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

30 M/15 f

2806271

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11

MUNICIP | CON.

COUNTY OR ~~DISTRICT~~: HALTON | TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: TRAFALGAR (MILTON NORTH) | CON: II | BLOCK, TRACT, SURVEY, ETC.: (2) | LOT: VII (7)

[redacted] 3374 HWY 25 MILTON | DATE COMPLETED: DAY 19 MO NOV YR 84

ING | RC | ELEVATION | RC | BASIN CODE | II | III | IV

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
BROWN	TOPSOIL			0	1
"	CLAY		FIRM	1	14
"	SAND	GRAVEL (STONES)		14	15
BLUE	CLAY		SOFT	15	25
GREY	GRAVEL	SANDY STONES	LOOSE	25	26

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
15	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
25	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
30	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☒ CONCRETE 4 ☐ OPEN HOLE	2½	0	23
32	1 ☐ STEEL 2 ☒ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	16 GA	23	26
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER ETC.)

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER | PUMPING RATE: 14 GPM | DURATION OF PUMPING: 1 HOURS ½ MINS

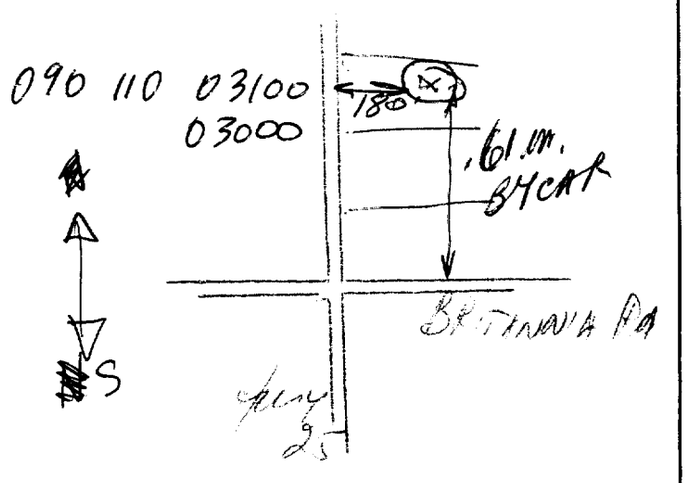
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☐ PUMPING 2 ☐ RECOVERY	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
1 FEET	FEET		5 FEET	9 FEET	13 FEET	15½ FEET

IF FLOWING, GIVE RATE: ½ GPM | PUMP INTAKE SET AT: 22 FEET | WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☒ SHALLOW ☐ DEEP | RECOMMENDED PUMP SETTING: 22 FEET | RECOMMENDED PUMPING RATE: 6½ GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE INDICATE NORTH BY ARROW.



DRILLERS REMARKS

FINAL STATUS OF WELL

1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED POOR QUALITY 7 ☐ UNFINISHED

WATER USE

1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF DRILLING

1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☒ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: MILTON WELL BORING | LICENCE NUMBER: 3637

ADDRESS: 6751 WALKERS LINE R.R.2 MILTON

NAME OF DRILLER OR BORER: MARCEL PELLETIER | LICENCE NUMBER: 3637

SIGNATURE OF CONTRACTOR: [signature] | SUBMISSION DATE: DAY 21 MO NOV YR 84

OFFICE USE ONLY

DATA SOURCE | CONTRACTOR | DATE RECEIVED: 160485

DATE OF INSPECTION | INSPECTOR

REMARKS

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506—4—77 FORM 7

Ministry of the Environment
Ontario

The Ontario Water Resources Act

30 M/5 f

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 | 2806272 | MUNICIP. | CON. Sec 1 605

COUNTY OR DISTRICT: [redacted]

TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: (TRAFALGAR) MILTON

CON., BLOCK, TRACT, SURVEY, ETC.: II

LOT: VII

374 HWY 25 MILTON

DATE COMPLETED: DAY 18 MO MAY YR 84

NORTHING | RC. | ELEVATION | RC. | BASIN CODE | II | III | IV

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
BROWN	TOPSOIL			0	1
"	CLAY		PACKED	1	14
"	SAND GRAVEL	STONES (GREY)	BOULDER	14	15
BLUE	CLAY		SOFT	15	25
GREY	GRAVEL	SAND STONES	LOOSE	25	26

31
32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
14	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
25	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
30	☐ STEEL ☐ GALVANIZED ☒ CONCRETE ☐ OPEN HOLE	2½	0	23
32	☐ STEEL ☒ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE	16 ga	23	26
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.) | DIAMETER INCHES | LENGTH FEET
MATERIAL AND TYPE | DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

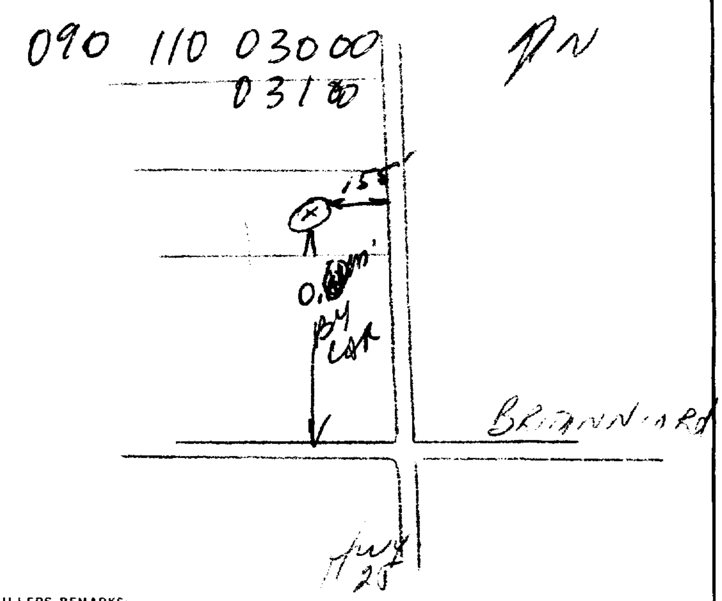
DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD: ☐ PUMP ☒ BAILER	PUMPING RATE: 14 GPM	DURATION OF PUMPING: 1 HOURS / MINS		
STATIC LEVEL: 1 FEET	WATER LEVEL END OF PUMPING: 16 FEET	WATER LEVELS DURING ☐ PUMPING ☐ RECOVERY		
		15 MINUTES: 5 FEET	30 MINUTES: 9 FEET	45 MINUTES: 13 FEET	60 MINUTES: 16 FEET
IF FLOWING, GIVE RATE: % GPM	PUMP INTAKE SET AT: 22 FEET	WATER AT END OF TEST: ☒ CLEAR ☐ CLOUDY		
RECOMMENDED PUMP TYPE: ☒ SHALLOW ☐ DEEP	RECOMMENDED PUMP SETTING: 22 FEET	RECOMMENDED PUMPING RATE: 6 GPM		

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS

FINAL STATUS OF WELL

☒ WATER SUPPLY ☐ OBSERVATION WELL ☐ TEST HOLE ☐ RECHARGE WELL ☐ ABANDONED, INSUFFICIENT SUPPLY ☐ ABANDONED, POOR QUALITY ☐ UNFINISHED

WATER USE

☒ DOMESTIC ☐ STOCK ☐ IRRIGATION ☐ INDUSTRIAL ☐ OTHER ☐ COMMERCIAL ☐ MUNICIPAL ☐ PUBLIC SUPPLY ☐ COOLING OR AIR CONDITIONING ☐ NOT USED

METHOD OF DRILLING

☐ CABLE TOOL ☐ ROTARY (CONVENTIONAL) ☐ ROTARY (REVERSE) ☐ ROTARY (AIR) ☐ AIR PERCUSSION ☒ BORING ☐ DIAMOND ☐ JETTING ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: MILTON WELL BORING | LICENCE NUMBER: 3637
ADDRESS: 6751 WALKERS LINE RR2 MILTON
NAME OF DRILLER OR BORER: MARCEL PELLETIER | LICENCE NUMBER: 3637
SIGNATURE OF CONTRACTOR | SUBMISSION DATE: DAY 21 MO MAY YR 84

OFFICE USE ONLY

DATA SOURCE | CONTRACTOR | DATE RECEIVED: 160485
DATE OF INSPECTION | INSPECTOR
REMARKS

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FORM NO. 0506-4-77 FORM 7

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
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11 2807518 MUNICIP 28004 CON. NS 10.3

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
HALTON	TOWN OF MILTON (TRAFAL)	CON.3	8
[redacted]	6285 HWY # 25		DATE COMPLETED DAY 18 MO 11 YR 89
	# 2 MILTON, ONT. LNT 2X5		

NG | RC. | ELEVATION | RC. | BASIN CODE

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
BROWN	SANDY CLAY		LOOSE	0	30
RED	CLAY	GRAVEL	LOOSE	30	34
RED	SHALE		HARD	34	55

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
34	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6¼	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC	.188	1	34
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE 5 ☐ PLASTIC		34	55
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET

MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER ETC.)
10-13	14-17	
18-21	22-25	
26-29	30-33	

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE GPM	DURATION OF PUMPING HOURS / MINS
1 ☐ PUMP 2 ☒ BAILER	4	3 HOURS ___ MINS

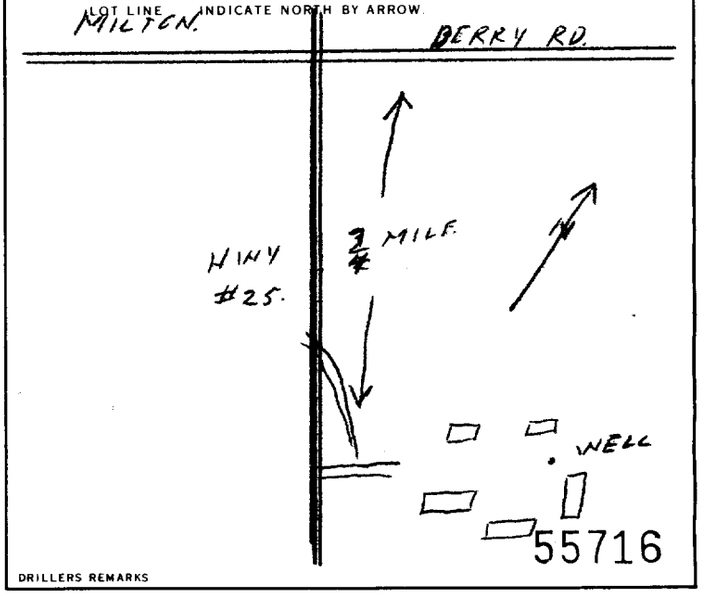
STATIC LEVEL FEET	WATER LEVEL END OF PUMPING FEET	WATER LEVELS DURING 1 ☒ PUMPING 2 ☐ RECOVERY	15 MINUTES FEET	30 MINUTES FEET	45 MINUTES FEET	60 MINUTES FEET
30	55		55	55	55	55

IF FLOWING, GIVE RATE GPM	PUMP INTAKE SET AT FEET	WATER AT END OF TEST 1 ☐ CLEAR 2 ☒ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING FEET	RECOMMENDED PUMPING RATE GPM
☐ SHALLOW ☐ DEEP		

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS

FINAL STATUS OF WELL	1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED ☐ DEWATERING
WATER USE	1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED
METHOD OF CONSTRUCTION	1 ☐ CABLE TOOL 2 ☒ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING ☐ DIGGING ☐ OTHER

CONTRACTOR

NAME OF WELL CONTRACTOR	WELL CONTRACTOR'S LICENCE NUMBER
OCONNOR WELL DRILLING LTD.	4005

ADDRESS
RR # 1 MILLGROVE, ONT. LOR 1V0

NAME OF WELL TECHNICIAN	WELL TECHNICIAN'S LICENCE NUMBER
B.W. OCONNOR	T-0290

SIGNATURE OF TECHNICIAN/CONTRACTOR	SUBMISSION DATE DAY ___ MO ___ YR. ___
B. OConnor	

OFFICE USE ONLY

DATA SOURCE	CONTRACTOR	DATE RECEIVED
	4005	DEC 20 1989

DATE OF INSPECTION	INSPECTOR

REMARKS

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506 (11/86) FORM 9

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

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2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 (1 2) — 2808260 — MUNICIP 28004 (10 14) — CON. N.S. (15 22 23 74) — 03

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON BLOCK TRACT SURVEY ETC	LOT (25-27)
[redacted]	TOWN OF MILTON (Trafalgar)	CON. 3	8

[redacted] #1 MILTON ONT. L9T-2X

DATE COMPLETED (48-53): DAY 27 MO 04 YR 93

RNG (RC.) ELEVATION (RC.) BASIN CODE (II III IV)

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	PREVIOUS DRILLED WELL				75
	RED SHALE ROCK			75	84

31 (1 2)

32 (10 14 15 21 32 43 54 65 75 80)

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
75 (10-13)	1 ☒ FRESH 2 ☐ SALTY — 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS (14)
(15-18)	1 ☐ FRESH 2 ☐ SALTY — 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS (19)
(20-23)	1 ☐ FRESH 2 ☐ SALTY — 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS (24)
(25-28)	1 ☐ FRESH 2 ☐ SALTY — 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS (29)
(30-33)	1 ☐ FRESH 2 ☐ SALTY — 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS (34) (80)

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6" (10-11)	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE 5 ☐ PLASTIC (12)		75	84 (13-16)
(17-18)	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC (19)			(20-23)
(24-25)	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC (26)			(27-30)

SCREEN

SIZE(S) OF OPENING (SLOT NO.) (31-33)	DIAMETER (34-38) INCHES	LENGTH (39-40) FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN (41-44) FEET	(80)

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER, ETC.)
(10-13)	(14-17)	
(18-21)	(22-25)	
(26-29)	(30-33) (80)	

71 PUMPING TEST

PUMPING TEST METHOD (10)	PUMPING RATE (11-14)	DURATION OF PUMPING (15-16 HOURS, 17-18 MINS)
1 ☐ PUMP 2 ☒ BAILER	6 GPM	1 HOURS — MINS

STATIC LEVEL (19-21)	WATER LEVEL END OF PUMPING (22-24)	WATER LEVELS DURING (25) 1 ☒ PUMPING 2 ☐ RECOVERY	15 MINUTES (26-28)	30 MINUTES (29-31)	45 MINUTES (32-34)	60 MINUTES (35-37)
26 FEET	54 FEET		35 FEET	43 FEET	54 FEET	54 FEET

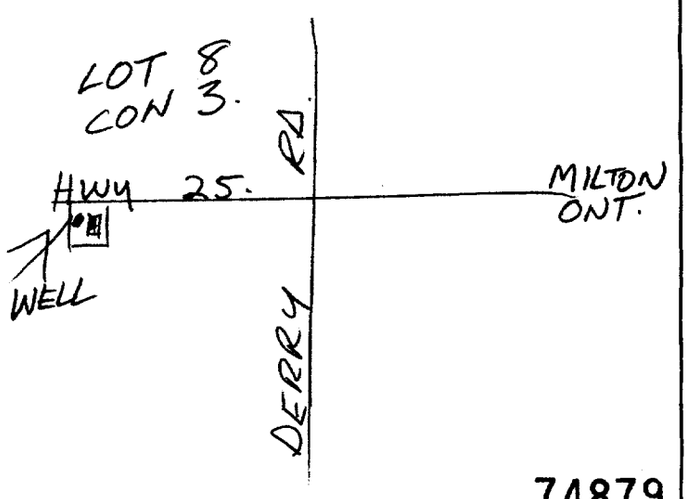
IF FLOWING, GIVE RATE (38-41)	PUMP INTAKE SET AT	WATER AT END OF TEST (42)
GPM	FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING (43-45)	RECOMMENDED PUMPING RATE (46-49)
☐ SHALLOW ☒ DEEP	79 FEET	6 GPM

(50-53)

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE INDICATE NORTH BY ARROW.



74879

DRILLERS REMARKS

FINAL STATUS OF WELL (54)

1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED ☐ DEWATERING

WATER USE (55-56)

1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF CONSTRUCTION (57)

1 ☒ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING ☐ DIGGING ☐ OTHER

CONTRACTOR

NAME OF WELL CONTRACTOR: CORE'S WELL DRILLING
WELL CONTRACTOR'S LICENCE NUMBER: 1660
ADDRESS: RR#3 GEORGETOWN ONT. L7G-4S6
NAME OF WELL TECHNICIAN: EDWARD CORE & TONY FOURNIER
WELL TECHNICIAN'S LICENCE NUMBER: TO-467
SIGNATURE OF TECHNICIAN/CONTRACTOR: [signature]
SUBMISSION DATE: DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE (58) — CONTRACTOR (59-62): 1660 — DATE RECEIVED (63-68): AUG 24 1994 (80)
DATE OF INSPECTION — INSPECTOR
REMARKS

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506 (11/86) FORM 9

Ontario Ministry of the Environment

Well Tag Number A003888

A003888

Well Record

Regulation 903 Ontario Water Resources Act

page ___ of ___

Instructions for Completing Form

- For use in the **Province of Ontario** only. This document is a permanent **legal** document. Please retain for future reference.
- All Sections **must** be completed in full to avoid delays in processing. Further instructions and explanations are available on the back of this form.
- Questions regarding completing this application can be directed to the Water Well Management Coordinator at 416-235-6203.
- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

[redacted]

Address of Well Location (County/District/Municipality): TOWN OF HALTON | Township: TOWN OF HALTON | Lot: 7 | Concession: 2

RR#/Street Number/Name: 6260A Hwy 25 | City/Town/Village: MILTON | Site/Compartment/Block/Tract etc.

GPS Reading: NAD 83 | Zone: 17 | Easting: W079° 50.625 | Northing: N 43° 29.560 | Unit Make/Model: CERMAK | Mode of Operation: X Undifferentiated 48 | Differentiated, specify | Averaged

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Metres To
BROWN	TOP SOIL		SOFT	0	.5
BROWN	CLAY	GRAVEL STONES	FIRM	.5	9.5
BROWN	CLAY	SAND	FIRM	9.5	10.6
RED	PLASTIDE	SHALE SLABS	LOOSE	10.6	

Hole Diameter

Depth From	Metres To	Diameter Centimetres
0	10.67	8" 20cm

Water Record

Water found at 10 Metres — Kind of Water

m — X Fresh — Sulphur — Gas — Salty — Minerals — Other:

m — Fresh — Sulphur — Gas — Salty — Minerals — Other:

m — Fresh — Sulphur — Gas — Salty — Minerals — Other:

After test of well yield, water was: X Clear and sediment free — Other, specify

Chlorinated X Yes — No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Metres To
Casing				
8" 20	X Steel — Fibreglass — Plastic — Concrete — Galvanized	.188	0	10.67 m
20	Steel — Fibreglass — Plastic — Concrete — Galvanized			
	Steel — Fibreglass — Plastic — Concrete — Galvanized			
Screen				
Outside diam	Steel — Fibreglass — Plastic — Concrete — Galvanized	Slot No. —		
No Casing or Screen				
	Open hole —			

Test of Well Yield

Pumping test method	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Pump intake set at - (metres)	Static Level	6.0		
Pumping rate (litres/min) 22	1		1	6.0
Duration of pumping 7 hrs + 30 min	2		2	
Final water level end of pumping 8 metres	3		3	
Recommended pump type. ☐ Shallow X Deep	4		4	
Recommended pump depth. 8. metres	5		5	
Recommended pump rate. 22 (litres/min)	10		10	
If flowing give rate - (litres/min)	15		15	
	20		20	
	25		25	
If pumping discontinued, give reason.	30		30	
	40		40	
	50		50	
	60	7.01	60	

Plugging and Sealing Record

X Annular space — Abandonment

Depth set at - Metres From	To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
0	10	BENTONITE SLURRY	

Method of Construction

X Cable Tool — Rotary (air) — Diamond — Digging
Rotary (conventional) — Air percussion — Jetting — Other
Rotary (reverse) — Boring — Driving

Water Use

X Domestic — Industrial — Public Supply — Other
Stock — Commercial — Not used
Irrigation — Municipal — Cooling & air conditioning

Final Status of Well

X Water Supply — Recharge well — Unfinished — Abandoned, (Other)
Observation well — Abandoned, insufficient supply — Dewatering
Test Hole — Abandoned, poor quality — Replacement well

Well Contractor/Technician Information

Name of Well Contractor: S.D. SMITH DRILLING CO. | Well Contractor's Licence No.: 4868

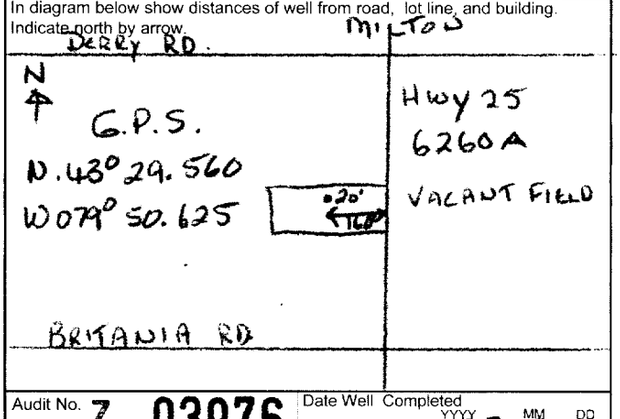
Business Address (street name, number, city etc.): RR #2 ACTON ONT L7J 2L8

Name of Well Technician (last name, first name): SIMON SMITH | Well Technician's Licence No.: 1-346

Signature of Technician/Contractor: X [signature] | Date Submitted: YYYY 03 MM 12 DD 20

Location of Well

In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.



Audit No. Z 03976 | Date Well Completed: YYYY 03 MM 12 DD 10

Was the well owner's information package delivered? X Yes — No | Date Delivered: YYYY 03 MM 12 DD 20

Ministry Use Only

Data Source | Contractor 4868

Date Received MAR 01 2004 | Date of Inspection YYYY MM DD

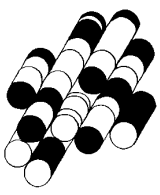
Remarks: CONFIRMED | Well Record Number 2809874

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy X

Cette formule est disponible en français

APPENDIX C

TERRAPROBE INC.



LOG OF BOREHOLE 1

Terraprobe

Project No. : 1-22-0209-01	Client : Thomas Robert Colbeck	Originated by : DH
Date started : June 13, 2022	Project : 6360 Regional Road 25	Compiled by : HR
Sheet No. : 1 of 1	Location : Milton, Ontario	Checked by : MMT

Position : E: 593189, N: 4816392 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value	Elevation Scale (m)
0	192.0	**GROUND SURFACE**					192
		100mm **TOPSOIL**		1	SS	10	
	191.2	(WEATHERED/DISTURBED), trace organics					
1	0.8	**CLAYEY SILT**, some sand to sandy, trace gravel, very stiff to hard, brown to reddish brown, moist (GLACIAL TILL)		2	SS	27	191
				3	SS	31	
2							190
				4	SS	27	
3							189
				5	SS	30	
4							188
	187.4						
	4.6	**SANDY SILT to SAND AND SILT**, trace to some clay, trace to some gravel, very dense, reddish brown, moist to wet (GLACIAL TILL)		6	SS	76 / 275mm	
5							187
				7	SS	50 / 125mm	
6							186
				8	SS	50 / 125mm	
7							185
8							184
9	182.7			9	SS	50 / 150mm	183
	9.3	**END OF BOREHOLE**					

Penetration Test Values (Blows / 0.3m): Dynamic Cone; 10 20 30 40

Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane; 40 80 120 160

Moisture / Plasticity: Plastic Limit, Natural Water Content, Liquid Limit; PL MC LL; 10 20 30

Headspace Vapour (ppm)

Instrument Details

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

SS1 Analysis: M&I

13 32 42 13

Borehole was dry and open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 11, 2022	6.5	185.5
Jul 14, 2022	6.7	185.3

file: 1-22-0209-01 bh logs.gpj

LOG OF BOREHOLE 2

Terraprobe

Project No. : 1-22-0209-01	Client : Thomas Robert Colbeck	Originated by : DH
Date started : June 17, 2022	Project : 6360 Regional Road 25	Compiled by : HR
Sheet No. : 1 of 1	Location : Milton, Ontario	Checked by : MMT

Position : E: 593164, N: 4816428 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value
0	192.6	**GROUND SURFACE**				
	192.4 / 0.2	150mm **TOPSOIL**				
		(WEATHERED/DISTURBED), trace organics		1	SS	12
	191.8 / 0.8	**CLAYEY SILT**, some sand to sandy, trace gravel, very stiff to hard, brown to reddish brown, moist (GLACIAL TILL)		2	SS	21
1						
				3	SS	30
2						
				4	SS	38
3						
				5	SS	34
4						
				6	SS	38
5						
6	186.5 / 6.1	**SANDY SILT to SAND AND SILT**, trace to some clay, trace to some gravel, very dense, moist to wet (GLACIAL TILL)		7	SS	50 / 125mm
7						
				8	SS	50 / 100mm
8						
9	183.4 / 9.2			9	SS	50 / 75mm

END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

Elevation Scale (m): 192, 191, 190, 189, 188, 187, 186, 185, 184

Penetration Test Values (Blows / 0.3m): Dynamic Cone 10 20 30 40

Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane 40 80 120 160

Moisture / Plasticity: Plastic Limit, Natural Water Content, Liquid Limit; PL MC LL; 10 20 30

Headspace Vapour (ppm)

Instrument Details

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

file: 1-22-0209-01 bh logs.gpj

Terraprobe

LOG OF BOREHOLE 3

Project No. : 1-22-0209-01 | Client : Thomas Robert Colbeck | Originated by : DH

Date started : June 17, 2022 | Project : 6360 Regional Road 25 | Compiled by : HR

Sheet No. : 1 of 1 | Location : Milton, Ontario | Checked by : MMT

Position : E: 593178, N: 4816411 (UTM 17T) | Elevation Datum : Geodetic

Rig type : Track-mounted | Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value	Elevation Scale (m)	Penetration Test Values (Blows / 0.3m) / Undrained Shear Strength (kPa)	Moisture / Plasticity (PL, MC, LL)	Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments
0	**192.5**	**GROUND SURFACE**					192					
		140mm **TOPSOIL**		1	SS	11				PID: 0 FID: 0		SS1 Analysis: M&I
	191.7	(WEATHERED/DISTURBED), trace organics										
1	0.8	**CLAYEY SILT**, some sand to sandy, trace gravel, very stiff to hard, brown to reddish brown, moist (GLACIAL TILL)		2	SS	25	191			PID: 0 FID: 0		
2				3	SS	29				PID: 0 FID: 0		
				4	SS	26	190			PID: 0 FID: 0		
3												
				5	SS	35	189			PID: 0 FID: 0		SS5 Analysis: .pH
4												
				6	SS	36	188			PID: 0 FID: 0		
5												
	186.4						187					
6	6.1	**SANDY SILT to SAND AND SILT**, trace to some clay, trace to some gravel, very dense, reddish brown, moist to wet (GLACIAL TILL)		7	SS	66				PID: 0 FID: 0		
				8	SS	50 / 125mm	186					
7												
							185			PID: 0 FID: 0		
8												
							184					
9	183.3			9	SS	50 / 100mm				PID: 0 FID: 0		
	9.2	**END OF BOREHOLE**										

Penetration Test Values (Blows / 0.3m): Dynamic Cone (10, 20, 30, 40)

Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane (40, 80, 120, 160)

Moisture / Plasticity: Plastic Limit (PL), Natural Water Content (MC), Liquid Limit (LL) (10, 20, 30)

Unstabilized Water Level

Lab Data and Comments: GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

Borehole was dry and open upon completion of drilling.

file: 1-22-0209-01 bh logs.gpj

LOG OF BOREHOLE 4

Terraprobe

Project No. : 1-22-0209-01	Client : Thomas Robert Colbeck	Originated by : DH
Date started : June 17, 2022	Project : 6360 Regional Road 25	Compiled by : HR
Sheet No. : 1 of 1	Location : Milton, Ontario	Checked by : MMT

Position : E: 593136, N: 4816448 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value
0	192.6	**GROUND SURFACE**				
		115mm **TOPSOIL**		1	SS	4
		(WEATHERED/DISTURBED)				
	191.8					
	0.8	**CLAYEY SILT**, some sand to sandy, trace gravel, very stiff to hard, brown to reddish brown, moist (GLACIAL TILL)		2	SS	22
				3	SS	26
				4	SS	29
				5	SS	34
				6	SS	36
	186.5					
	6.1	**SANDY SILT SAND AND SILT**, trace to some clay, trace to some gravel, very dense, reddish brown, moist (GLACIAL TILL)		7	SS	50 / 150mm
		...wet below		8	SS	50 / 100mm
	183.3			9	SS	50 / 125mm
	9.3	**END OF BOREHOLE**				

Borehole was dry and open upon completion of drilling.

50 mm dia. monitoring well installed.

Penetration Test Values (Blows / 0.3m) — Dynamic Cone: 10, 20, 30, 40

Undrained Shear Strength (kPa) — Unconfined, Pocket Penetrometer, Field Vane, Lab Vane: 40, 80, 120, 160

Moisture / Plasticity — Plastic Limit (PL), Natural Water Content (MC), Liquid Limit (LL): 10, 20, 30

Lab Data and Comments — GRAIN SIZE DISTRIBUTION (%) (MIT): GR SA SI CL

Sample 6: 2 19 53 26

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 14, 2022	6.8	185.8

file: 1-22-0209-01 bh logs.gpj

LOG OF BOREHOLE 5

Terraprobe

Project No. : 1-22-0209-01	Client : Thomas Robert Colbeck	Originated by : DH
Date started : June 13, 2022	Project : 6360 Regional Road 25	Compiled by : HR
Sheet No. : 1 of 1	Location : Milton, Ontario	Checked by : MMT

Position : E: 593158, N: 4816475 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value
0	192.6	**GROUND SURFACE**				
		100mm **TOPSOIL**		1	SS	13
	191.8	**FILL**, clayey silt, trace gravel, trace sand, trace organics, compact, dark brown, moist				
1	0.8	**CLAYEY SILT**, some sand to sandy, trace gravel, very stiff to hard, brown to reddish brown, moist (GLACIAL TILL)		2	SS	24
				3	SS	37
2				4	SS	30
3				5	SS	29
4	188.0					
	4.6	**SANDY SILT to SAND AND SILT**, trace to some clay, trace to some gravel, very dense, reddish brown, moist (GLACIAL TILL)		6	SS	50 / 100mm
5						
6				7	SS	50 / 125mm
7		...wet				
				8	SS	71 / 250mm
8						
9				9	SS	50 / 75mm
	183.2					
	9.4	**END OF BOREHOLE**				

Elevation Scale (m): 192, 191, 190, 189, 188, 187, 186, 185, 184

Penetration Test Values (Blows / 0.3m): Dynamic Cone 10 20 30 40

Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane 40 80 120 160

Moisture / Plasticity: Plastic Limit (PL) Natural Water Content (MC) Liquid Limit (LL) 10 20 30

Headspace Vapour (ppm)

Instrument Details

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

Unstabilized water level measured at 8.8 m below ground surface; borehole was open upon completion of drilling.

file: 1-22-0209-01 bh logs.gpj

LOG OF BOREHOLE 6

Terraprobe

Project No. : 1-22-0209-01	Client : Thomas Robert Colbeck	Originated by : DH
Date started : June 14, 2022	Project : 6360 Regional Road 25	Compiled by : HR
Sheet No. : 1 of 1	Location : Milton, Ontario	Checked by : MMT

Position : E: 593175, N: 4816456 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value	Elevation Scale (m)	Penetration Test Values (Blows / 0.3m) / Undrained Shear Strength (kPa)	Moisture / Plasticity	Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments
0	**192.7**	**GROUND SURFACE**					192					
		100mm **TOPSOIL**		1	SS	9				PID: 0 FID: 0		SS1 Analysis: M&I
	191.9	**FILL**, clayey silt, trace gravel, trace sand, trace organics, compact, dark brown, moist										
1	0.8	**CLAYEY SILT**, some sand to sandy, trace gravel, very stiff to hard, brown to reddish brown, moist (GLACIAL TILL)		2	SS	16	191			PID: 0 FID: 0		
				3	SS	24				PID: 0 FID: 0		
2				4	SS	28	190			PID: 0 FID: 0		
3				5	SS	34	189			PID: 0 FID: 0		
4	188.1											
	4.6	**SANDY SILT to SAND AND SILT**, trace to some clay, trace to some gravel, very dense, reddish brown, moist (GLACIAL TILL)		6	SS	72 / 275mm	188			PID: 0 FID: 0		SS6 Analysis: .pH
5												
6		...sandy silt, trace clay, wet		7	SS	50 / 100mm	187			PID: 0 FID: 0		
7							186					
				8	SS	50 / 125mm	185			PID: 0 FID: 0		▽
8												
9	183.3	...wet		9	SS	50 / 75mm	184			PID: 0 FID: 0		
	9.4	**END OF BOREHOLE**										

Penetration Test Values (Blows / 0.3m): Dynamic Cone; 10 20 30 40

Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane; 40 80 120 160

Moisture / Plasticity: Plastic Limit, Natural Water Content, Liquid Limit; PL MC LL; 10 20 30

Unstabilized Water Level

Lab Data and Comments: GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

Unstabilized water level measured at 7.9 m below ground surface; borehole caved to 7.9 m below ground surface upon completion of drilling.

file: 1-22-0209-01 bh logs.gpj

LOG OF BOREHOLE 7

Terraprobe

Project No. : 1-22-0209-01	Client : Thomas Robert Colbeck	Originated by : DH
Date started : June 14, 2022	Project : 6360 Regional Road 25	Compiled by : HR
Sheet No. : 1 of 1	Location : Milton, Ontario	Checked by : MMT

Position : E: 593197, N: 4816435 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value
0	192.7	**GROUND SURFACE**				
		125mm **TOPSOIL**		1	SS	10
		(WEATHERED/DISTURBED), trace organics				
	191.9					
	0.8	**CLAYEY SILT**, some sand to sandy, trace gravel, very stiff to hard, brown to reddish brown, moist (GLACIAL TILL)		2	SS	20
1						
				3	SS	26
2						
				4	SS	32
3						
				5	SS	31
4						
	188.1					
	4.6	**SANDY SILT to SAND AND SILT**, trace to some clay, trace to some gravel, dense to very dense, reddish brown, moist (GLACIAL TILL)		6	SS	41
5						
6		...silty sand lense, wet		7	SS	50 / 150mm
7						
				8	SS	50 / 125mm
8						
9		...wet		9	SS	50 / 100mm
	183.3					
	9.4	**END OF BOREHOLE**				

Elevation Scale (m): 192, 191, 190, 189, 188, 187, 186, 185, 184

Penetration Test Values (Blows / 0.3m) — Dynamic Cone: 10, 20, 30, 40

Undrained Shear Strength (kPa) — Unconfined, Pocket Penetrometer, Field Vane, Lab Vane: 40, 80, 120, 160

Moisture / Plasticity — Plastic Limit (PL), Natural Water Content (MC), Liquid Limit (LL): 10, 20, 30

Headspace Vapour (ppm)

Instrument Details

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT) — GR SA SI CL

Borehole was dry and open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 14, 2022	7.2	185.5

file: 1-22-0209-01 bh logs.gpj

LOG OF BOREHOLE 8

Terraprobe

Project No. : 1-22-0209-01	Client : Thomas Robert Colbeck	Originated by : DH
Date started : June 14, 2022	Project : 6360 Regional Road 25	Compiled by : HR
Sheet No. : 1 of 1	Location : Milton, Ontario	Checked by : MMT

Position : E: 593216, N: 4816419 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value
0	192.6	**GROUND SURFACE**				
		90mm **TOPSOIL**		1	SS	11
	191.8	**FILL**, clayey silt, trace gravel, trace sand, trace organics, compact, dark brown, moist				
1	0.8	**CLAYEY SILT**, some sand to sandy, trace gravel, very stiff to hard, brown to reddish brown, moist (GLACIAL TILL)		2	SS	28
2				3	SS	33
				4	SS	34
3				5	SS	35
4	188.0					
	4.6	**SANDY SILT to SAND AND SILT**, trace to some clay, trace to some gravel, very dense, reddish brown, moist (GLACIAL TILL)		6	SS	79
5						
6		...silty sand lense, wet		7	SS	84 / 250mm
7		...wet below		8	SS	50 / 125mm
8						
9	183.3			9	SS	50 / 125mm
	9.3	**END OF BOREHOLE**				

Elevation Scale (m): 192, 191, 190, 189, 188, 187, 186, 185, 184

Penetration Test Values (Blows / 0.3m): Dynamic Cone; 10 20 30 40

Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane; 40 80 120 160

Moisture / Plasticity: Plastic Limit, Natural Water Content, Liquid Limit; PL MC LL; 10 20 30

Headspace Vapour (ppm)

Instrument Details

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

Unstabilized water level measured at 7.6 m below ground surface; borehole caved to 7.9 m below ground surface upon completion of drilling.

file: 1-22-0209-01 bh logs.gpj

LOG OF BOREHOLE 9

Terraprobe

Project No. : 1-22-0209-01	Client : Thomas Robert Colbeck	Originated by : DH
Date started : June 15, 2022	Project : 6360 Regional Road 25	Compiled by : HR
Sheet No. : 1 of 1	Location : Milton, Ontario	Checked by : MMT

Position : E: 593172, N: 4816498 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value
0	192.5	**GROUND SURFACE**				
		125mm **TOPSOIL**		1	SS	12
		FILL, clayey silt, trace gravel, trace sand, trace organics, stiff, dark brown, moist				
	191.7					
1	0.8	**CLAYEY SILT**, some sand to sandy, trace gravel, very stiff to hard, brown to reddish brown, moist (GLACIAL TILL)		2	SS	21
2				3	SS	37
				4	SS	25
3	189.5					
	3.0	**SANDY SILT to SAND AND SILT**, trace to some clay, trace to some gravel, very dense, reddish brown, moist (GLACIAL TILL)		5	SS	62
4						
5				6	SS	50 / 125mm
6		...wet below		7	SS	50 / 150mm
7						
		...sand and silt lense		8	SS	50 / 150mm
8						
9	183.3			9	SS	50 / 100mm
	9.2	**END OF BOREHOLE**				

Elevation Scale (m): 192, 191, 190, 189, 188, 187, 186, 185, 184

Penetration Test Values (Blows / 0.3m)
Dynamic Cone: 10 20 30 40
Undrained Shear Strength (kPa)
Unconfined, Pocket Penetrometer, Field Vane, Lab Vane: 40 80 120 160

Moisture / Plasticity
Plastic Limit, Natural Water Content, Liquid Limit
PL MC LL: 10 20 30

Headspace Vapour (ppm): PID: 0 FID: 0

Instrument Details

Unstabilized Water Level

Lab Data and Comments
GRAIN SIZE DISTRIBUTION (%) (MIT)
GR SA SI CL

SS1 Analysis: M&I
SS5 Analysis: PHC
SS7 Analysis: PCB

Borehole was dry and open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 11, 2022	6.5	186.0
Jul 14, 2022	6.8	185.7

file: 1-22-0209-01 bh logs.gpj

LOG OF BOREHOLE 10

Terraprobe

Project No. : 1-22-0209-01	Client : Thomas Robert Colbeck	Originated by : DH
Date started : June 16, 2022	Project : 6360 Regional Road 25	Compiled by : HR
Sheet No. : 1 of 1	Location : Milton, Ontario	Checked by : MMT

Position : E: 593184, N: 4816470 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value
0	192.9	**GROUND SURFACE**				
		90mm **TOPSOIL**		1	SS	11
		FILL, clayey silt, trace gravel, trace sand, trace organics, stiff, dark brown, moist				
	192.1					
1	0.8	**CLAYEY SILT**, some sand to sandy, trace gravel, very stiff to hard, brown to reddish brown, moist (GLACIAL TILL)		2	SS	15
2				3	SS	28
				4	SS	26
3						
				5	SS	30
4						
5				6	SS	35
6	186.8					
	6.1	**SANDY SILT to SAND AND SILT**, trace to some clay, trace to some gravel, very dense, reddish brown, moist (GLACIAL TILL)		7	SS	50 / 125mm
7						
		...wet below		8	SS	50 / 125mm
8						
9	183.6			9	SS	50 / 150mm
	9.3	**END OF BOREHOLE**				

Elevation Scale (m): 192, 191, 190, 189, 188, 187, 186, 185, 184

Penetration Test Values (Blows / 0.3m): Dynamic Cone; 10 20 30 40

Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane; 40 80 120 160

Moisture / Plasticity: Plastic Limit, Natural Water Content, Liquid Limit; PL MC LL; 10 20 30

Headspace Vapour (ppm): PID: 0 FID: 0

Instrument Details: Unstabilized Water Level

Lab Data and Comments: GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

SS1 Analysis: M&I

SS2 Analysis: PHC

3 31 44 22

SS5 Analysis: .pH

SS6 Analysis: PHC

Borehole was dry and open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 11, 2022	8.0	184.9
Jul 14, 2022	7.1	185.8

file: 1-22-0209-01 bh logs.gpj

LOG OF BOREHOLE 11

Terraprobe

Project No. : 1-22-0209-01	Client : Thomas Robert Colbeck	Originated by : DH
Date started : June 15, 2022	Project : 6360 Regional Road 25	Compiled by : HR
Sheet No. : 1 of 1	Location : Milton, Ontario	Checked by : MMT

Position : E: 593207, N: 4816449 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Sample Number	Sample Type	SPT 'N' Value
0	192.5	**GROUND SURFACE**				
		115mm **TOPSOIL**				
		FILL, clayey silt, trace gravel, trace sand, trace organics, stiff, dark brown, moist		1	SS	9
	191.7					
1	0.8	**CLAYEY SILT**, some sand to sandy, trace gravel, very stiff to hard, brown to reddish brown, moist (GLACIAL TILL)		2	SS	22
2				3	SS	24
				4	SS	27
3				5	SS	30
4	187.9					
	4.6	**SANDY SILT to SAND AND SILT**, trace to some clay, trace to some gravel, very dense, reddish brown, moist (GLACIAL TILL)		6	SS	74
5						
6		...wet		7	SS	82 / 250mm
7		...wet below		8	SS	50 / 100mm
8						
9	183.2			9	SS	50 / 125mm
	9.3	**END OF BOREHOLE**				

Unstabilized water level measured at 7.9 m below ground surface; borehole caved to 8.8 m below ground surface upon completion of drilling.

Elevation Scale (m): 192, 191, 190, 189, 188, 187, 186, 185, 184

Penetration Test Values (Blows / 0.3m): Dynamic Cone; 10 20 30 40

Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane; 40 80 120 160

Moisture / Plasticity: Plastic Limit, Natural Water Content, Liquid Limit; PL MC LL; 10 20 30

Headspace Vapour (ppm)

Instrument Details

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

SS1 Analysis: M&I

file: 1-22-0209-01 bh logs.gpj

LOG OF BOREHOLE 12

Terraprobe

Project No. : 1-22-0209-01	Client : Thomas Robert Colbeck	Originated by : DH
Date started : June 14, 2022	Project : 6360 Regional Road 25	Compiled by : HR
Sheet No. : 1 of 1	Location : Milton, Ontario	Checked by : MMT

Position : E: 593228, N: 4816434 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value
0	192.5	**GROUND SURFACE**				
		100mm **TOPSOIL**		1	SS	11
	191.7	(WEATHERED/DISTURBED)				
1	0.8	**CLAYEY SILT**, some sand to sandy, trace gravel, very stiff to hard, brown to reddish brown, moist (GLACIAL TILL)		2	SS	15
				3	SS	22
2				4	SS	40
3				5	SS	31
4						
5				6	SS	19
6	186.4					
	6.1	**SAND**, trace silt, trace clay, very dense, brown, wet		7	SS	26 / 250mm
7	184.9					
	7.6	**SANDY SILT to SAND AND SILT**, trace to some clay, trace to some gravel, very dense, reddish brown, wet (GLACIAL TILL)		8	SS	50 / 150mm
8						
9	183.1			9	SS	50 / 100mm
	9.4	**END OF BOREHOLE**				

Elevation Scale (m): 192, 191, 190, 189, 188, 187, 186, 185, 184

Penetration Test Values (Blows / 0.3m): Dynamic Cone; 10 20 30 40

Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane; 40 80 120 160

Moisture / Plasticity: Plastic Limit, Natural Water Content, Liquid Limit; PL MC LL; 10 20 30

Headspace Vapour (ppm)

Instrument Details

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

Unstabilized water level measured at 7.6 m below ground surface; borehole caved to 8.8 m below ground surface upon completion of drilling.

file: 1-22-0209-01 bh logs.gpj

LOG OF BOREHOLE 13

Terraprobe

Project No. : 1-22-0209-01	Client : Thomas Robert Colbeck	Originated by : DH
Date started : June 16, 2022	Project : 6360 Regional Road 25	Compiled by : HR
Sheet No. : 1 of 1	Location : Milton, Ontario	Checked by : MMT

Position : E: 593188, N: 4816515 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Sample Number	Sample Type	SPT 'N' Value
0	192.4	**GROUND SURFACE**				
		90mm **TOPSOIL**		1	SS	10
		FILL, clayey silt, trace gravel, trace sand, trace organics, stiff, dark brown, moist				
	191.6					
1	0.8	**CLAYEY SILT**, some sand to sandy, trace gravel, very stiff, brown to reddish brown, moist (GLACIAL TILL)		2	SS	22
2				3	SS	27
				4	SS	27
3	189.4					
	3.0	**SANDY SILT to SAND AND SILT**, trace to some clay, trace to some gravel, very dense, reddish brown, moist (GLACIAL TILL)		5	SS	50
4						
				6	SS	50 / 125mm
5						
6				7	SS	50 / 150mm
7		...wet below		8	SS	50 / 100mm
8						
9	183.1			9	SS	50 / 150mm
	9.3	**END OF BOREHOLE**				

Elevation Scale (m): 192, 191, 190, 189, 188, 187, 186, 185, 184

Penetration Test Values (Blows / 0.3m): Dynamic Cone; 10 20 30 40

Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane; 40 80 120 160

Moisture / Plasticity: Plastic Limit, Natural Water Content, Liquid Limit; PL MC LL; 10 20 30

Headspace Vapour (ppm):
PID: 5 FID: 0
PID: 0 FID: 0
PID: 0 FID: 0
PID: 0 FID: 0
PID: 0 FID: 0
PID: 0 FID: 0
PID: 0 FID: 0
PID: 0 FID: 0
PID: 0 FID: 0

Instrument Details: Unstabilized Water Level

Lab Data and Comments: GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

SS1 Analysis: M&I

8 36 43 13

SS8 Analysis: PCB, PHC

Borehole was dry and open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 11, 2022	6.7	185.7
Jul 14, 2022	6.8	185.6

file: 1-22-0209-01 bh logs.gpj

LOG OF BOREHOLE 14

Terraprobe

Project No. : 1-22-0209-01	Client : Thomas Robert Colbeck	Originated by : DH
Date started : June 16, 2022	Project : 6360 Regional Road 25	Compiled by : HR
Sheet No. : 1 of 1	Location : Milton, Ontario	Checked by : MMT

Position : E: 593207, N: 4816494 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value
0	192.2	**GROUND SURFACE**				
		140mm **TOPSOIL**		1	SS	9
		(WEATHERED/DISTURBED), trace organics				
	191.4					
	0.8	**CLAYEY SILT**, some sand to sandy, trace gravel, very stiff, brown to reddish brown, moist (GLACIAL TILL)		2	SS	20
1						
				3	SS	23
2						
				4	SS	29
	189.2					
3	3.0	**SANDY SILT to SAND AND SILT**, trace to some clay, trace to some gravel, very dense, reddish brown, moist (GLACIAL TILL)		5	SS	60
4						
				6	SS	50 / 150mm
5						
6				7	SS	50 / 125mm
7						
				8	SS	50 / 75mm
8						
9				9	SS	50 / 100mm
	183.0					
	9.2	**END OF BOREHOLE**				

Elevation Scale (m): 192, 191, 190, 189, 188, 187, 186, 185, 184, 183

Penetration Test Values (Blows / 0.3m)
Dynamic Cone: 10 20 30 40
Undrained Shear Strength (kPa)
Unconfined, Pocket Penetrometer, Field Vane, Lab Vane: 40 80 120 160

Moisture / Plasticity
Plastic Limit, Natural Water Content, Liquid Limit
PL MC LL: 10 20 30

Headspace Vapour (ppm)

Instrument Details

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT)
GR SA SI CL

Borehole was dry and open upon completion of drilling.

file: 1-22-0209-01 bh logs.gpj

LOG OF BOREHOLE 15

Terraprobe

Project No. : 1-22-0209-01	Client : Thomas Robert Colbeck	Originated by : DH
Date started : June 16, 2022	Project : 6360 Regional Road 25	Compiled by : HR
Sheet No. : 1 of 1	Location : Milton, Ontario	Checked by : MMT

Position : E: 593225, N: 4816475 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value
0	192.2	**GROUND SURFACE**				
		115mm **TOPSOIL**		1	SS	8
		FILL, clayey silt, trace gravel, trace sand, trace organics, stiff, brown, moist				
	191.4					
1	0.8	**CLAYEY SILT**, some sand to sandy, trace gravel, very stiff to hard, brown to reddish brown, moist (GLACIAL TILL)		2	SS	26
				3	SS	24
2				4	SS	27
3				5	SS	28
4						
5				6	SS	31
6	186.1					
	6.1	**SANDY SILT to SAND AND SILT**, trace to some clay, trace to some gravel, very dense, reddish brown, wet (GLACIAL TILL)		7	SS	83 / 275mm
7						
				8	SS	50 / 75mm
8						
9	182.9			9	SS	50 / 125mm
	9.3	**END OF BOREHOLE**				

Elevation Scale (m): 192, 191, 190, 189, 188, 187, 186, 185, 184, 183

Penetration Test Values (Blows / 0.3m): Dynamic Cone 10 20 30 40

Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane 40 80 120 160

Moisture / Plasticity: Plastic Limit (PL) 10, Natural Water Content (MC) 20, Liquid Limit (LL) 30

Headspace Vapour (ppm): PID: 0

Instrument Details

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

SS1 Analysis: M&I

SS4 Analysis: .pH

Borehole was dry and open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 11, 2022	7.0	185.2
Jul 14, 2022	7.1	185.1

file: 1-22-0209-01 bh logs.gpj

LOG OF BOREHOLE 16

Terraprobe

Project No. : 1-22-0209-01	Client : Thomas Robert Colbeck	Originated by : DH
Date started : June 15, 2022	Project : 6360 Regional Road 25	Compiled by : HR
Sheet No. : 1 of 1	Location : Milton, Ontario	Checked by : MMT

Position : E: 593246, N: 4816455 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value
0	192.2	**GROUND SURFACE**				
		125mm **TOPSOIL**		1	SS	12
		(WEATHERED/DISTURBED), trace organics				
	191.4					
	0.8	**CLAYEY SILT**, some sand to sandy, trace gravel, very stiff to hard, brown to reddish brown, moist (GLACIAL TILL)		2	SS	26
				3	SS	28
				4	SS	26
				5	SS	33
				6	SS	25
	186.1					
	6.1	**SANDY SILT to SAND AND SILT**, trace to some clay, trace to some gravel, very dense, reddish brown, moist (GLACIAL TILL)		7	SS	84 / 275mm
		...wet below		8	SS	50 / 150mm
	183.0			9	SS	50 / 100mm
	9.2	**END OF BOREHOLE**				

Elevation Scale (m): 192, 191, 190, 189, 188, 187, 186, 185, 184

Penetration Test Values (Blows / 0.3m): Dynamic Cone 10 20 30 40

Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane 40 80 120 160

Moisture / Plasticity: Plastic Limit (PL) Natural Water Content (MC) Liquid Limit (LL) 10 20 30

Headspace Vapour (ppm): PID: 0 FID: 0

Instrument Details: Unstabilized Water Level

Lab Data and Comments: SS1 Analysis: M&I

GRAIN SIZE DISTRIBUTION (%) (MIT): GR SA SI CL — 13 49 32 6

Borehole was dry and open upon completion of drilling.

50 mm dia. monitoring well installed.

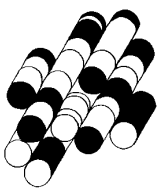
WATER LEVEL READINGS

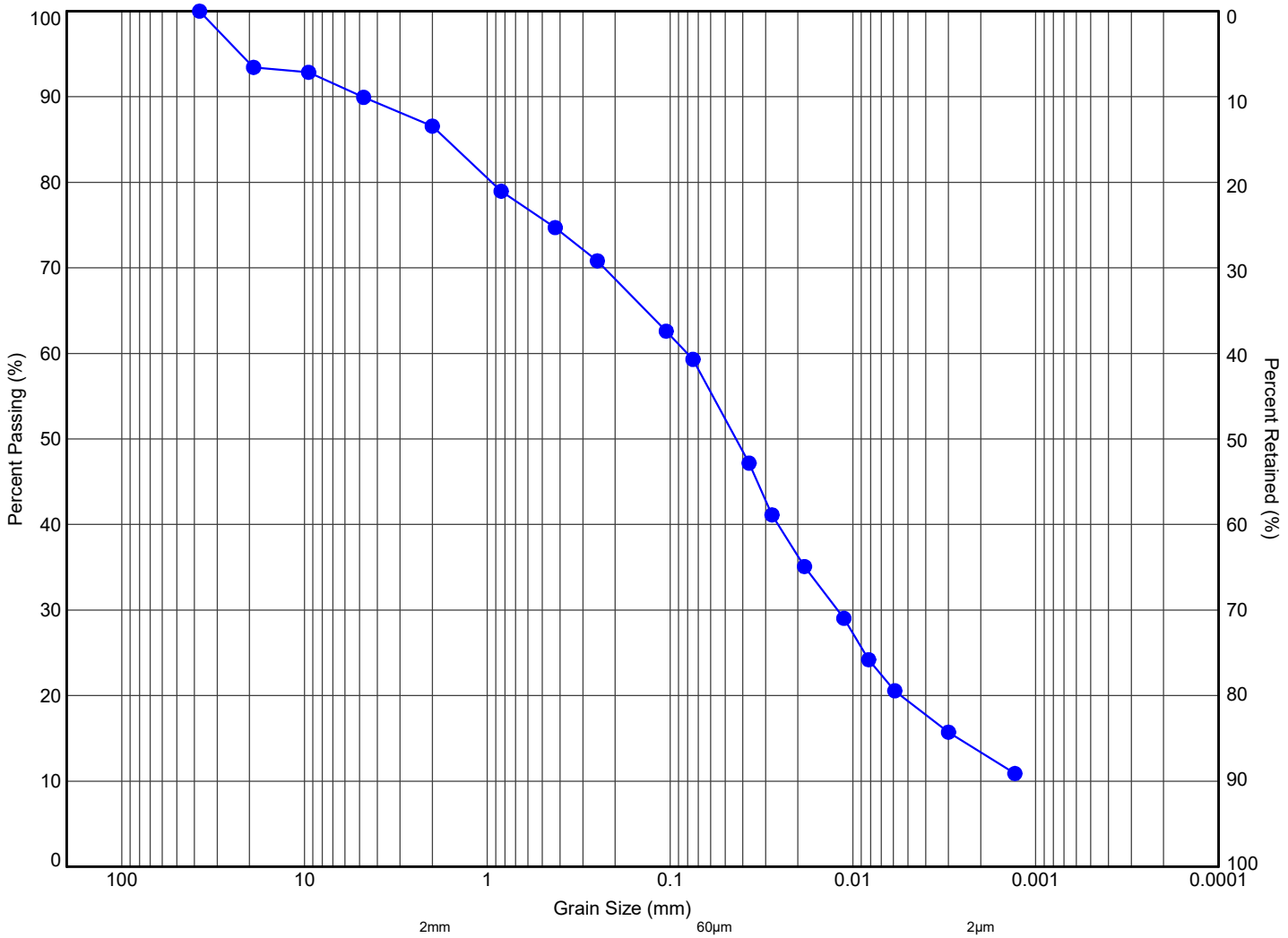
Date	Water Depth (m)	Elevation (m)
Jul 11, 2022	7.1	185.1
Jul 14, 2022	7.3	184.9

file: 1-22-0209-01 bh logs.gpj

APPENDIX D

TERRAPROBE INC.





MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM

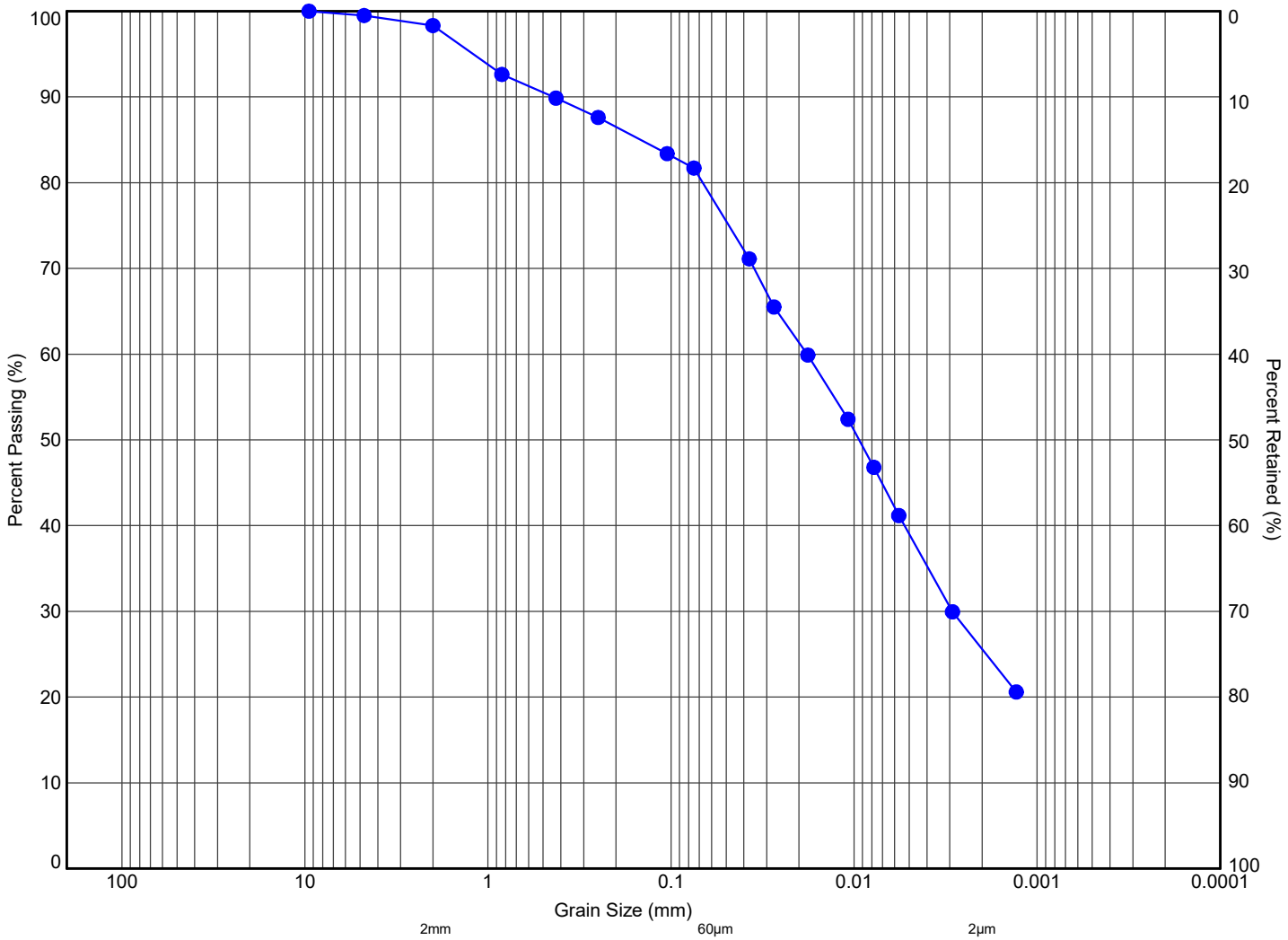
	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**1**	SS8	7.7	184.4	13	32	42	13	

Terraprobe
11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title:

GRAIN SIZE DISTRIBUTION
SANDY SILT, SOME GRAVEL, SOME CLAY

File No.: **1-22-0209-01**



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM

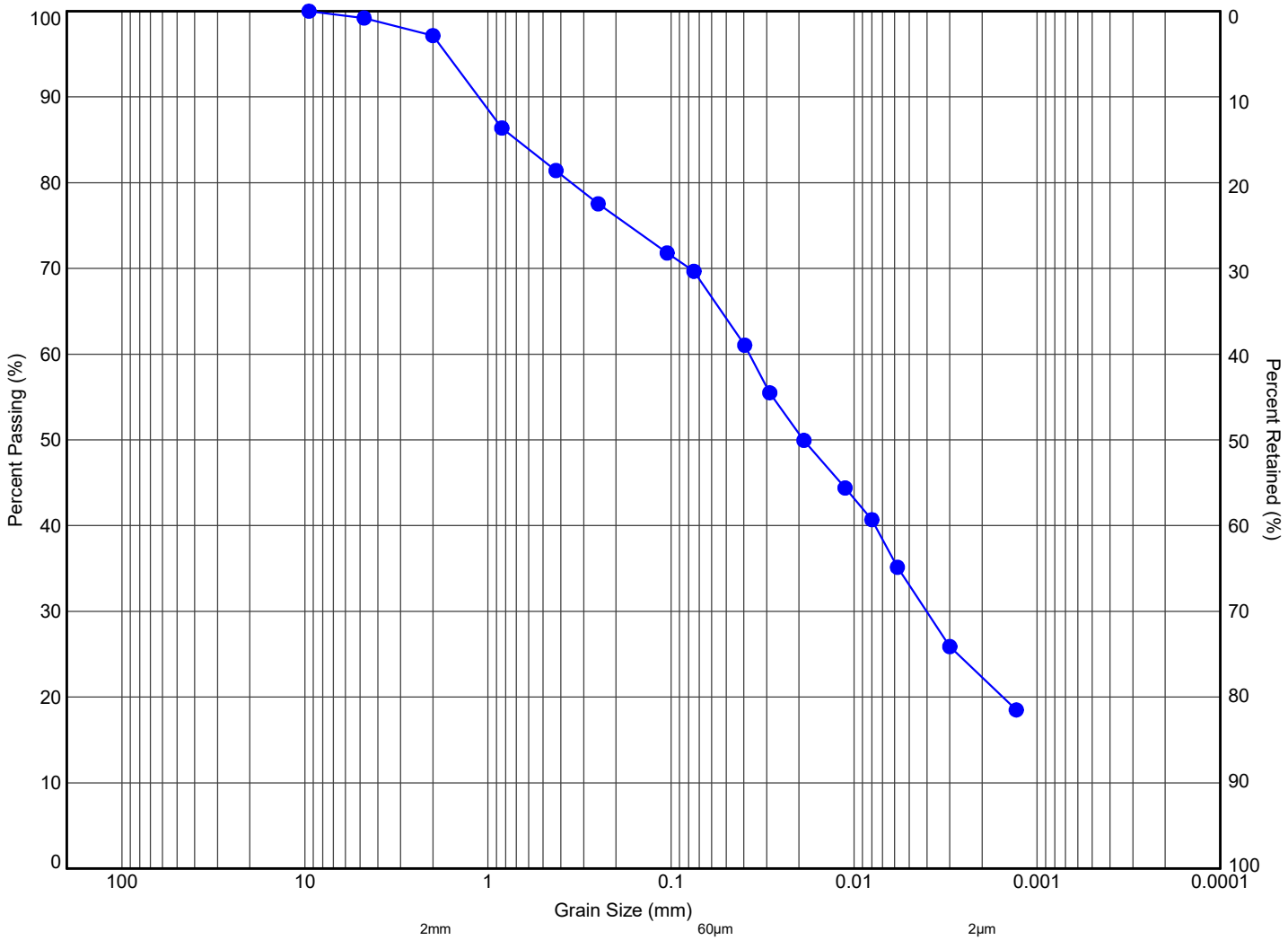
	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**4**	SS6	4.8	187.8	2	19	53	26	

Terraprobe
11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title:

GRAIN SIZE DISTRIBUTION
CLAYEY SILT, SOME SAND, TRACE GRAVEL

File No.: **1-22-0209-01**



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM

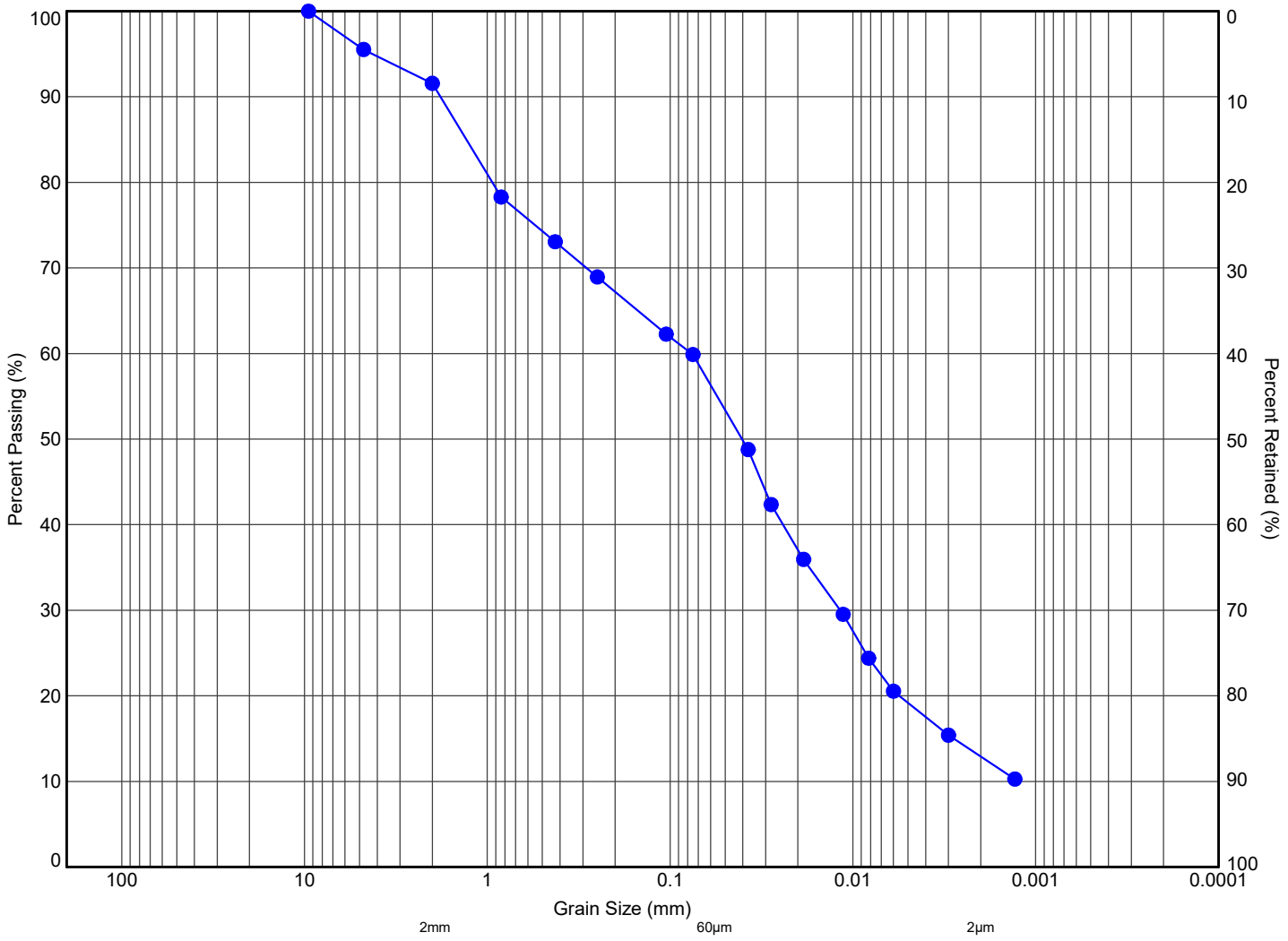
	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**10**	SS5	3.4	189.5	3	31	44	22	

Terraprobe
11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title:

GRAIN SIZE DISTRIBUTION
SANDY SILT, CLAYEY, TRACE GRAVEL

File No.: **1-22-0209-01**



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM

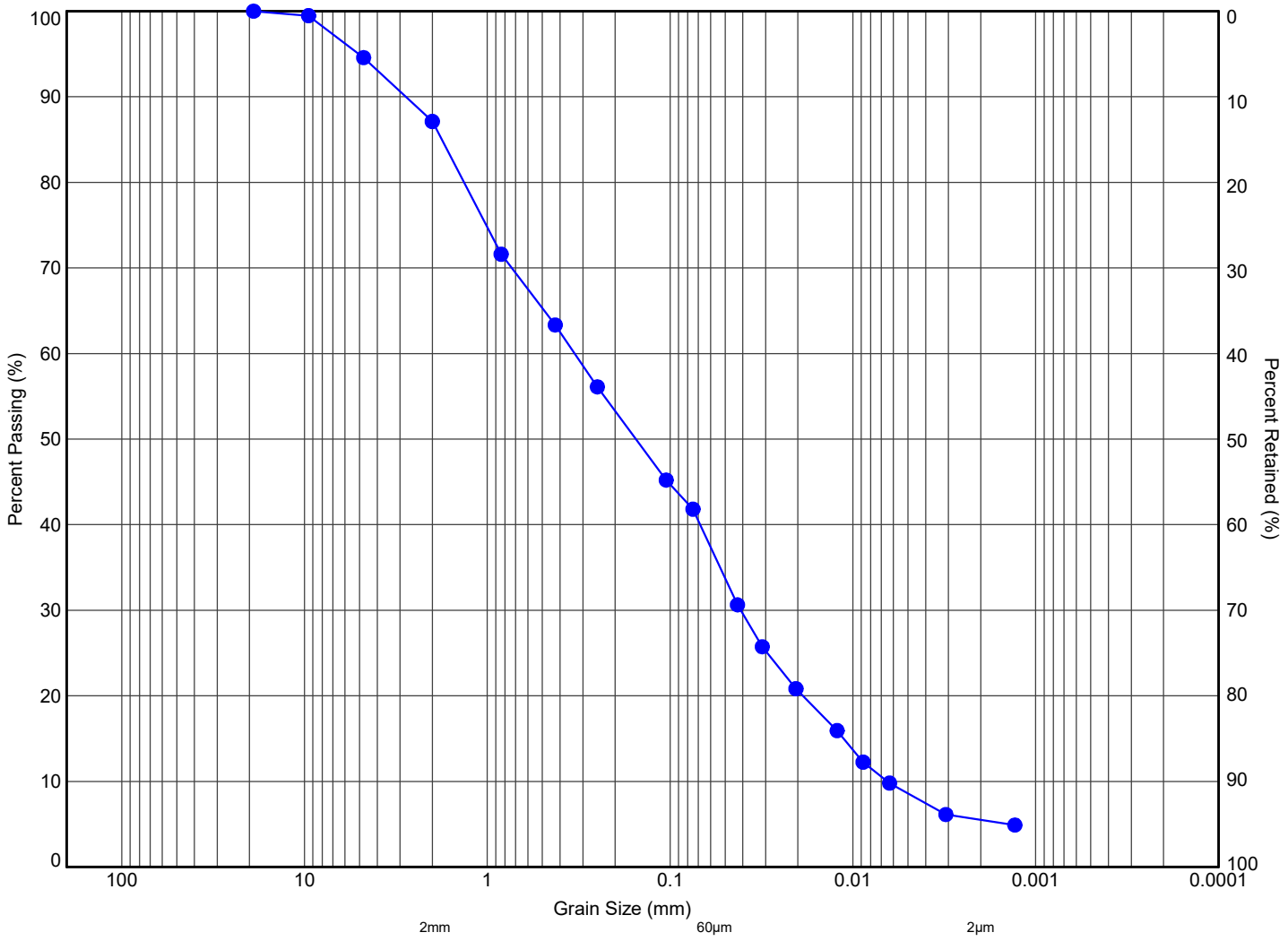
	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**13**	SS7	6.2	186.1	8	36	43	13	

Terraprobe
11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title:

GRAIN SIZE DISTRIBUTION
SAND AND SILT, SOME CLAY, TRACE GRAVEL

File No.: **1-22-0209-01**



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM

	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**16**	SS9	9.2	183.1	13	49	32	6	

Terraprobe
11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

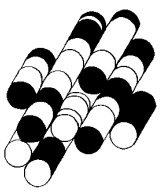
Title:

GRAIN SIZE DISTRIBUTION
SILTY SAND, SOME GRAVEL, TRACE CLAY

File No.: **1-22-0209-01**

APPENDIX E

TERRAPROBE INC.



Terraprobe
Consulting Geotechnical & Environmental Engineering
Construction Materials Engineering, Inspection & Testing

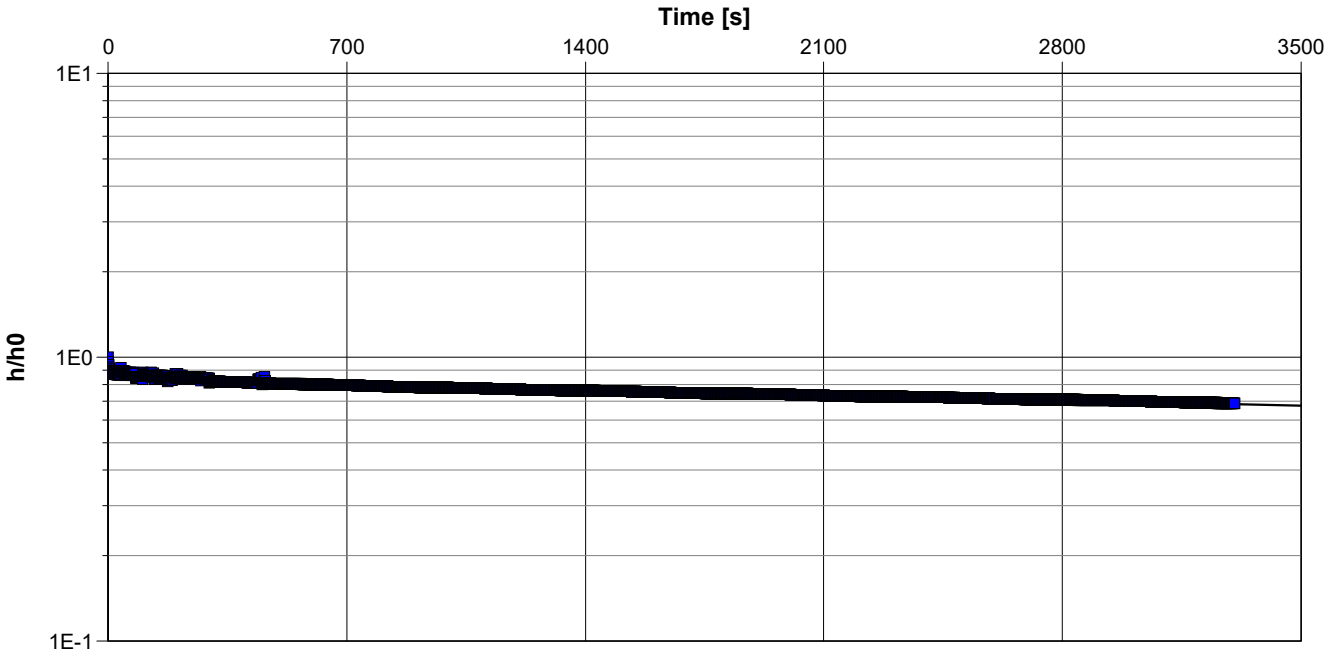
Falling Head Test Analysis Report E

Project: Hydrogeological assessment

Number: 1-22-0209-46

Client: Creswell Residences Inc

Location: 6360 Regional Road 25, Milton	Slug Test: BH1	Test Well: BH1
Test Conducted by:		Test Date: 2022-07-15
Analysis Performed by: MM	Falling Head Test	Analysis Date: 2022-08-03
Aquifer Thickness:		



Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH1	3.10×10^{-8}	

Terraprobe
Consulting Geotechnical & Environmental Engineering
Construction Materials Engineering, Inspection & Testing

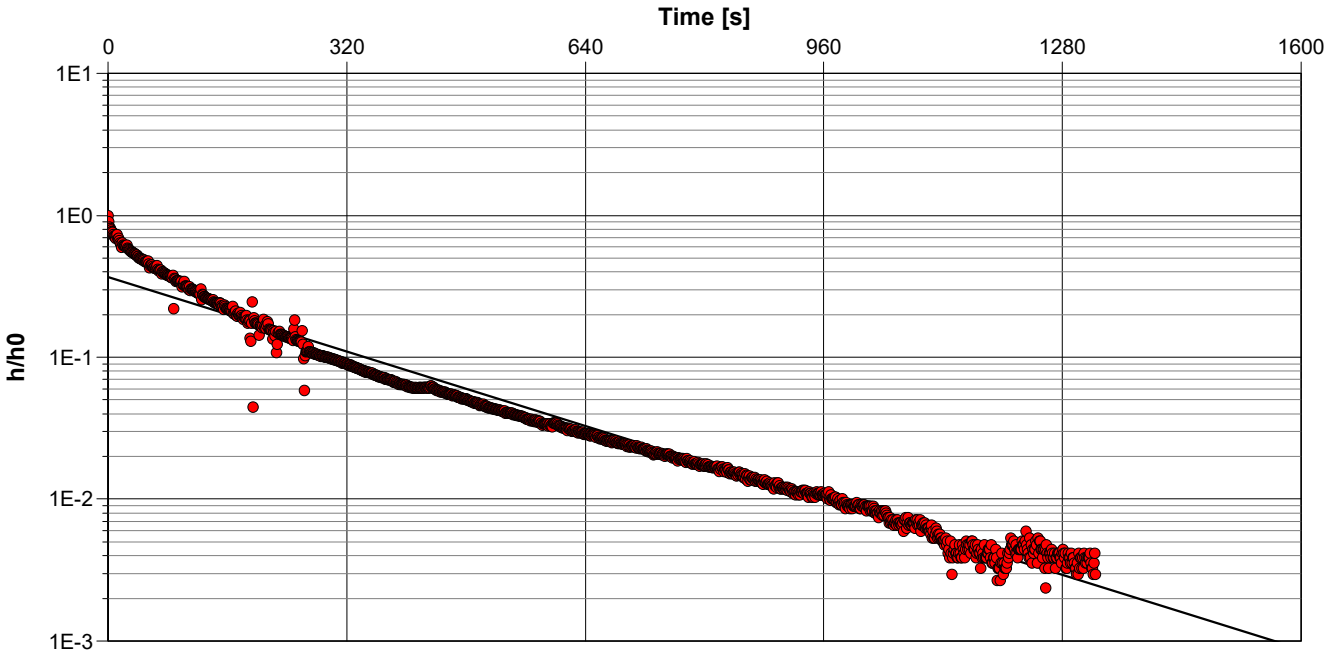
Slug Test Analysis Report

Project: Hydrogeological assessment

Number: 1-22-0209-46

Client: Creswell Residences Inc

Location: 6360 Regional Road 25, Milton	Slug Test: BH4	Test Well: BH4
Test Conducted by:		Test Date: 2022-07-15
Analysis Performed by:	New analysis 1	Analysis Date: 2022-08-03
Aquifer Thickness:		



Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]
BH4	1.84×10^{-6}

Terraprobe
Consulting Geotechnical & Environmental Engineering
Construction Materials Engineering, Inspection & Testing

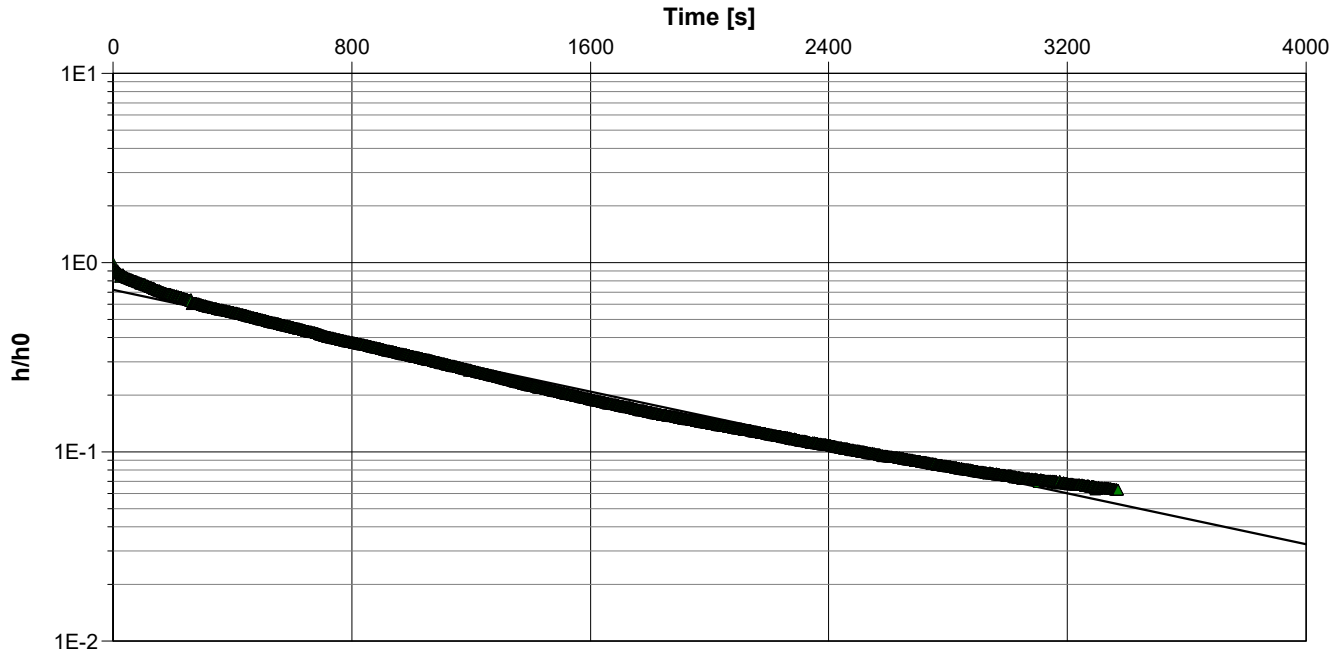
Slug Test Analysis Report E

Project: Hydrogeological assessment

Number: 1-22-0209-46

Client: Creswell Residences Inc

Location: 6360 Regional Road 25, Milton	Slug Test: BH7	Test Well: BH7
Test Conducted by:		Test Date: 2022-07-15
Analysis Performed by: MM	Falling Head Test	Analysis Date: 2022-08-03
Aquifer Thickness:		



Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH7	3.78×10^{-7}	

Terraprobe
Consulting Geotechnical & Environmental Engineering
Construction Materials Engineering, Inspection & Testing

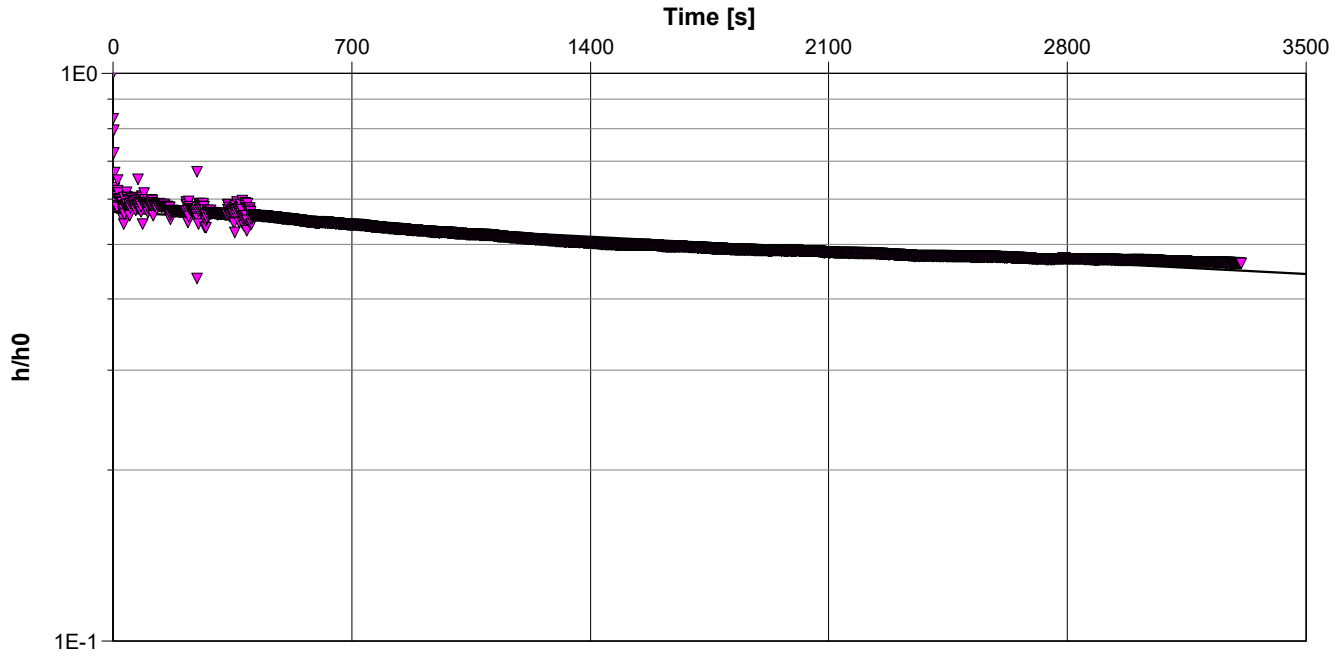
Falling Head Test Analysis Report E

Project: Hydrogeological assessment

Number: 1-22-0209-46

Client: Creswell Residences Inc

Location: 6360 Regional Road 25, Milton	Slug Test: BH9	Test Well: BH9
Test Conducted by:		Test Date: 2022-07-15
Analysis Performed by: MM	Falling Head Test	Analysis Date: 2022-08-03
Aquifer Thickness:		



Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH9	3.51×10^{-8}	

Terraprobe
Consulting Geotechnical & Environmental Engineering
Construction Materials Engineering, Inspection & Testing

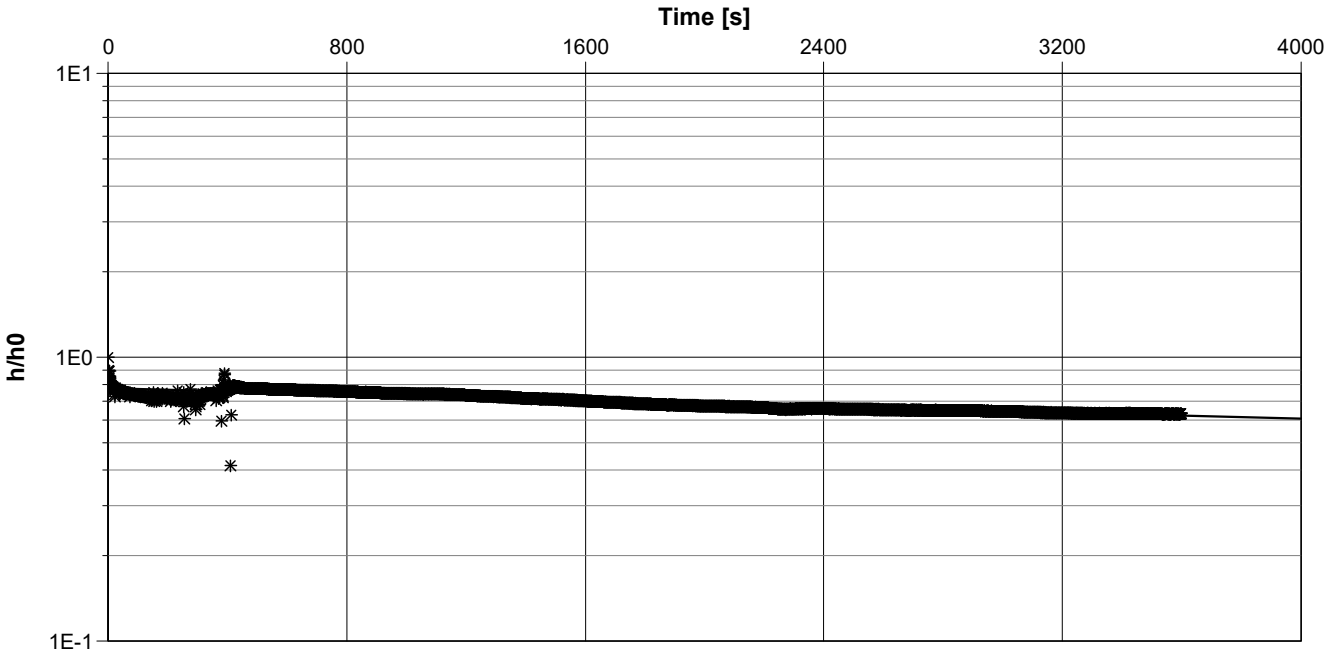
Slug Test Analysis Report

Project: Hydrogeological assessment

Number: 1-22-0209-46

Client: Creswell Residences Inc

Location: 6360 Regional Road 25, Milton	Slug Test: BH10	Test Well: BH10
Test Conducted by:		Test Date: 2022-07-15
Analysis Performed by:	New analysis 1	Analysis Date: 2022-08-03
Aquifer Thickness:		



Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH10	2.99×10^{-8}	

Terraprobe
Consulting Geotechnical & Environmental Engineering
Construction Materials Engineering, Inspection & Testing

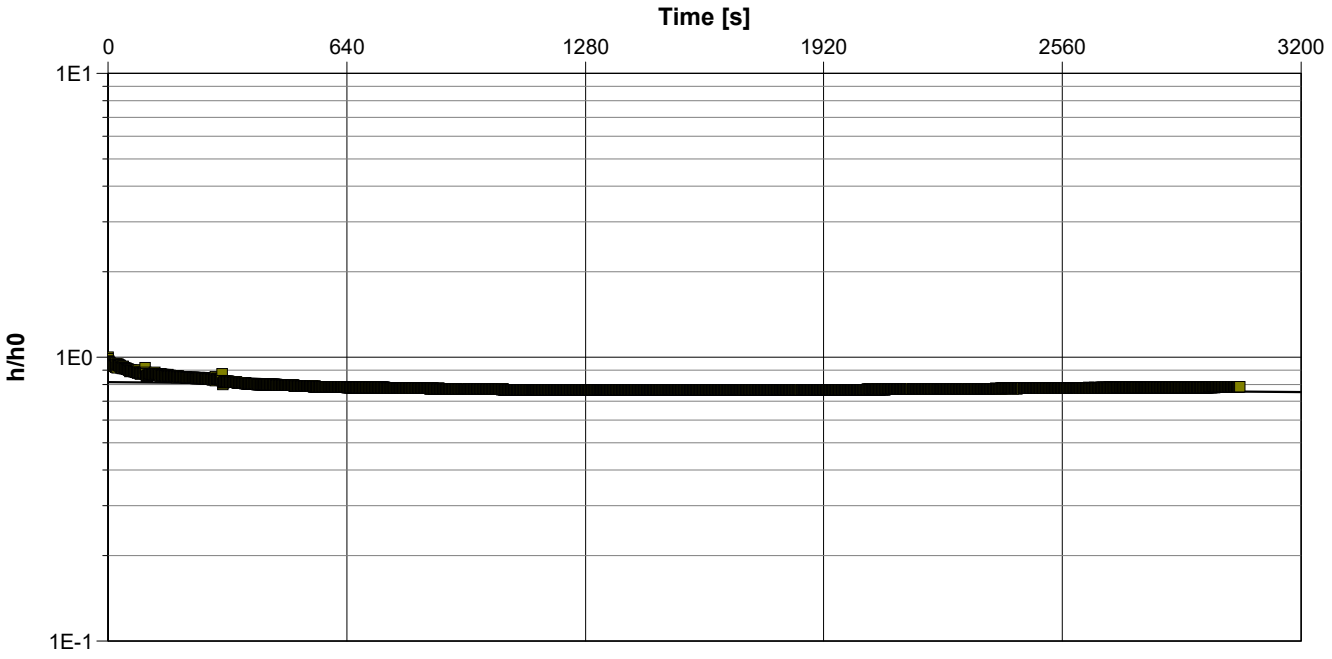
Falling Head Test Analysis Report E

Project: Hydrogeological assessment

Number: 1-22-0209-46

Client: Creswell Residences Inc

Location: 6360 Regional Road 25, Milton	Slug Test: BH13	Test Well: BH13
Test Conducted by:		Test Date: 2022-07-15
Analysis Performed by: MM	Falling Head Test	Analysis Date: 2022-08-03
Aquifer Thickness:		



Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH13	1.18×10^{-8}	

Terraprobe
Consulting Geotechnical & Environmental Engineering
Construction Materials Engineering, Inspection & Testing

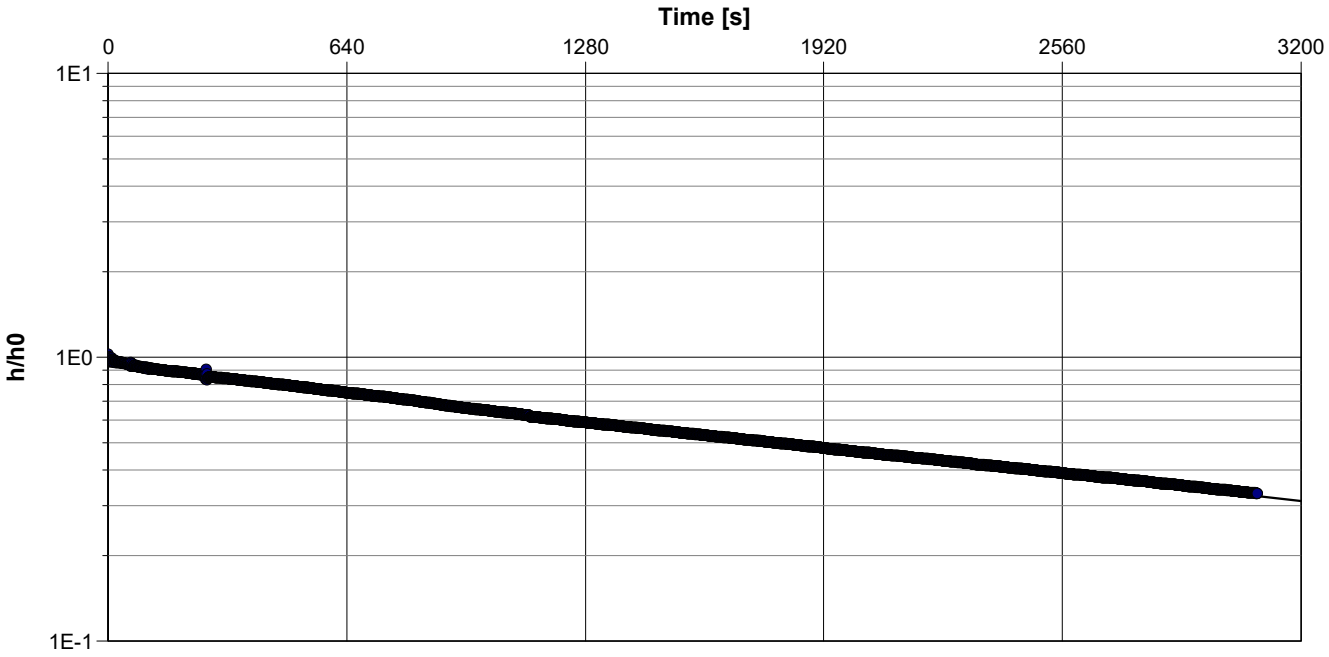
Falling Head Test Analysis Report E

Project: Hydrogeological assessment

Number: 1-22-0209-46

Client: Creswell Residences Inc

Location: 6360 Regional Road 25, Milton	Slug Test: BH15	Test Well: BH15
Test Conducted by:		Test Date: 2022-07-15
Analysis Performed by: MM	Falling Head Test	Analysis Date: 2022-08-03
Aquifer Thickness:		



Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH15	1.67×10^{-7}	

Terraprobe
Consulting Geotechnical & Environmental Engineering
Construction Materials Engineering, Inspection & Testing

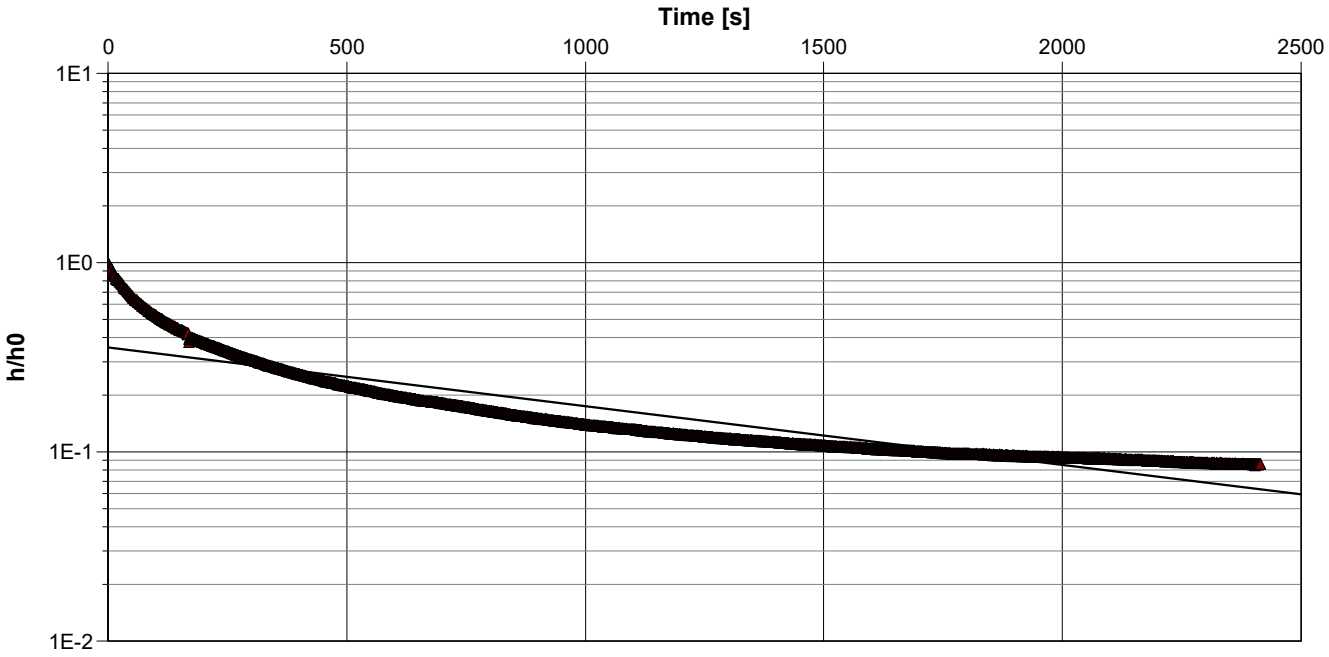
Slug Test Analysis Report E

Project: Hydrogeological assessment

Number: 1-22-0209-46

Client: Creswell Residences Inc

Location: 6360 Regional Road 25, Milton	Slug Test: BH16	Test Well: BH16
Test Conducted by:		Test Date: 2022-07-15
Analysis Performed by: MM	Falling Head Test	Analysis Date: 2022-08-03
Aquifer Thickness:		



Calculation using Hvorslev

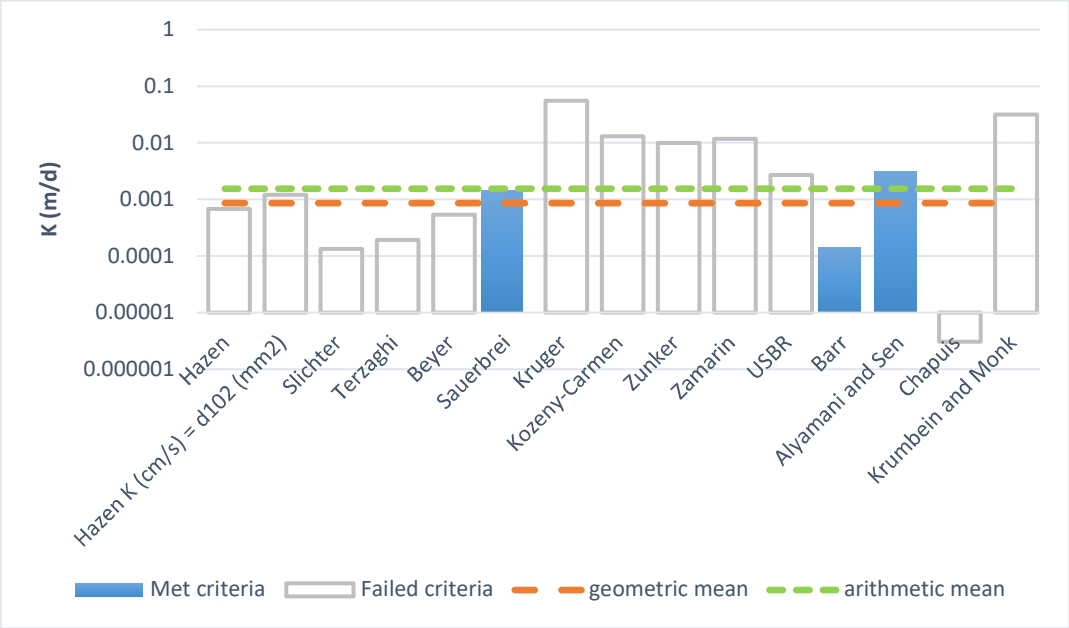
Observation Well	Hydraulic Conductivity [m/s]	
BH16	3.49×10^{-7}	

K from Grain Size Analysis Report Date: 11-Aug-22

Sample Name: BH1 SS8

Mass Sample (g): 100 T (oC) 20

Poorly sorted sandy gravelly silt with fines



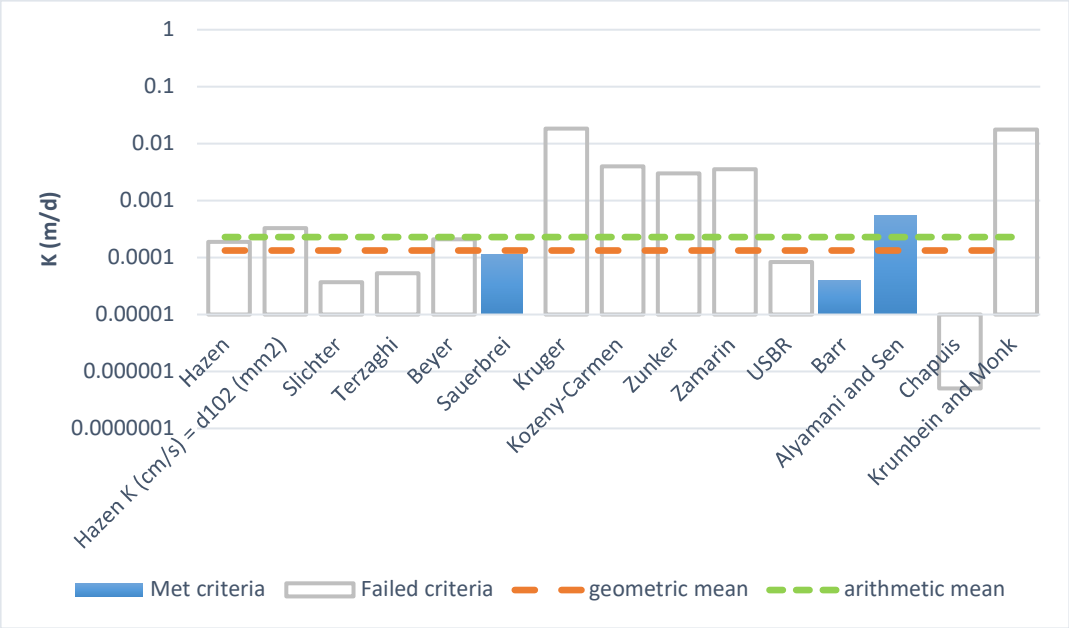
Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	7.9E-07	7.9E-09	0.00	
Hazen K (cm/s) = d_{10} (mm)	1.4E-06	1.4E-08	0.00	
Slichter	1.6E-07	1.6E-09	0.00	
Terzaghi	2.2E-07	2.2E-09	0.00	
Beyer	6.2E-07	6.2E-09	0.00	
Sauerbrei	1.7E-06	1.7E-08	0.00	
Kruger	6.4E-05	6.4E-07	0.06	
Kozeny-Carmen	1.5E-05	1.5E-07	0.01	
Zunker	1.1E-05	1.1E-07	0.01	
Zamarin	1.4E-05	1.4E-07	0.01	
USBR	3.1E-06	3.1E-08	0.00	
Barr	1.7E-07	1.7E-09	0.00	
Alyamani and Sen	3.6E-06	3.6E-08	0.00	
Chapuis	3.5E-09	3.5E-11	0.00	
Krumbein and Monk	3.6E-05	3.6E-07	0.03	
geometric mean	9.9E-07	9.9E-09	0.00	
arithmetic mean	1.8E-06	1.8E-08	0.00	

K from Grain Size Analysis Report Date: 11-Aug-22

Sample Name: BH4 SS6

Mass Sample (g): 100 T (oC) 20

Poorly sorted clay with fines



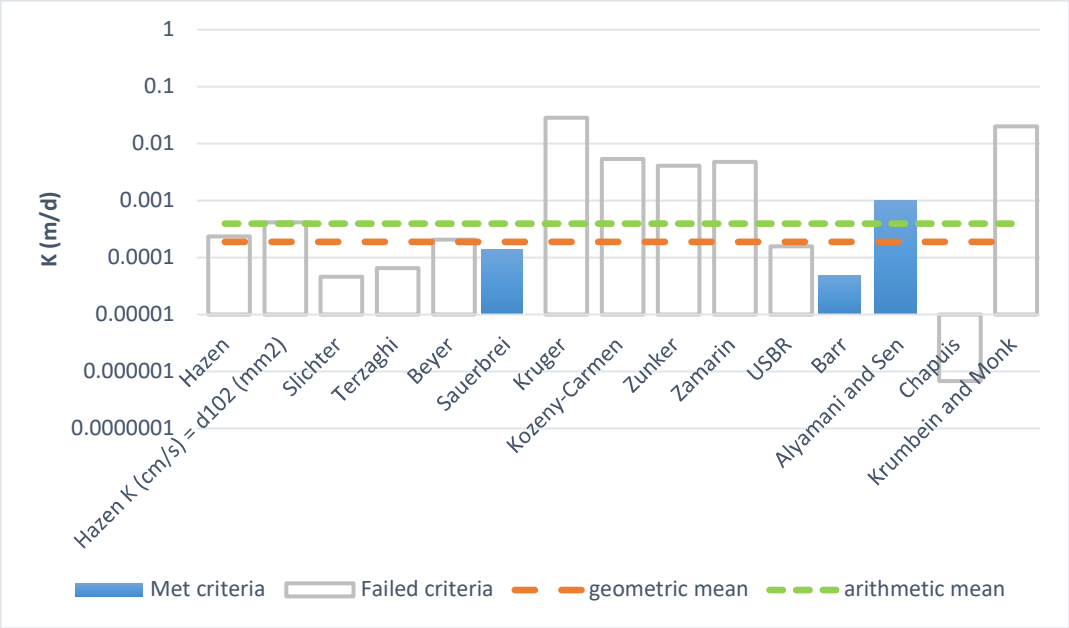
Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	2.2E-07	2.2E-09	0.00	
Hazen K (cm/s) = d_{10} (mm)	3.8E-07	3.8E-09	0.00	
Slichter	4.3E-08	4.3E-10	0.00	
Terzaghi	6.1E-08	6.1E-10	0.00	
Beyer	2.4E-07	2.4E-09	0.00	
Sauerbrei	1.3E-07	1.3E-09	0.00	
Kruger	2.1E-05	2.1E-07	0.02	
Kozeny-Carmen	4.6E-06	4.6E-08	0.00	
Zunker	3.5E-06	3.5E-08	0.00	
Zamarin	4.1E-06	4.1E-08	0.00	
USBR	9.7E-08	9.7E-10	0.00	
Barr	4.6E-08	4.6E-10	0.00	
Alyamani and Sen	6.2E-07	6.2E-09	0.00	
Chapuis	5.8E-10	5.8E-12	0.00	
Krumbein and Monk	2.0E-05	2.0E-07	0.02	
geometric mean	1.5E-07	1.5E-09	0.00	
arithmetic mean	2.7E-07	2.7E-09	0.00	

K from Grain Size Analysis Report Date: 11-Aug-22

Sample Name: BH10 SS5

Mass Sample (g): 100 T (oC) 20

Poorly sorted sandy silt with fines



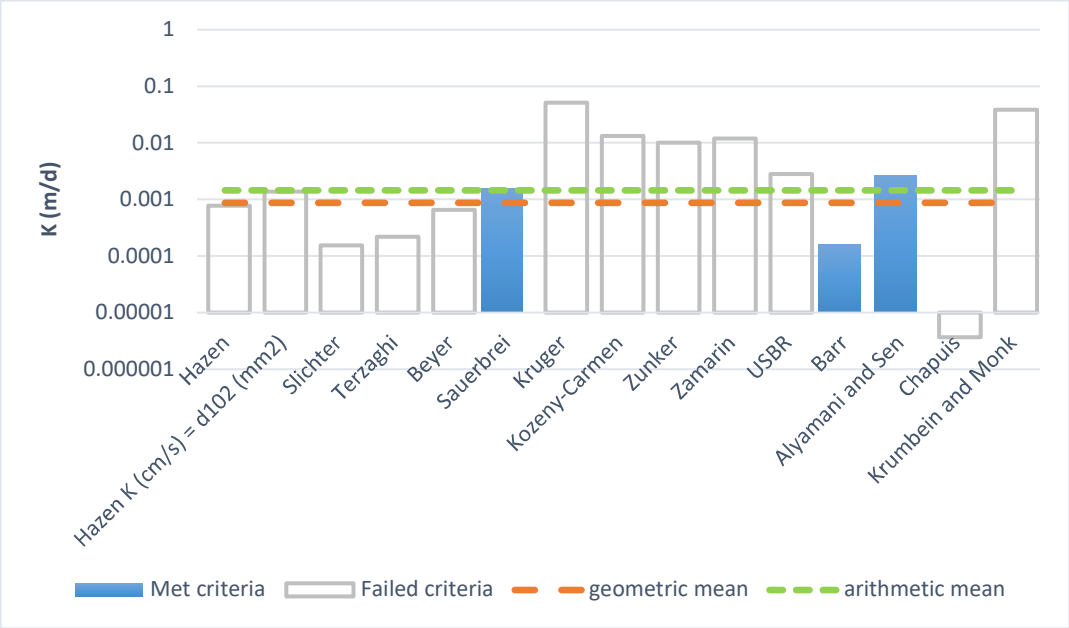
Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	2.7E-07	2.7E-09	0.00	
Hazen K (cm/s) = d_{10} (mm)	4.8E-07	4.8E-09	0.00	
Slichter	5.3E-08	5.3E-10	0.00	
Terzaghi	7.6E-08	7.6E-10	0.00	
Beyer	2.4E-07	2.4E-09	0.00	
Sauerbrei	1.6E-07	1.6E-09	0.00	
Kruger	3.3E-05	3.3E-07	0.03	
Kozeny-Carmen	6.2E-06	6.2E-08	0.01	
Zunker	4.7E-06	4.7E-08	0.00	
Zamarin	5.5E-06	5.5E-08	0.00	
USBR	1.8E-07	1.8E-09	0.00	
Barr	5.7E-08	5.7E-10	0.00	
Alyamani and Sen	1.2E-06	1.2E-08	0.00	
Chapuis	7.8E-10	7.8E-12	0.00	
Krumbein and Monk	2.3E-05	2.3E-07	0.02	
geometric mean	2.2E-07	2.2E-09	0.00	
arithmetic mean	4.6E-07	4.6E-09	0.00	

K from Grain Size Analysis Report Date: 11-Aug-22

Sample Name: BH13 SS7

Mass Sample (g): 100 T (oC) 20

Poorly sorted sandy silt with fines



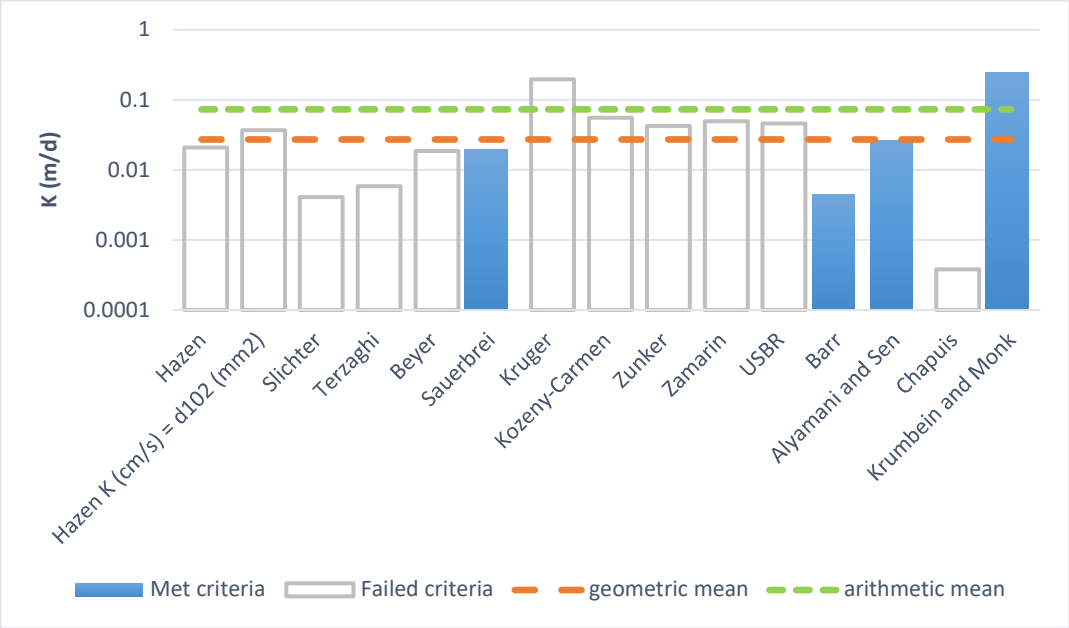
Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	9.0E-07	9.0E-09	0.00	
Hazen K (cm/s) = d_{10} (mm)	1.6E-06	1.6E-08	0.00	
Slichter	1.8E-07	1.8E-09	0.00	
Terzaghi	2.5E-07	2.5E-09	0.00	
Beyer	7.5E-07	7.5E-09	0.00	
Sauerbrei	1.8E-06	1.8E-08	0.00	
Kruger	5.9E-05	5.9E-07	0.05	
Kozeny-Carmen	1.5E-05	1.5E-07	0.01	
Zunker	1.2E-05	1.2E-07	0.01	
Zamarin	1.4E-05	1.4E-07	0.01	
USBR	3.2E-06	3.2E-08	0.00	
Barr	1.9E-07	1.9E-09	0.00	
Alyamani and Sen	3.1E-06	3.1E-08	0.00	
Chapuis	4.3E-09	4.3E-11	0.00	
Krumbein and Monk	4.5E-05	4.5E-07	0.04	
geometric mean	1.0E-06	1.0E-08	0.00	
arithmetic mean	1.7E-06	1.7E-08	0.00	

K from Grain Size Analysis Report Date: 11-Aug-22

Sample Name: BH16 SS9

Mass Sample (g): 100 T (oC) 20

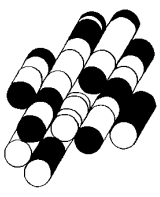
Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	2.4E-05	2.4E-07	0.02	
Hazen K (cm/s) = d_{10} (mm)	4.3E-05	4.3E-07	0.04	
Slichter	4.7E-06	4.7E-08	0.00	
Terzaghi	6.8E-06	6.8E-08	0.01	
Beyer	2.1E-05	2.1E-07	0.02	
Sauerbrei	2.3E-05	2.3E-07	0.02	
Kruger	2.3E-04	2.3E-06	0.20	
Kozeny-Carmen	6.4E-05	6.4E-07	0.06	
Zunker	4.9E-05	4.9E-07	0.04	
Zamarin	5.7E-05	5.7E-07	0.05	
USBR	5.3E-05	5.3E-07	0.05	
Barr	5.1E-06	5.1E-08	0.00	
Alyamani and Sen	3.0E-05	3.0E-07	0.03	
Chapuis	4.4E-07	4.4E-09	0.00	
Krumbein and Monk	2.8E-04	2.8E-06	0.24	
geometric mean	3.1E-05	3.1E-07	0.03	
arithmetic mean	8.4E-05	8.4E-07	0.07	

APPENDIX F

TERRAPROBE INC.



AGAT Laboratories

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Justin Rumney

PROJECT: 1-22-0209-46

AGAT WORK ORDER: 22T921250

MICROBIOLOGY ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer

TRACE ORGANICS REVIEWED BY: Pinkal Patel, Report Reviewer

WATER ANALYSIS REVIEWED BY: Yris Verastegui, Report Reviewer

DATE REPORTED: Jul 25, 2022

PAGES (INCLUDING COVER): 11

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*Notes

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CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
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Certificate of Analysis

AGAT WORK ORDER: 22T921250

PROJECT: 1-22-0209-46

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Justin Rumney

SAMPLING SITE:6360 Regional Rd, Milton

SAMPLED BY:DM

E. Coli (Using MI Agar)

DATE RECEIVED: 2022-07-15

DATE REPORTED: 2022-07-25

			SAMPLE DESCRIPTION:	BH16
			SAMPLE TYPE:	Water
			DATE SAMPLED:	2022-07-15 15:00
Parameter	Unit	G / S	RDL	4100481
Escherichia coli	CFU/100mL	200		0

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Halton Storm Sewer
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

4100481 Escherichia coli RDL = 1 CFU/100mL.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

AGAT Laboratories

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CANADA L4Z 1Y2
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Certificate of Analysis

AGAT WORK ORDER: 22T921250

PROJECT: 1-22-0209-46

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Justin Rumney

SAMPLING SITE:6360 Regional Rd, Milton

SAMPLED BY:DM

Halton Sanitary and Combined Sewer Use By-law - Organics

DATE RECEIVED: 2022-07-15

DATE REPORTED: 2022-07-25

				SAMPLE DESCRIPTION:	BH16
				SAMPLE TYPE:	Water
				DATE SAMPLED:	2022-07-15 15:00
Parameter	Unit	G / S	RDL	4100481	
Oil and Grease (animal/vegetable) in water	mg/L	150	0.5	<0.5	
Oil and Grease (mineral) in water	mg/L	15	0.5	<0.5	
Methylene Chloride	mg/L	2	0.0003	<0.0003	
Chloroform	mg/L	0.04	0.0002	<0.0002	
Benzene	mg/L		0.0002	<0.0002	
Trichloroethene	mg/L	0.4	0.0002	<0.0002	
Toluene	mg/L	0.016	0.0002	<0.0002	
Tetrachloroethene	mg/L	1	0.010	<0.010	
Ethylbenzene	mg/L	0.16	0.0001	<0.0001	
1,4-Dichlorobenzene	mg/L	0.08	0.0002	<0.0002	
Naphthalene	mg/L	0.14	0.0003	<0.0003	
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140		100	
4-Bromofluorobenzene	% Recovery	50-140		103	
Naphthalene-d8	%	50-140		92	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Halton Sanitary & Combined Sewer
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

4100481 Oil and Grease animal/vegetable is a calculated parameter. The calculated value is the difference between Total O&G and Mineral O&G.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By: Jinkal Patel

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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FAX (905)712-5122
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Certificate of Analysis

AGAT WORK ORDER: 22T921250

PROJECT: 1-22-0209-46

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Justin Rumney

SAMPLING SITE:6360 Regional Rd, Milton

SAMPLED BY:DM

Halton Sanitary and Combined Sewer Use By-law - Inorganics

DATE RECEIVED: 2022-07-15

DATE REPORTED: 2022-07-25

				SAMPLE DESCRIPTION:	BH16
				SAMPLE TYPE:	Water
				DATE SAMPLED:	2022-07-15 15:00
Parameter	Unit	G / S	RDL	4100481	
pH	pH Units	6.0-10.0	NA	7.78	
CBOD (5)	mg/L	300	2	<2	
Total Suspended Solids	mg/L	350	10	33	
Fluoride	mg/L	10	0.05	<0.05	
Sulphate	mg/L	1500	0.10	68.0	
Cyanide, SAD	mg/L	2	0.002	<0.002	
Phenols	mg/L	1	0.004	0.005	
Total Kjeldahl Nitrogen	mg/L	100	0.10	0.12	
Total Phosphorus	mg/L	10	0.02	0.05	
Total Aluminum	mg/L	50	0.010	1.15	
Total Antimony	mg/L	5	0.020	<0.020	
Total Arsenic	mg/L	1	0.015	<0.015	
Total Beryllium	mg/L	5	0.001	<0.001	
Total Cadmium	mg/L	1	0.010	<0.010	
Total Chromium	mg/L	3	0.020	<0.020	
Total Cobalt	mg/L	5	0.020	<0.020	
Total Copper	mg/L	3	0.015	<0.015	
Total Iron	mg/L	50	0.050	1.54	
Total Lead	mg/L	3	0.020	<0.020	
Total Manganese	mg/L	5	0.020	0.240	
Total Mercury	mg/L	0.05	0.0002	<0.0002	
Total Molybdenum	mg/L	5	0.020	<0.020	
Total Nickel	mg/L	3	0.015	<0.015	
Total Selenium	mg/L	5	0.002	0.003	
Total Silver	mg/L	5	0.020	<0.020	
Total Tin	mg/L	5	0.025	<0.025	
Total Titanium	mg/L	5	0.010	0.020	
Total Zinc	mg/L	3	0.020	<0.020	

Certified By: Iris Verástegui

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Certificate of Analysis

AGAT WORK ORDER: 22T921250

PROJECT: 1-22-0209-46

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Justin Rumney

SAMPLING SITE:6360 Regional Rd, Milton

SAMPLED BY:DM

Halton Sanitary and Combined Sewer Use By-law - Inorganics

DATE RECEIVED: 2022-07-15

DATE REPORTED: 2022-07-25

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Halton Sanitary & Combined Sewer
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

4100481 Dilution required, RDL has been increased accordingly.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By: Iris Verástegui

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CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
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Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 22T921250

PROJECT: 1-22-0209-46

ATTENTION TO: Justin Rumney

SAMPLING SITE:6360 Regional Rd, Milton

SAMPLED BY:DM

Microbiology Analysis

RPT Date: Jul 25, 2022			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
E. Coli (Using MI Agar)															
Escherichia coli	4100481	4100481	0	0	NA										

Comments: NA - % RPD Not Applicable.

Certified By:

AGAT Laboratories

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CANADA L4Z 1Y2
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Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 22T921250

PROJECT: 1-22-0209-46

ATTENTION TO: Justin Rumney

SAMPLING SITE:6360 Regional Rd, Milton

SAMPLED BY:DM

Trace Organics Analysis

RPT Date: Jul 25, 2022			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Halton Sanitary and Combined Sewer Use By-law - Organics															
Oil and Grease (animal/vegetable) in water	4087752		0.71	0.69	NA	< 0.5	87%	60%	130%	101%	60%	130%	98%	60%	130%
Oil and Grease (mineral) in water	4087752		< 0.5	< 0.5	0.0%	< 0.5	81%	60%	130%	90%	60%	130%	84%	60%	130%
Methylene Chloride	4101149		< 0.0003	< 0.0003	0.0%	< 0.0003	76%	50%	140%	71%	60%	130%	70%	50%	140%
Chloroform	4101149		< 0.0002	< 0.0002	0.0%	< 0.0002	87%	50%	140%	87%	60%	130%	86%	50%	140%
Benzene	4101149		< 0.0002	< 0.0002	0.0%	< 0.0002	114%	50%	140%	76%	60%	130%	78%	50%	140%
Trichloroethene	4101149		< 0.0002	< 0.0002	0.0%	< 0.0002	97%	50%	140%	95%	60%	130%	101%	50%	140%
Toluene	4101149		< 0.0002	< 0.0002	0.0%	< 0.0002	100%	50%	140%	93%	60%	130%	93%	50%	140%
Tetrachloroethene	4101149		< 0.010	< 0.010	0.0%	< 0.010	98%	50%	140%	91%	60%	130%	93%	50%	140%
Ethylbenzene	4101149		< 0.0001	< 0.0001	0.0%	< 0.0001	104%	50%	140%	97%	60%	130%	96%	50%	140%
1,4-Dichlorobenzene	4101149		< 0.0002	< 0.0002	0.0%	< 0.0002	112%	50%	140%	103%	60%	130%	94%	50%	140%
Naphthalene	4092744		< 0.0003	< 0.0003	0.0%	< 0.0003	104%	50%	140%	81%	50%	140%	87%	50%	140%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By: Jinkal Patel

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 22T921250

PROJECT: 1-22-0209-46

ATTENTION TO: Justin Rumney

SAMPLING SITE:6360 Regional Rd, Milton

SAMPLED BY:DM

Water Analysis

RPT Date: Jul 25, 2022

PARAMETER	Batch	Sample Id	DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
			Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Halton Sanitary and Combined Sewer Use By-law - Inorganics															
pH	4099156		7.50	7.65	2.0%	NA	101%	90%	110%						
CBOD (5)	4101058		5	5	NA	< 2	101%	75%	125%						
Total Suspended Solids	4100481	4100481	33	33	NA	< 10	96%	80%	120%						
Fluoride	4099255		<0.05	<0.05	NA	< 0.05	103%	70%	130%	104%	80%	120%	101%	70%	130%
Sulphate	4099255		1.72	1.64	4.8%	< 0.10	101%	70%	130%	102%	80%	120%	101%	70%	130%
Cyanide, SAD	4082679		<0.002	<0.002	NA	< 0.002	96%	70%	130%	86%	80%	120%	101%	70%	130%
Phenols	4099143		0.009	0.008	NA	< 0.002	100%	90%	110%	101%	90%	110%	107%	80%	120%
Total Kjeldahl Nitrogen	4099706		<0.10	<0.10	NA	< 0.10	103%	70%	130%	95%	80%	120%	102%	70%	130%
Total Phosphorus	4108521		0.13	0.14	7.4%	< 0.02	99%	70%	130%	98%	80%	120%	NA	70%	130%
Total Aluminum	4101058		0.144	0.160	10.5%	< 0.010	98%	70%	130%	103%	80%	120%	110%	70%	130%
Total Antimony	4101058		<0.020	<0.020	NA	< 0.020	100%	70%	130%	100%	80%	120%	106%	70%	130%
Total Arsenic	4101058		<0.015	<0.015	NA	< 0.015	94%	70%	130%	97%	80%	120%	105%	70%	130%
Total Beryllium	4101058		<0.001	<0.001	NA	< 0.001	99%	70%	130%	106%	80%	120%	107%	70%	130%
Total Cadmium	4101058		<0.010	<0.010	NA	< 0.010	98%	70%	130%	100%	80%	120%	103%	70%	130%
Total Chromium	4101058		<0.020	<0.020	NA	< 0.020	100%	70%	130%	105%	80%	120%	106%	70%	130%
Total Cobalt	4101058		<0.020	<0.020	NA	< 0.020	99%	70%	130%	105%	80%	120%	104%	70%	130%
Total Copper	4101058		<0.015	<0.015	NA	< 0.015	100%	70%	130%	102%	80%	120%	99%	70%	130%
Total Iron	4101058		1.37	1.49	8.4%	< 0.050	97%	70%	130%	103%	80%	120%	112%	70%	130%
Total Lead	4101058		<0.020	<0.020	NA	< 0.020	96%	70%	130%	97%	80%	120%	100%	70%	130%
Total Manganese	4101058		0.522	0.559	6.8%	< 0.020	101%	70%	130%	105%	80%	120%	101%	70%	130%
Total Mercury	4101058		<0.0002	<0.0002	NA	< 0.0002	101%	70%	130%	101%	80%	120%	90%	70%	130%
Total Molybdenum	4101058		0.020	0.022	NA	< 0.020	100%	70%	130%	108%	80%	120%	111%	70%	130%
Total Nickel	4101058		0.016	<0.015	NA	< 0.015	100%	70%	130%	105%	80%	120%	103%	70%	130%
Total Selenium	4101058		0.007	0.008	NA	< 0.002	103%	70%	130%	103%	80%	120%	111%	70%	130%
Total Silver	4101058		<0.020	<0.020	NA	< 0.020	99%	70%	130%	102%	80%	120%	98%	70%	130%
Total Tin	4101058		<0.025	<0.025	NA	< 0.025	102%	70%	130%	101%	80%	120%	103%	70%	130%
Total Titanium	4101058		<0.010	<0.010	NA	< 0.010	98%	70%	130%	106%	80%	120%	114%	70%	130%
Total Zinc	4101058		0.028	0.028	NA	< 0.020	100%	70%	130%	101%	80%	120%	109%	70%	130%

Comments: NA signifies Not Applicable.
If the RPD value is NA, the results of the duplicates are under 5X the RDL and will not be calculated.
Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated.

Certified By: Iris Verástegui

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 22T921250

PROJECT: 1-22-0209-46

ATTENTION TO: Justin Rumney

SAMPLING SITE:6360 Regional Rd, Milton

SAMPLED BY:DM

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
Escherichia coli	MIC-93-7010	EPA 1604	Membrane Filtration
Trace Organics Analysis			
Oil and Grease (animal/vegetable) in water	VOL-91-5011	EPA SW-846 3510C & SM5520	BALANCE
Oil and Grease (mineral) in water	VOL-91-5011	EPA SW-846 3510C & SM5520	BALANCE
Methylene Chloride	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Chloroform	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Benzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Trichloroethene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Toluene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Tetrachloroethene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Naphthalene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Toluene-d8	VOL-91- 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91- 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Naphthalene-d8	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS

AGAT Laboratories

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Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 22T921250

PROJECT: 1-22-0209-46

ATTENTION TO: Justin Rumney

SAMPLING SITE:6360 Regional Rd, Milton

SAMPLED BY:DM

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
pH	INOR-93-6000	modified from SM 4500-H+ B	PC TITRATE
CBOD (5)	INOR-93-6006	Modified from SM 5210 B	DO METER
Total Suspended Solids	INOR-93-6028	modified from EPA 1684,ON MOECC E3139,SM 2540C,D	BALANCE
Fluoride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Cyanide, SAD	INOR-93-6051	modified from MOECC E3015; SM 4500-CN- A, B, & C	TECHNICON AUTO ANALYZER
Phenols	INOR-93-6072	modified from SM 5530 D	LACHAT FIA
Total Kjeldahl Nitrogen	INOR-93-6048	modified from EPA 351.2 and SM 4500-NORG D	LACHAT FIA
Total Phosphorus	INOR-93-6022	modified from SM 4500-P B and SM 4500-P E	SPECTROPHOTOMETER
Total Aluminum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Antimony	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Arsenic	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Beryllium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Cadmium	MET -93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Chromium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Cobalt	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Copper	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Iron	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Lead	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Manganese	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Mercury	MET-93-6100	modified from EPA 245.2 and SM 3112 B	CVAAS
Total Molybdenum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Nickel	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Selenium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Silver	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Tin	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Titanium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Zinc	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS

AGAT Laboratories
5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

~~If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form~~ (potable water consumed by humans)

Laboratory Use Only

Work Order #: 22T921250

Cooler Quantity: 1 LG

Arrival Temperatures: C.O | 6.6 | 6.3

Custody Seal Intact: ☐Yes ☐No ☐N/A

Notes: ~~Ice~~ Free Ice

Report Information:

Company: Terraprobe Inc.
Contact: Justin Rumney / Ahmad Aswar
Address: 11 Indell Ln, Brampton, Ontario L6T3Y3
Phone: 905-796-2650 Fax:
Reports to be sent to:
1. Email: Jrumney@terraprobe.ca
2. Email:

Project Information:

Project: 1-22-0209-46
Site Location: 6360 Regional Rd, Milton
Sampled By: Deepak Masaun
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☑ No ☐

Company: Terraprobe Inc.
Contact: Lorena Rossi
Address: 11 Indell Ln, Brampton, ON L6T3Y3
Email: lrossi@terraprobe.ca

Regulatory Requirements:

(Please check all applicable boxes)

☐ Regulation 153/04
Table (Indicate One) ☐Ind/Com ☐Res/Park ☐Agriculture
Soil Texture (Check One) ☐Coarse ☐Fine

☐ Excess Soils R406
Table (Indicate One)

☐ Regulation 558

☐ CCME

☑ Sewer Use ☑Sanitary ☑Storm
Milton (Region)

☐ Prov. Water Quality Objectives (PWQO)

☐ Other (Indicate One)

Is this submission for a **Record of Site Condition?** ☐ Yes ☐ No

Report Guideline on *Certificate of Analysis* ☒ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

For 'Same Day' analysis, please contact your AGAT CPM

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI, DOC Y/N	O. Reg 153: Metals & Inorganics	O. Reg 153: Metals - ☐ CrVI, ☐ Hg, ☐ HWSB	O. Reg 153: BTEX, F1-F4 PHCs	O. Reg 153: PAHs	O. Reg 153: PCBs	O. Reg 153: VOC	O. Reg 153: Aroclors	O. Reg 558: Landfill Disposal Characterization TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	O. Reg 406: Excess Soils SPLP Rainwater Leach ☐ Metals ☐ VOCs ☐ SVOCs	O. Reg 406: Excess Soils Characterization Package pH, ICPMS Metals, BTEX, F1-F4	Corrosivity: Include Moisture ☐ Sulphide ☐	Sewer Ret	Potentially Hazardous or High Concentration (Y/N)
BH 16	July 15	3:00 AM/PM	20	GW													X	
		AM/PM																
		AM/PM																
		AM/PM																
		AM/PM																
		AM/PM																
		AM/PM																
		AM/PM																
		AM/PM																
		AM/PM																
		AM/PM																

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Deepak Masaun	July 15, 2022	3:00	A. Rives		

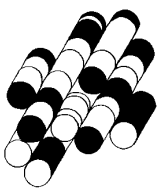
'22 JUL 15 4:01 PM

Page ____ of ____

Nº: T - 134534

APPENDIX G

TERRAPROBE INC.

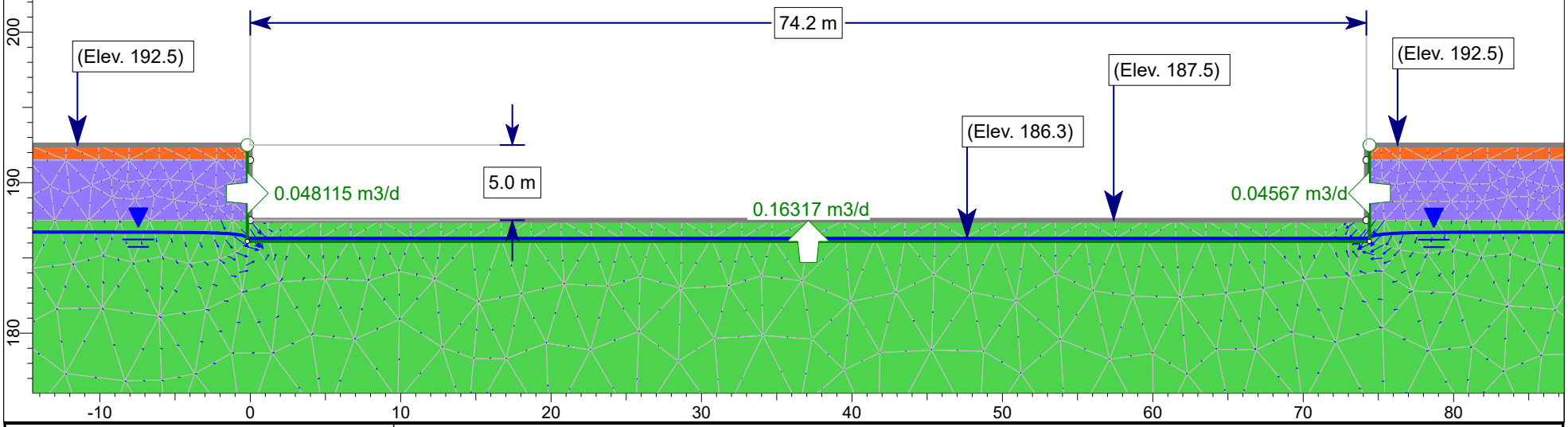


Material Name	Color	KS (m/s)
Earth Fill		1e-006
Clayey Silt Till		2.2e-009
Sandy Silt Till		1.84e-006

SHORT TERM - PERMEABLE SHORING
Excavation Dimensions: 74.2 m x 24.1 m
Section Cut: E-W

Existing Ground Surface: Elev. 192.5 masl
P1 Finished Floor: Elev. 188.5 masl
Base of Bulk Excavation: Elev. 187.5 masl
Water Table: Elev. 186.7 masl
Dewatering Target: Elev. 186.3 masl

Q Ground Water = 28,500 L/day
(S.F. = 2)
27 mm of Rainfall Event = 48,500 L/day
Q Total= 77,000 L/day



Terraprobe
an Englobe Company

SLIDEINTERPRET 7.038

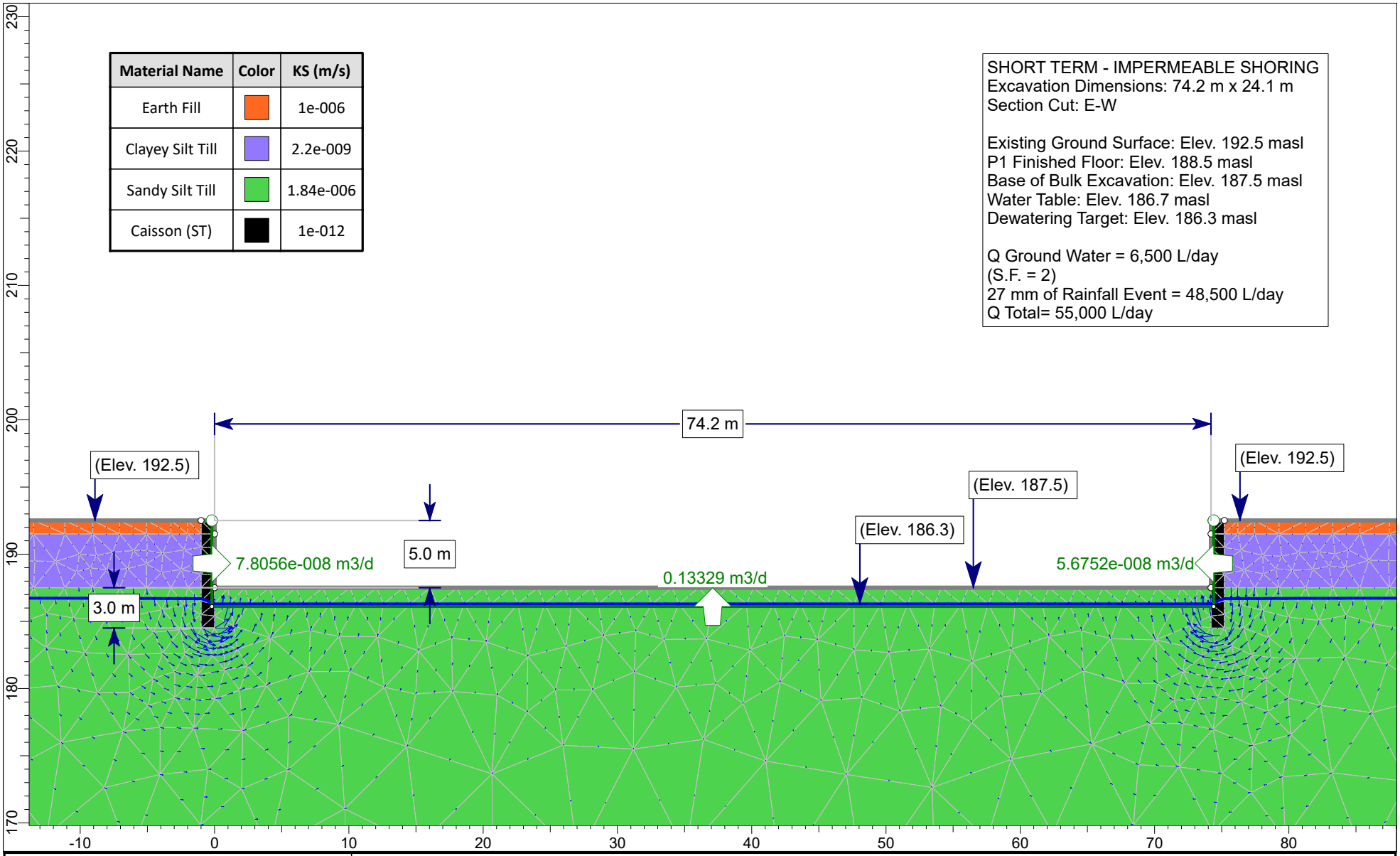
Project	1-22-0209-46 , 6360 Regional Road25, Milton		
Analysis Description	Construction Dewatering (Short Term) - Permeable Shoring		
Drawn By	MM	Scale 1:400	Company Terraprobe Inc.
Date	2022-12-19, 7:41:25 PM		File Name 1-22-0209-46.slmd

Material Name	Color	KS (m/s)
Earth Fill		1e-006
Clayey Silt Till		2.2e-009
Sandy Silt Till		1.84e-006
Caisson (ST)		1e-012

SHORT TERM - IMPERMEABLE SHORING
Excavation Dimensions: 74.2 m x 24.1 m
Section Cut: E-W

Existing Ground Surface: Elev. 192.5 masl
P1 Finished Floor: Elev. 188.5 masl
Base of Bulk Excavation: Elev. 187.5 masl
Water Table: Elev. 186.7 masl
Dewatering Target: Elev. 186.3 masl

Q Ground Water = 6,500 L/day
(S.F. = 2)
27 mm of Rainfall Event = 48,500 L/day
Q Total= 55,000 L/day



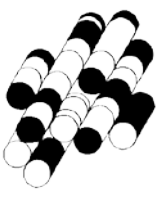
Terraprobe
an Englobe Company

SLIDEINTERPRET 7.038

Project	1-22-0209-46 , 6360 Regional Road25, Milton		
Analysis Description	Construction Dewatering (Short Term) - Impermeable Shoring		
Drawn By	MM	Scale 1:400	Company Terraprobe Inc.
Date	2022-12-19, 7:41:25 PM		File Name 1-22-0209-46.slmd

APPENDIX H

TERRAPROBE INC.



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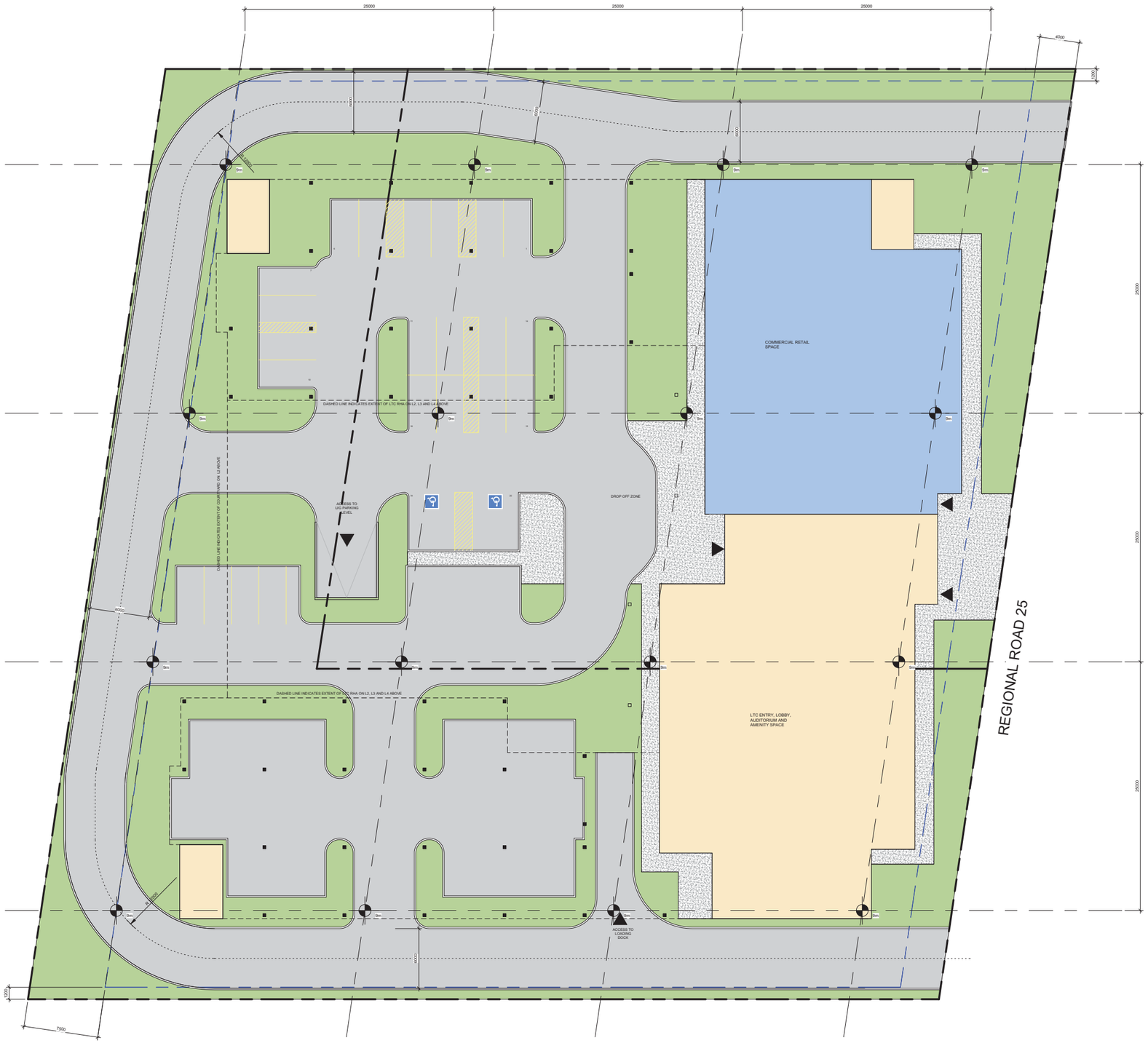
2022-02-04 8:20:18 AM



No.	Revision	Date
1	Issued for Geotechnical RFQ	2022_02_04

Orientation

PROJECT NORTH

Seal

All dimensions to be checked and verified on the job by the Contractor. Any discrepancies are to be reported to the Consultant prior to action. Only the latest approved drawings to be used for construction in conformance with all applicable codes, by-laws and regulations. All drawings remain the property of the Consultant.

salterpilon
architecture

151 Ferris Lane, Suite 400
salterpilon.com
Barrie, Ontario L4M 6C1
t: 705.737.3530

Project Information
Careswell Milton

6360 Regional Rd 25

For
Excelligent Care

Drawing Title
Site Plan - Proposed
Borehole Locations

Date
2022_02_04
Drawn by
BB
Scale
1 : 200
Project No
21040
Drawing No
RFQ