Preliminary Hydrogeological Investigation

1050 Markham Road
Toronto, ON
M1H 2Y7

Prepared For:

CAPREIT

Project No.: 24-014-100
Date: March 15th, 2024

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23-470-100 **March 15th, 2024**

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RE: Preliminary Hydrogeological Investigation – 1050 Markham Road, Toronto, ON

DS Consultants Limited (DS) was retained by CAPREIT to complete a preliminary hydrogeological investigation for the proposed development at 1050 Markham Road, Toronto, ON (Site). The Site is currently occupied by a 19-storey residential apartment building and includes one (1) level of basement and one (1) level of underground parking located west of the building and beneath the current exterior asphalt surface parking area. It is DS' understanding that an infill development is being considered south of the existing building on the property with a high-rise building with two (2) to four (4) levels of underground parking (P2 to P4). Detailed design was not available at the time of the current investigation. Therefore, P2 to P4 is estimated to extend approximately 7 to 13 mbgs. This investigation is based on five (5) monitoring wells installed by DS in February 2024 in support of the hydrogeological, geotechnical and environmental investigations at the Site. The scope of work conducted at the Site is only for a preliminary investigation. Additional investigative work will be required at the detailed design stage.

This hydrogeological investigation includes an overview of the existing geological and hydrogeological conditions at the Site and the surrounding area. This investigation also provides an estimation of construction dewatering and impact assessment associated with the potential dewatering activities. The findings from this investigation will determine the dewatering and discharge permitting requirements from the Ministry of the Environment, Conservation and Parks (MECP) and the City of Toronto. Based on the results of this investigation, the following conclusions and recommendations are presented:

1. Based on the review of the MECP WWRs, there are thirty-one (31) water wells within a 500 m radius of the Site. All wells were noted as monitoring/test holes (MO/TH), not in use (NU), or had unknown status. Groundwater level was reported to range from 2.7 to 6.4 mbgs within the study area. The study area is fully serviced by municipal water and therefore, no groundwater users are expected in the area.
2. In February 2024, test drilling of five (5) boreholes was carried out by a licensed water well contractor as part of the subsurface investigation at the Site. The boreholes were advanced to 12.3 to 20.3 mbgs (135.7 to 148.7 masl). All boreholes were equipped with a monitoring well, with a 3.05 m screens installed to depths ranging from 7.6 to 15.2 mbgs (145.7 to 152.6 masl). The monitoring wells were developed before any use to allow for groundwater level monitoring, hydraulic conductivity testing, and to assess groundwater quality.

3. The stratigraphy at the Site generally consists of till (clayey silt, sandy silt to silty sand) with underlying occasional silty sand deposits. The overburden extended to the maximum explored depth of the boreholes. Shale bedrock was not encountered and is not anticipated to influence current groundwater conditions at the Site.

4. The groundwater levels were measured on March 6th by DS. The groundwater levels ranged from 3.5 to 4.5 mbgs (156.4 to 156.7 masl) in shallow wells and 8.0 to 11.8 mbgs (149.4 to 150.4 masl) in deep wells. The groundwater flow direction in the study area was inferred south towards West Highland Creek located approximately 2 km from the Site. A bi-weekly groundwater level monitoring program has been implemented to comply with the City of Toronto Terms of Reference (ToR) for discharge permitting.

5. Five (5) Single Well Response Test (slug test) were completed by DS in March 2024, to estimate hydraulic conductivity (k) for the representative geological units in which the well was screened. The resulting hydraulic conductivity values ranged from 1.8×10^{-7} to 2.1×10^{-9} m/s and is indicative of low to medium permeable soils.

6. One (1) unfiltered groundwater sample was collected from monitoring well BH24-3 on March 5th, 2024, and submitted to SGS Laboratories in Lakefield, Ontario. SGS is certified by the Canadian Association of Laboratory Accreditation Inc. (CALA) and Canadian Standard Association (CSA). The analytical results were compared to the parameter limits listed under the City of Toronto sanitary and storm sewer by-law 100_2016. The reported analytical results indicate that only Total Suspended Solids (TSS) and total manganese exceeded storm sewer criteria. No exceedances were reported when compared to sanitary sewer discharge criteria.

7. Based on the current groundwater table at the Site, excavation activities are anticipated to occur below the groundwater table for potential P2 to P4. The total estimated water discharge for P2 to P4 ranges from approximately 47,750 L/day (47.8 m^3/day) to 57,000 L/day (57 m^3/day). These values incorporate a 50% safety factor and a 10 mm precipitation event during construction. Based on Sichardt equation, the zones of influence (ZOI) for the potential underground structures at the Site ranges from approximately 38 to 45 m.

8. Since the potential underground structure will be below the groundwater table, permanent drainage is required. As of January 1st, 2022, the City of Toronto has introduced a Foundation Drainage Policy and guidelines which are applicable to all new developments applications to the City of Toronto under the Ontario Planning Act. Therefore, permanent drainage for the proposed development will not be permitted.

9. Since the expected design dewatering rate for the unsealed excavation for P3 and P4 are above the MECP's minimum pumping daily water taking limit of 50,000 L/day, an EASR will be required to be submitted to the MECP prior to construction at the Site. An EASR application is also recommended for the construction of P2 to account for any unforeseen conditions at the Site. A discharge permit will be required from the City of Toronto if private water is to be sent to the sewer system for a short-term discharge.

10. The groundwater quality at the Site is not suitable for direct discharge into the City's storm sewers without pre-treatment. The groundwater can be discharged to the sanitary sewer with no treatment. However, basic treatment is recommended to be implemented at the Site. Treatment options include but not limited to the settlement of suspended solids and filtration to remove fines and associated metals.
11. The MECP PTTW Open Data Catalogue search indicated that there is one (1) active PTTW within a 1 km radius of the Site. The PTTW location does not fall within the estimated ZOI, and the proposed construction is not anticipated to influence nearby water taking activities.
12. The Site and study area are located within the Toronto Source Protection Area (SPA). The Site and study area are not located within a Highly Vulnerable Aquifer (HVA), Significant Groundwater Recharge Area (SGRA), Wellhead Protection Area (WHPA) or within an Intake Protection Zone (IPZ).
13. In conformance with Regulation 903 of the Ontario Water Resources Act, the decommissioning of any monitoring wells should be carried out by a licensed contractor under the supervision of a licensed water well technician.

Should you have any questions regarding these findings, please contact the undersigned.

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1.0 INTRODUCTION

DS Consultants Limited (DS) was retained by CAPREIT to complete a preliminary hydrogeological investigation for the proposed development at 1050 Markham Road, Toronto, ON (Site). The Site is currently occupied by a 19-storey residential apartment building and includes one (1) level of basement and one (1) level of underground parking located west of the building and beneath the current exterior asphalt surface parking area. It is DS' understanding that an infill development is being considered south of the existing building on the property with a high-rise building(s) with two (2) to four (4) levels of underground parking (P2 to P4). Detailed design was not available at the time of the current investigation. Therefore, P2 to P4 is estimated to extend approximately 7 to 13 mbgs.

This investigation is based on five (5) monitoring wells installed by DS in February 2024 in support of the hydrogeological, geotechnical and environmental investigations at the Site. The scope of work conducted at the Site is only for a preliminary investigation. Additional investigative work will be required at the detailed design stage.

This hydrogeological investigation includes an overview of the existing geological and hydrogeological conditions at the Site and the surrounding area. This investigation also provides an estimation of construction dewatering and impact assessment associated with the potential dewatering activities. The findings from this investigation will determine the dewatering and discharge permitting requirements from the Ministry of the Environment, Conservation and Parks (MECP) and the City of Toronto. This hydrogeological assessment was prepared in accordance with the Ontario Water Resources Act, Ontario Regulation 387/04, and with the Toronto Municipal Code Chapter 681-Sewers.

1.1 Purpose

The purpose of this investigation was to review and determine the need for dewatering, estimate dewatering rates, assess groundwater quality, and determine the need for a Permit to Take Water (PTTW) or an Environmental Activity Sector Registry (EASR) from the Ministry of Environment and Conservation and Parks (MECP) and the City of Toronto. Potential impacts related to construction dewatering and associated monitoring/mitigation measures were also to be investigated.

1.2 Scope of Work

The scope of work for this investigation included:

- Site visits;
- Desktop review of pertinent geological and hydrogeological resources;
- Review the MECP Water Well Records and water use in the surrounding area;
- Fieldwork including monitoring well drilling program consisting of five (5) boreholes all equipped as monitoring wells;

- Conducting single well response tests (slug tests) to determine hydraulic conductivity values across the Site;
- Characterize the stratigraphy and measure the groundwater levels across the Site;
- Collection and analysis of a groundwater sample to quantify and characterize any possible contaminants that may impact future discharge applications;
- Estimation of construction dewatering volumes, which is to be used to predict the short-term groundwater control requirements for the construction of the proposed building on Site.

2.0 FIELDWORK

In February 2024, test drilling of five (5) boreholes was carried out by a licensed water well contractor. A representative from DS was onsite for all drilling activity. The boreholes were advanced to 12.3 to 20.3 mbgs (135.7 to 148.7 masl). All boreholes were equipped with a monitoring well, with a 3.05 m screens installed to depths ranging from 7.6 to 15.2 mbgs (145.7 to 152.6 masl). The monitoring wells were developed before any use to allow for groundwater level monitoring, hydraulic conductivity testing, and to assess groundwater quality. Five (5) single well response test (SWRT) were completed by performing a rising head test to estimate hydraulic conductivity values of the soils on Site. One (1) unfiltered groundwater sample was also collected and analyzed for the parameters listed under the City of Toronto Sewer Use Bylaw to assess groundwater quality before any discharge to the City's sewers system. The borehole and monitoring well location plan in shown in **Figure 3**.

3.0 PHYSICAL SETTING

Available topographic maps, environmental, geotechnical, and hydrogeological reports were used to develop an understanding of the physical setting of the study area. Borehole logs and the Ministry of the Environment, Conservation and Parks Water Wells Records (MECP WWRs) were used to interpret the geological and hydrogeological conditions at the development Site.

3.1 Physiography and Drainage

The topography at the development Site generally slopes south towards West Highland Creek, located approximately 2 km from the Site. Based on borehole logs, surface elevation across the Site is ranges from approximately 159.3 to 161.3 masl. Drainage in the study area is generally controlled by streams, artificial channels, the local topography, and may also be influenced by fill and underground utilities.

3.2 Geology

The following presents a brief description of regional and development Site geology based on the review of available information and development site-specific soil investigations.

3.2.1 Quaternary Geology

According to the Ontario Geological Survey (OGS) mapping across the region, the Site lies within the South Slope physiographic region of southern Ontario characterized by drumlinized till plains. The surficial geology at the Site is characterized as till (5b), consisting of stone-poor, sandy silt to silty sand-textured till on Paleozoic terrain. The surficial geology map is shown in **Figure 2.**

3.2.2 Bedrock Geology

According to the OGS mapping across the region, the bedrock at the Site is comprised of shale, limestone, dolostone, and siltstone of the Georgian Bay, Blue Mountain, Billings formations and Collingwood and Eastview member. Bedrock was not encountered during the current investigation. Based on the OGS mapping, the depth to bedrock is estimated to be approximately 119-122 masl which is approximately 38 to 41 mbgs. Groundwater from underlying bedrock is not expected to influence groundwater conditions at the Site.

3.2.3 Site Geology

On-site subsurface soil conditions were summarised from the subsurface hydrogeological investigation at the Site from the boreholes advanced by DS for the current investigation. Detailed subsurface conditions are presented on the borehole log in **Appendix A** and in the geological cross section in **Figure 5**. The subsurface conditions in the boreholes are summarized in the following paragraphs.

Topsoil

A layer of topsoil, varying in thickness from 150 to 400 mm, was present at the surface of all boreholes. Buried topsoil was also found at a deeper depth of 1.5 to 2.3 m in borehole BH24-3 and at a deeper depth of 2.5 to 3.2 m in borehole BH24-5.

Fill Materials:

Fill materials consisting of clayey silt and sandy silt to silty sand were encountered in all boreholes and extended to depths ranging from about 1.5 to 4.6 m below existing ground surface. These materials typically contain trace to some organic matter. Buried topsoil was found at a depth of 1.5 to 2.3 m within the fill materials in borehole BH24-3 and at a depth of 2.5 to 3.2 m in borehole BH24-5.

Clayey Silt Till:

Clayey silt till deposit was encountered in all boreholes and extended to depths ranging from 3.1 to 10.7 m below existing ground surface. The clayey silt till deposit was present in a firm to hard consistency, with trace cobbles/boulders.

Sandy Silt to Silty Sand Till:

Sandy silt to silty sand till deposits were encountered in all boreholes and extended to depths ranging from 12.3 to 24.5 m below existing ground surface. Boreholes BH24-2, BH24-3 and BH24-5 were terminated in

the sandy silt to silty sand till. Trace cobbles/boulders were inferred within the sandy silt till deposits during drilling.

Silty Sand:

Silty sand was encountered in boreholes BH24-1, BH24-3 and BH24-4, extending to depths of 20.0 to 22.9 m below existing grade. Boreholes BH24-1 and BH24-4 were terminated in the silty sand.

3.3 Hydrogeology

The hydrogeology at the development Site was evaluated using the on-site monitoring wells installed by DS, and the MECP WWRs in the study area.

3.3.1 Local Groundwater Use

Based on the review of the MECP WWRs, there are thirty-one (31) water wells within a 500 m radius of the Site. All wells were noted as monitoring/test holes (MO/TH), not in use (NU), or had unknown status. **Figure 1** shows the MECP water well location plan. Groundwater level was reported to range from 2.7 to 6.4 mbgs within the study area. The study area is fully serviced by municipal water and therefore, no groundwater users are expected in the area.

3.3.2 Groundwater Conditions

The groundwater level was measured on March 6th, 2024, by DS. **Table 3-1** presents the groundwater level. The groundwater level ranged from 3.5 to 4.5 mbgs (156.4 to 156.7 masl) in shallow wells and 8.0 to 11.8 mbgs (149.4 to 150.4 masl) in deep wells. Underground utilities and infilled material may influence the shallow groundwater table at the Site. Groundwater levels may also fluctuate due to seasonal variation. The groundwater flow direction in the study area is inferred to be south towards West Highland Creek. A bi-weekly groundwater level monitoring program for a period of three (3) months will be required to be implemented to meet the City ToR and to assess seasonal groundwater level fluctuations.

Table 3-1: Groundwater Levels in Monitoring Wells

Well ID	Surface Elevation (masl)	Depth (mbgs)	Groundwater Level (mbgs)	Groundwater Level (masl)
BH24-1	161.3	15.1	11.8	149.4
BH24-2	161.0	10.6	4.5	156.5
BH24-3	160.2	7.6	3.5	156.7
BH24-4	159.3	13.6	8.9	150.4
BH24-5	160.2	9.1	3.8	156.4

3.3.3 Hydraulic Conductivity

Five (5) Single Well Response Test (slug tests) was completed by DS in March 2024, to estimate hydraulic conductivity (k) for the representative geological units in which the well was screened. The testing was completed using data loggers set to 5 second intervals and placed at the bottom of the monitoring wells for 3-4 hours to accurately measure the change in the hydraulic head versus time. The Hydraulic conductivity (k) value was calculated using the Bouwer and Rice method using the AquiferTest® Software. The resulting hydraulic conductivity values ranged from 1.8×10^{-7} to 2.1×10^{-9} m/s and is indicative of low to medium permeable soils. The semi-log plot for normalized drawdown versus time is provided in **Appendix B. Table 3-2** presents the Hydraulic Conductivity (k) value for the representative geological units.

Table 3-2: Summary of Hydraulic Conductivity (k) Test Results

Well ID	Screened Interval (mbgs)	Screened Formation	k-value (m/s)
BH24-1	12.1-15.1	Sandy Silt Till	1.8×10^{-8}
BH24-2	7.6-10.6	Silty Sand Till	1.8×10^{-7}
BH24-3	4.6-7.6	Clayey Silt Till & Silty Sand to Silt Till	2.0×10^{-8}
BH24-4	10.6-13.6	Sandy Silt Till	5.5×10^{-8}
BH23-5	6.1-9.1	Clayey Silt Till & Sandy Silt Till	2.1×10^{-9}

3.3.4 Groundwater Quality

To assess the suitability for discharge of groundwater to the City of Toronto Sewers, one (1) unfiltered groundwater sample was collected from monitoring well BH24-3 on March 5th, 2024. The samples were placed in pre-cleaned laboratory supplied vials and/or bottles provided with analytical test group-specific preservatives, as required. Dedicated nitrile gloves were used during sample handling. The groundwater samples were submitted to SGS Laboratories in Lakefield, Ontario. SGS is certified by the Canadian Association of Laboratory Accreditation Inc. (CALA) and the Canadian Standard Association (CSA). The analytical results were compared to the parameter limits listed under the City of Toronto sanitary and storm sewer by-law 100_2016. The reported analytical results indicate that TSS and total manganese exceeded storm sewer criteria. No exceedances were reported against sanitary sewer criteria. **Table 3-3** presents a summary of the exceeded parameters, and the certificate of analysis is provided in **Appendix C.**

Table 3-3: Parameters in Groundwater Exceeding the Toronto Bylaw Discharge Criteria

Parameter	Unit	Storm By-Law Criteria	Sanitary By-Law Criteria	BH24-3
Total Suspended Solids (TSS)	mg/L	15	350	**68**
Manganese-Total	mg/L	0.05	5	**0.233**

Note: 0.00- Exceeded Storm Bylaw **0.00-** Exceeded Sanitary Bylaw

4.0 CONSTRUCTION DEWATERING

An infill development is being considered south of the existing building on the property with a high-rise building with two (2) to four (4) levels of underground parking (P2 to P4). Detailed design was not available at the time of the current investigation. Therefore, P2 to P4 is estimated to extend approximately 7 to 13 mbgs to approximate elevations of 152.3 to 146.3 masl. Footings are estimated to extend 2.5 m below the basement floor slabs. To maintain dry conditions within the excavation footprint groundwater levels should be lowered 1 m to an approximate elevation of 148.8 to 142.8 masl for P2 to P4. Any excavation below the groundwater table will require dewatering of any groundwater seepage into the excavation. Based on the stratigraphy at the Site, the construction is expected to be ended into the till (clayey silt and silty sand). The groundwater level at the Site was recorded to range between 3.5 to 4.5 mbgs (156.4 to 156.7 masl) in shallow wells and 8.0 to 11.8 mbgs (149.4 to 150.4 masl) in deep wells. Therefore, the excavation is anticipated to be below the groundwater table.

4.1 Estimation of Flow Rate- Unsealed Excavation Method (Construction Dewatering)

This section calculates the estimated dewatering required during the construction of the proposed building based on the above noted k-value using the steady-state flow equation for unsealed excavation as follows:

$$Q = \frac{\pi(H^2 - h^2)}{2.3 \log\left(\frac{R_0}{re}\right)}$$ Equation 4.1

$$R_0 = C(H - h)\sqrt{k}$$ Equation 4.2

$$r_e = \sqrt{\frac{ab}{\pi}}$$ Equation 4.3

	P2	P3	P4
H- Initial Elevation of Water Table (m)	8.9	11.9	14.9
h- Final Elevation of Water Table (m)	1	1	1
K- Hydraulic Conductivity (m/s)	1.8 X 10^{-7}	1.8 X 10^{-8}	1.8 X 10^{-9}
Ro- Radius of influence (m)	38	42	45
Re- Equivalent Radius (m)	27.6	27.6	27.6
A- Area (m2)	2,400	2,400	2,400
C- Dimensionless Constant	3	3	3
Flow Rate (Q) L/day	12,500	17,000	22,000
Storm water (L/day)	24,000	24,000	24,000
Maximum Flow Rate (Q) -50% safety factor + storm water (L/day)	**42,750**	**49,500**	**57,000**

Additional pumping capacity may be required to maintain dry conditions within the open excavations during and following a major precipitation event. The estimated flow rate is based on the excavation dimensions and a 10 mm precipitation event in 24 hours. The total estimated dewatering that may be required from a 10 mm precipitation event is approximately **24,000 L/day (24 m^3/day).**

The total estimated daily rate for short term construction is estimated to range from **47,750 L/day (47.8 m^3/day) to 57,000 L/day (57 m^3/day)** for P2 to P4. These values incorporate a 100% safety factor and the above-mentioned storm water. It is expected that the initial dewatering rate will be higher to remove groundwater from within the overburden formation. The dewatering rates are expected to decrease once the target water level is achieved in the excavation footprint as groundwater will have been removed locally from storage resulting in lower seepage rates into the excavation. The maximum flow calculation is intended to provide conservative values to account for unforeseeable conditions that may arise during construction.

4.2 Zone of Influence During Construction

The radius of influence (Ro) for the construction dewatering was calculated based on the Sichardt equation (Equation 4.2). Ro is the distance at which the drawdown resulting from pumping is negligible. The equation is empirical and was developed to provide representative flow rates using the steady-state flow dewatering equations as indicated above. Under steady-state conditions, Ro of pumping will extend until boundary flow conditions are reached, and sufficient water inputs are equal to the discharge rate due to pumping. Therefore, the Sichardt equation is used to provide a representative flow rate but is not precise in determining the actual radius of influence by pumping. Based on Sichardt equation the zone of influence for the proposed development at the Site ranges from approximately 38 to 45 m for P2 to P4.

4.3 Permanent Drainage (Long-term Discharge)

Following construction of the underground structure, long-term groundwater flow to the underfloor drainage system for a building will be a function of the upward flux and drainage along the foundation wall. Since the potential underground structure will be below the groundwater table, permanent drainage is anticipated. As of January 1st, 2022, The City of Toronto has introduced a Foundation Drainage Policy and guidelines which are applicable to all new developments applications to the City of Toronto under the Ontario Planning Act. Therefore, permanent drainage for the proposed development will not be permitted.

4.4 Permit Requirements

4.4.1 Environmental Activity and Sector Registry (EASR) /Permit to Take Water (PTTW) Application

An Environmental Activity Sector Registration (EASR) is required to be submitted to the Ministry of the Environment, Conservation and Parks (MECP) if the taking of groundwater and stormwater for a temporary construction project is between 50,000 L/day and 400,000 L/ day. The EASR application is an online registry and should be submitted to the MECP before any construction dewatering. A PTTW is only required to be submitted to the MECP if the taking of groundwater and stormwater for a temporary construction project is more than 400,000 L/ day, which is not expected for this proposed development.

Since the expected design dewatering rate for the unsealed excavation for P3 and P4 are above the MECP's minimum pumping daily water taking limit of 50,000 L/day, an EASR will be required to be submitted to the MECP prior to construction at the Site. An EASR application is also recommended for the construction of P2 to account for any unforeseen conditions at the Site.

4.4.2 Discharge Permits

A discharge permit will be required from the City of Toronto if private water is to be sent to the sewer system for a short-term discharge.

5.0 POTENTIAL IMPACTS

The following are the predicted potential impacts as a result of construction dewatering:

5.1 Local Groundwater Use

The area is serviced by municipal water supply. Since groundwater is not expected to be used as a source of drinking water within the ZOI for the proposed development, there will be no short-term or long-term predicted impacts to private water wells occurring from the proposed dewatering activities.

5.2 Point of Discharge and Groundwater Quality

Groundwater quality analysis indicated that TSS and total manganese exceeded the storm Sewer Use By-Law criteria. Therefore, groundwater at the development Site is not suitable for discharge into the City's storm sewers without treatment. The groundwater can be discharged to the sanitary sewer with no treatment. However, basic treatment is recommended to be implemented at the Site. Treatment options include but not limited to the settlement of suspended solids and filtration to remove fines and associated metals.

5.3 Current PTTW Search

The MECP Permit to take Water (PTTW) Open Data Catalogue was searched within a 1 km radius of the Site. The search indicated that there is one (1) active PTTWs within 1 km of the Site. However, the PTTW locations do not fall within the estimated ZOI, and the proposed construction is not anticipated to influence nearby water taking activities. However, the groundwater interferences from nearby water taking activities may lower groundwater levels across the Site. The PTTW search is summarized in **Table 5-1** below.

Table 5-1: PTTW Search within 1 km of Site

Permit Number	Permit Holder Name	Purpose	Specific Purpose	Max Litres Per Day	Source Type	Distance (km)
2758-ABMQSA	R.A.B Properties Limited	Dewatering	Other-Dewatering	139,000	Groundwater	0.13

5.4 Source Protection Area

The Site is located within the Toronto Source Protection Area (SPA). The Source Protection Plan contains policies aimed at protecting drinking water sources by reducing or eliminating significant threats to sources of municipal drinking water. Based on the MECP WWRs, there are no groundwater users within the ZOI. Therefore, the proposed development is not anticipated to influence drinking water supply within the study area.

5.5 Highly Vulnerable Aquifer

The Site and study area are located are not located within a Highly Vulnerable Aquifer (HVA). HVAs are an aquifer susceptible to contamination because of its location near the ground's surface or where the types of materials in the ground around it are highly permeable. HVAs typically occur in areas of coarse or sandy soils with a high groundwater table. HVA impacts are not anticipated due to the proposed development.

5.6 Significant Groundwater Recharge Area

The Site and study area are not located within a Significant Groundwater Recharge Area (SGRA). A SRGA is an area where precipitation seep underground into an aquifer and one that helps maintain the water level in an aquifer that supplies a community with drinking water. Recharge may be impacted through developments that do not encourage infiltration of water back into the aquifer.

5.7 Wellhead Protection Area

The Site and study area are not located within a wellhead protection area (WHPA Q1 or WHPA Q2). WHPA Q1 refers to the area where activities that take water without retuning it to the same source may be a threat, and WHPA Q2 refer to the area where activities that reduce recharge may be a threat.

5.8 Intake Protection Zone

The Site and the study area are not located within a water intake protection zone (IPZ). No IPZ impacts are anticipated due to the proposed temporary dewatering.

5.9 Surface Water

There are no surface water features within the study area. Therefore, there are no surface water impacts anticipated from construction dewatering activities.

5.10 Well Decommissioning

Following the completion of construction activities, all dewatering wells, well points, eductors and monitoring wells installed at various stages of this project must be decommissioned. The installation and eventual decommissioning of the wells and the dewatering system must be carried out by a licenced water well contractor in accordance with Regulation 903 of the Ontario Water Resources Act.

6.0 MONITORING AND MITIGATION

Based on the finding of hydrogeological assessment and associated potential impacts due to development, the following monitoring and mitigation program is provided:

- A bi-weekly groundwater level monitoring program has been implemented for a period of three (3) months to comply with the City of Toronto TOR for discharge permitting purposes.
- Baseline groundwater quality has been assessed and established before construction. However, groundwater quality can change based on several factors (land-use change, spills, etc.) and should be monitored during construction dewatering and after construction to ensure that water quality meets the guideline or regulations associated with any permits from the MECP and City of Toronto.
- Once a groundwater dewatering system is set up at the Site, daily and weekly monitoring should be implemented to assess the groundwater conditions such as water levels, measurement of discharge flow, discharge water quality and any adverse impacts as a result of dewatering include settlement.
- Following the completion of construction activities, all dewatering wells, well points, eductors and monitoring wells installed at various stages of this project must be decommissioned. The installation and eventual decommissioning of the wells and the dewatering system must be carried out by a licensed water well contractor in accordance with Regulation 903 of the Ontario Water Resources Act.

Should you have any questions regarding these findings, please contact the undersigned.

DS Consultants Ltd.

Prepared By:

Dorothy Santos, M.Sc.
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Reviewed By:

Martin Gedeon, M.Sc., P.Geo.
Senior Hydrogeologist

7.0 REFERENCES

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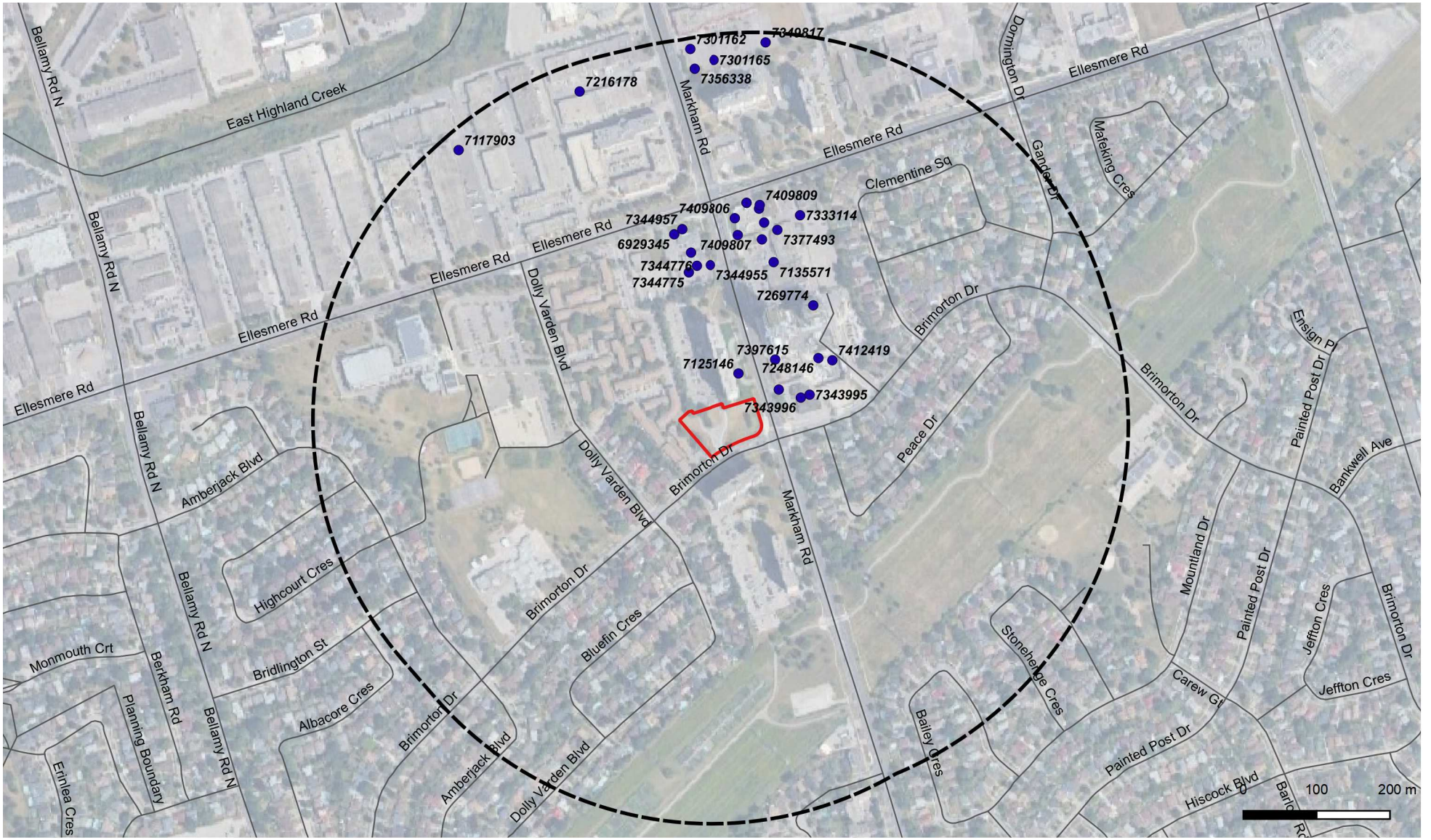
Figures

J:\-GIS\2024 PROJECTS\24-014-100 1050 Markham Road, Toronto, ON\1-QGIS\HydroG\Figure 1 – Site Location and MECP Well Records.qgs Mar-15 09:33



Legend

- Site Boundary
- 500m Buffer
- Registered Water Well (MECP WWR)

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Project: HYDROGEOLOGICAL INVESTIGATION
1050 Markham Rd., Toronto, ON

Title: **SITE LOCATION AND MECP WELL RECORDS**

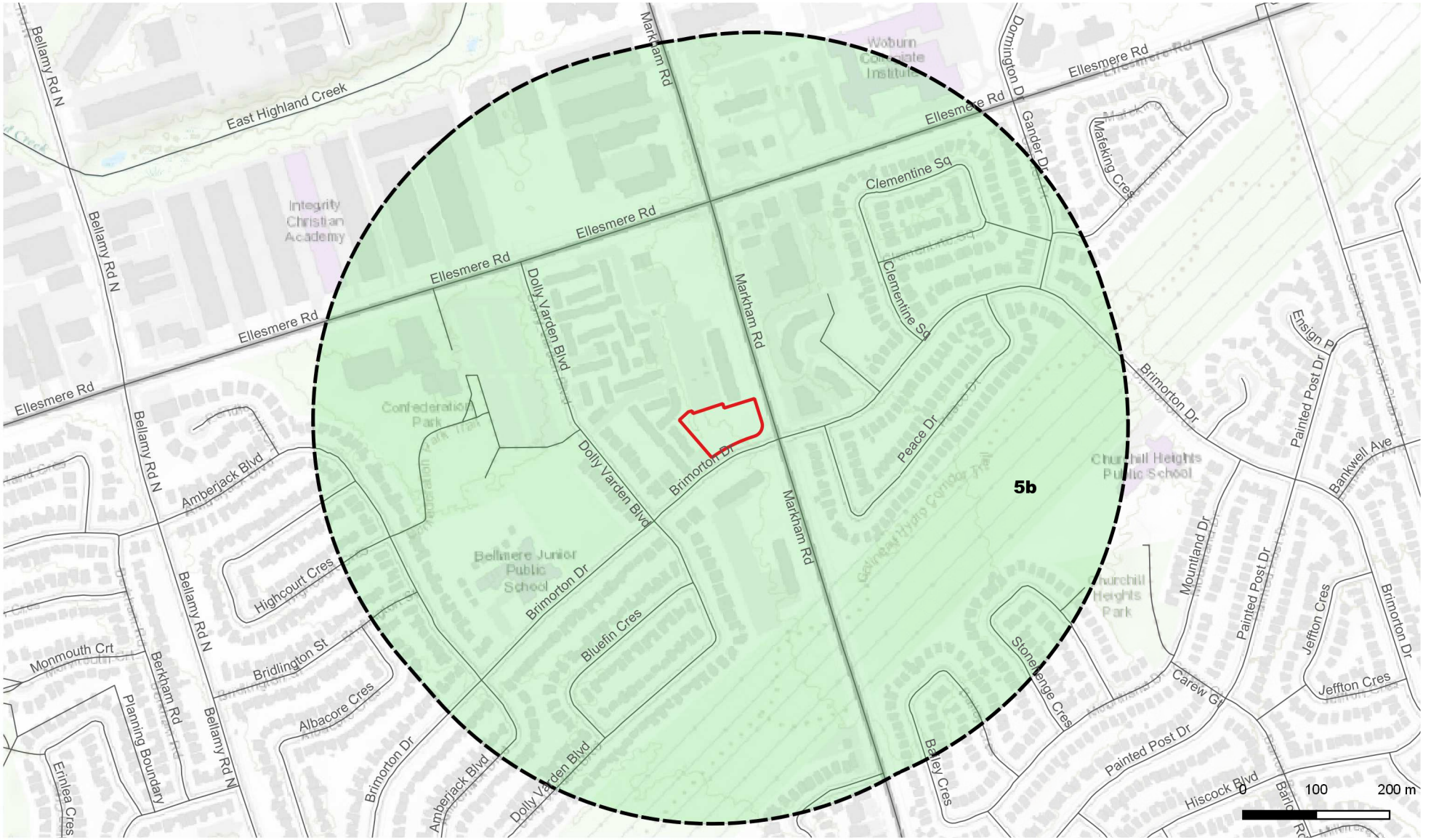
N

Client: CAPREIT

Size:	Approved By:	Drawn By:	Date:
8.5 x 11	D.S	S.Y	March 2024
Rev: 0	Scale: As Shown	Project No.: 24-014-100	Figure No.: 1

Image/Map Source: *Google Satellite Image*

J:\-GIS\2024 PROJECTS\24-014-100 1050 Markham Road, Toronto, ON\1-QGIS\HydroG\Figure 2 – Surficial Geology Map.qgs Mar-15 09:42



Legend

- Site Boundary
- 500m Buffer
- 5b - Till

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Project: HYDROGEOLOGICAL INVESTIGATION
1050 Markham Rd., Toronto, ON

Title: **SURFICIAL GEOLOGY MAP**

N

Client: CAPREIT

Size:	Approved By:	Drawn By:	Date:
8.5 x 11	D.S	S.Y	March 2024
Rev: 0	Scale: As Shown	Project No.: 24-014-100	Figure No.: 2

Image/Map Source: *Google Satellite Image*

J:\-GIS\2024 PROJECTS\24-014-100 1050 Markham Road, Toronto, ON\1-QGIS\HydroG\Figure 3 – Borehole and Monitoring Well Locations.qgs Mar-15 10:29

Legend

- Site Boundary
- Monitoring Well
- Cross Section

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Project: HYDROGEOLOGICAL INVESTIGATION
1050 Markham Rd., Toronto, ON

Title: **BOREHOLE AND MONITORING WELL LOCATIONS**

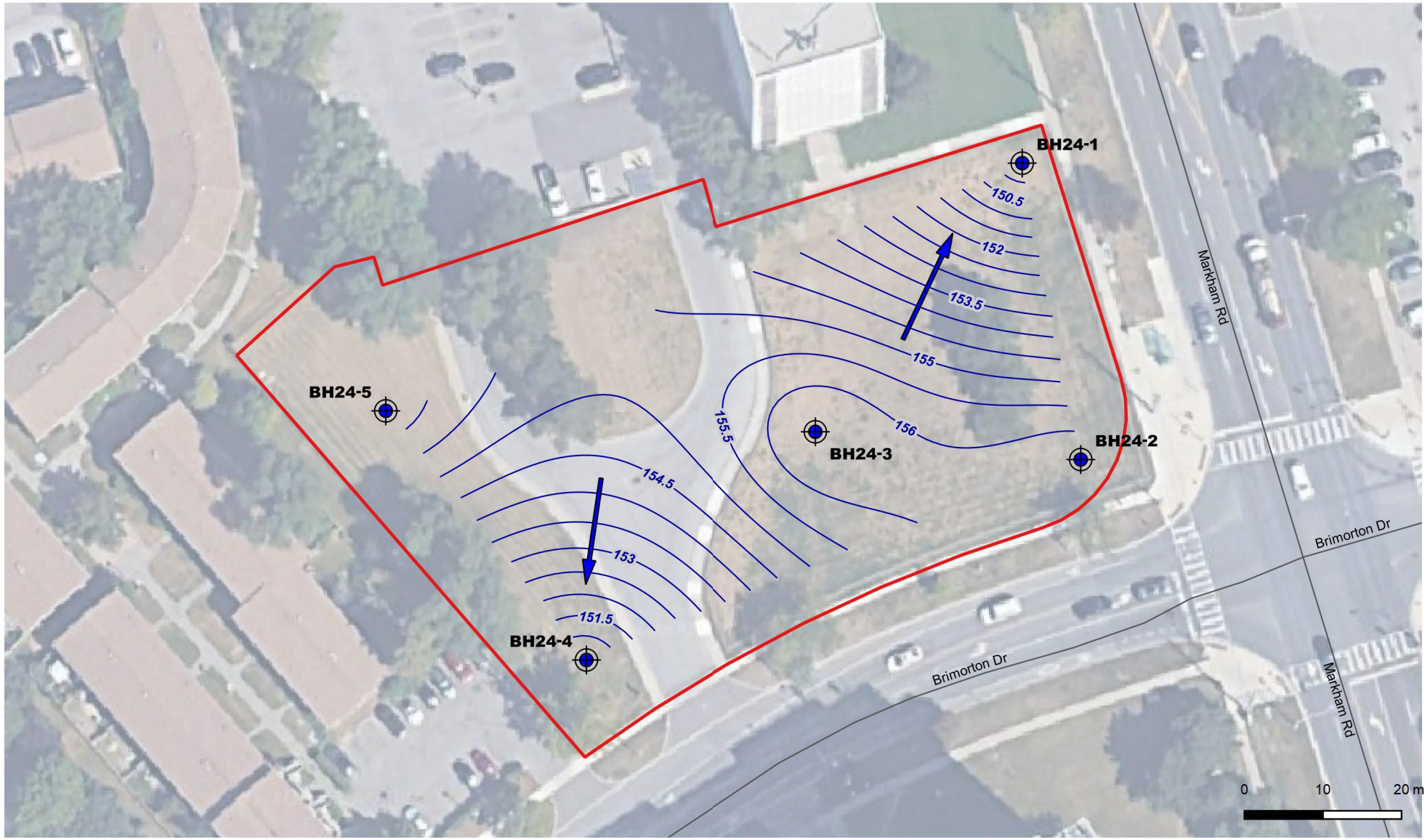
N

Client: CAPREIT

Size:	Approved By:	Drawn By:	Date:
8.5 x 11	D.S	S.Y	March 2024
Rev: 0	Scale: As Shown	Project No.: 24-014-100	Figure No.: 3

Image/Map Source: *Google Satellite Image*

J:\-GIS\2024 PROJECTS\24-014-100 1050 Markham Road, Toronto, ON\1-QGIS\HydroG\Figure 4 - Groundwater Elevation Contours and Flow Direction.qgs Mar-15 10:28



Legend

- Site Boundary
- Monitoring Well
- Inferred Groundwater Flow Direction
- Groundwater Elevation Contour March 4 2024

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Telephone: (905) 264-9393
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Client: CAPREIT

Project: HYDROGEOLOGICAL INVESTIGATION
1050 Markham Rd., Toronto, ON

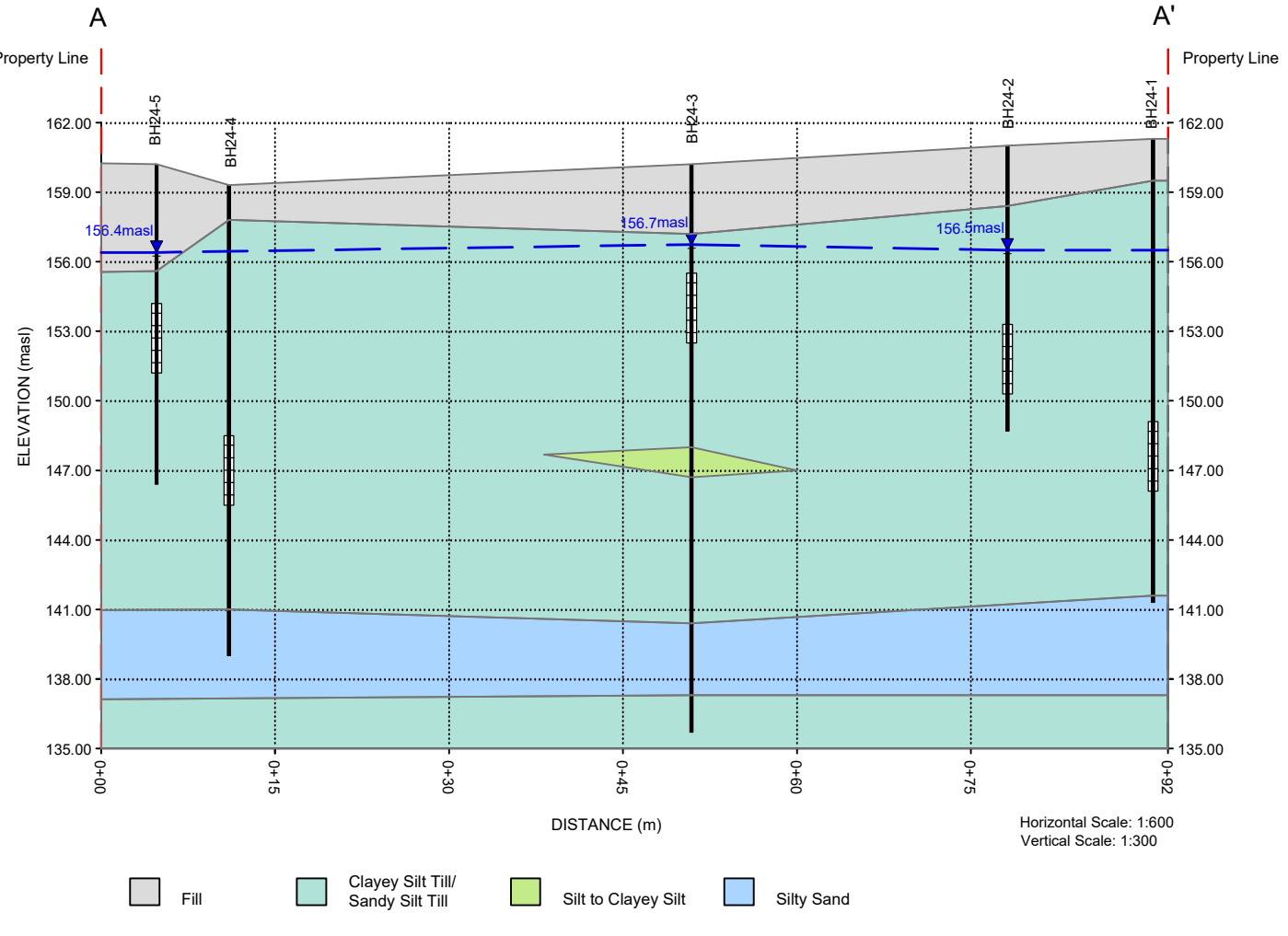
Title: **INFERRED GROUNDWATER CONTOURS AND FLOW DIRECTION MAP**

N

Size:	Approved By:	Drawn By:	Date:
8.5 x 11	D.S	S.Y	March 2024
Rev: 0	Scale: As Shown	Project No.: 24-014-100	Figure No.: 4

Image/Map Source: *Google Satellite Image*

Path:j:\-gis\2024 projects\24-014-100 1050 markham road, toronto, on\7-misc\cad\geological cross section 24-014.dwg



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Telephone: (905) 264-9393
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Project: HYDROGEOLOGICAL INVESTIGATION
1050 Markham Rd., Toronto, ON

Title: **GEOLOGICAL CROSS SECTION A-A'**

Client:	Size:	Approved By:	Drawn By:	Date:
CAPREIT	8.5 x 11	D.S	S.Y	March 2024
	Rev.	Scale:	Project No:	Figure No.
		As Shown	24-014-100	5

Appendix A

DS CONSULTANTS LTD.
Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH24-1

PROJECT: Preliminary Geotechnical Investigation
CLIENT: CAPREIT
PROJECT LOCATION: 1050 Markham Rd., Toronto, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4848287.86 E 642357.33

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Feb-07-2024

REF. NO.: 24-014-100
ENCL NO.: 2

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
161.3 / 0.0	**TOPSOIL:** 200mm				
161.1 / 0.2	**FILL:** sandy silt, trace organics, trace gravel, some clay, brown to dark brown, moist, loose	1	SS	9	161
		2	SS	8	
159.4 / 1.9	**CLAYEY SILT TILL:** sandy, trace gravel, brown, moist, stiff to very stiff	3	SS	9	160
		4	SS	10	159
		5	SS	10	158
		6	SS	18	157
		7	SS	13	156
	grey below 7.6m	8	SS	8	155
		9	SS	10	154
150.6 / 10.7	**SANDY SILT TILL:** trace to some clay, trace gravel, grey, moist, dense to very dense	10	SS	48	153
		11	SS	77	152
		12	SS	50/130mm	151
		13	SS	50/130mm	150
					149
					148
					147
					146

GROUND WATER CONDITIONS: W. L. 149.5 m Mar 05, 2024

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)	GR	SA	SI	CL
	5	44	38	13
	6	34	48	12

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG-2021-FINAL 24-014-100GEO.GPJ DS.GDT 24-3-12

LOG OF BOREHOLE BH24-1

PROJECT: Preliminary Geotechnical Investigation
CLIENT: CAPREIT
PROJECT LOCATION: 1050 Markham Rd., Toronto, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4848287.86 E 642357.33

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Feb-07-2024

REF. NO.: 24-014-100
ENCL NO.: 2

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS "N" 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	SANDY SILT TILL: trace to some clay, trace gravel, grey, moist, dense to very dense(Continued)		14	SS	50/ 130mm		145					
							144					
							143					
							142					
141.6 19.7	**SILTY SAND:** trace clay, trace gravel, grey, wet, very dense		15	SS	50/ 100mm							
141.3 20.0	**END OF BOREHOLE:**											

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water Level Readings:

Date:	Water Level(mbgl):
Mar. 5, 2024	11.84

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH24-2

PROJECT: Preliminary Geotechnical Investigation
CLIENT: CAPREIT
PROJECT LOCATION: 1050 Markham Rd., Toronto, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4848250.09 E 642364.78

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Feb-07-2024

REF. NO.: 24-014-100
ENCL NO.: 3

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
161.0 / 0.0	**TOPSOIL:** 200mm				
160.8 / 0.2	**FILL:** clayey silt, trace organics, trace sand,, brown to dark brown, moist, firm to stiff	1	SS	7	
		2	SS	12	160
		3	SS	5	159
158.4 / 2.6	layer of sand till at 2.3m	4	SS	14	
	CLAYEY SILT TILL: sandy, trace to some gravel, brown to grey, moist, stiff to hard	5	SS	18	158
					157
		6	SS	35	156
	grey below 6.1m	7	SS	11	155
					154
153.5 / 7.5	**SILTY SAND TILL:** some clay, trace gravel, brown to grey, moist, loose	8	SS	6	153
152.0 / 9.0	**SILTY SAND TILL:** some clay, trace gravel, brown to grey, moist, dense to very dense	9	SS	32	152
					151
		10	SS	84	150
148.7 / 12.3	**END OF BOREHOLE:**	11	SS	50/ 130mm	149

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water Level Readings:

Date: Water Level(mbgl):
Mar. 5, 2024 4.45

W. L. 156.5 m
Mar 05, 2024

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

	GR	SA	SI	CL
	10	42	35	13
	5	49	36	10

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
● ε=3% Strain at Failure

DS SOIL LOG-2021-FINAL 24-014-100GEO.GPJ DS.GDT 24-3-12

DS CONSULTANTS LTD.
Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH24-3

PROJECT: Preliminary Geotechnical Investigation
CLIENT: CAPREIT
PROJECT LOCATION: 1050 Markham Rd., Toronto, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4848253.63 E 642330.99

DRILLING DATA
Method: Hollow Stem Auger/Mud Rotary
Diameter: 200mm
Date: Feb-12-2024

REF. NO.: 24-014-100
ENCL NO.: 4

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
160.2								
160.0 / 0.2	**TOPSOIL:** 200mm							
159.4	**FILL:** silty sand, gravelly, grey, moist, compact		1	SS	25		160	
1 0.8 / 158.7	**FILL:** silty sand to sandy silt, trace rootlets, some clay, trace organics, dark brown to brown, moist, loose		2	SS	6		159	
1.5 / 157.9	**TOPSOIL:**		3	SS	10		158	
2.3 / 157.2	**FILL:** clayey silt, trace organics, brown, moist, firm		4	SS	5		157	
3.0	**CLAYEY SILT TILL:** sandy, trace gravel, trace cobbles/boulders, brown, sand seams, moist, very stiff		5	SS	21	▽		Switched to Mud rotary
	grey below 4.6m		6	SS	16		156	
154.2							155	
6.0	**SILTY SAND TO SANDY SILT TILL:** some clay, trace gravel, grey, moist, loose to compact		7	SS	8		154	4 44 40 12
	wet sand layer at 7.6m		8	SS	14		153	
			9	SS	12		152	
			10	SS	19		151	
148.0							150	
12.2	**SILT TO CLAYEY SILT:** trace sand, trace gravel, grey, moist, very dense		11	SS	50/ 50mm		149	
146.7							148	
13.5	**SANDY SILT TILL:** trace to some clay, trace gravel, grey, moist, very dense		12	SS	50/ 75mm		147	
	clayey at 15.2m		13	SS	88		146	
							145	

W. L. 156.7 m
Mar 05, 2024

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG-2021-FINAL 24-014-100GEO.GPJ DS.GDT 24-3-12

LOG OF BOREHOLE BH24-3

PROJECT: Preliminary Geotechnical Investigation
CLIENT: CAPREIT
PROJECT LOCATION: 1050 Markham Rd., Toronto, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4848253.63 E 642330.99

DRILLING DATA
Method: Hollow Stem Auger/Mud Rotary
Diameter: 200mm
Date: Feb-12-2024

REF. NO.: 24-014-100
ENCL NO.: 4

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS "N" 0.3 m	GROUND WATER CONDITIONS	ELEVATION
17	**SANDY SILT TILL:** trace to some clay, trace gravel, grey, moist, very dense(Continued) very moist to wet below 16.5m		14	SS	50/ 75mm		144
18							143
19			15	SS	50/ 130mm		142
140.4							141
20 19.8	**SILTY SAND:** trace clay, trace gravel, grey, wet, very dense		16	SS	50/ 50mm		140
21							139
22	gravelly at 21.3m		17	SS	50/ 25mm		138
137.3							
23 22.9	**SANDY SILT TILL:** trace clay, trace gravel, grey, moist, very dense		18	SS	50/ 25mm		137
24							136
135.7							
24.5	**END OF BOREHOLE:** Notes: 1) 50mm dia. monitoring well installed upon completion. 2) Water Level Readings: Date: Water Level(mbgl): Mar. 5, 2024 3.46		19	SS	50/ 50mm		

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)
REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH24-4

PROJECT: Preliminary Geotechnical Investigation
CLIENT: CAPREIT
PROJECT LOCATION: 1050 Markham Rd., Toronto, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4848224.55 E 642301.72

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Feb-09-2024

REF. NO.: 24-014-100
ENCL NO.: 5

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
159.3					
0.0 / 158.9	**TOPSOIL:** 400mm	1	SS	4	159
0.4	**FILL:** sandy silt, trace organics, some clay, brown to dark brown, moist to wet, loose to compact	2	SS	19	
157.8					158
1.5	**CLAYEY SILT TILL:** sandy, trace gravel, brown to grey, moist, firm to stiff	3	SS	7	
		4	SS	9	157
156.1					
3.2	**SILTY SAND TO SANDY SILT TILL:** some clay, trace gravel, grey, moist, loose to compact	5	SS	12	156
	layer of wet gravelly sand at 4.0m				
		6	SS	19	155
					154
		7	SS	8	153
					152
		8	SS	14	
					151
		9	SS	12	
148.8					149
10.5	**SANDY SILT TILL:** trace to some clay, trace gravel, grey, moist, very dense	10	SS	90	
					148
		11	SS	50/ 130mm	147
	layer of silty sand, wet at 13.7m				146
		12	SS	50/ 130mm	
					145
		13	SS	50/ 130mm	144

GROUND WATER CONDITIONS: W. L. 150.4 m Mar 05, 2024

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)	GR	SA	SI	CL
	7	42	39	12
	1	20	65	14

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG-2021-FINAL 24-014-100GEO.GPJ DS.GDT 24-3-12

LOG OF BOREHOLE BH24-4

PROJECT: Preliminary Geotechnical Investigation
CLIENT: CAPREIT
PROJECT LOCATION: 1050 Markham Rd., Toronto, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4848224.55 E 642301.72

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Feb-09-2024

REF. NO.: 24-014-100
ENCL NO.: 5

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS "N" 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	SANDY SILT TILL: trace to some clay, trace gravel, grey, moist, very dense(Continued)		14	SS	50/ 100mm		143					
17												
18 141.0							142					
18.3	**SILTY SAND:** trace clay, trace gravel, grey, wet, very dense		15	SS	50/ 130mm		141					8 59 28 5
19												
20 139.0			16	SS	50/ 130mm		140					
20.3	**END OF BOREHOLE:** Notes: 1) 50mm dia. monitoring well installed upon completion. 2) Water Level Readings: Date: Water Level(mbgl): Mar. 5, 2024 8.92						139					

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG-2021-FINAL 24-014-100GEO.GPJ DS.GDT 24-3-12

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LOG OF BOREHOLE BH24-5

PROJECT: Preliminary Geotechnical Investigation
CLIENT: CAPREIT
PROJECT LOCATION: 1050 Markham Rd., Toronto, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4848256.3 E 642276.17

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Feb-08-2024

REF. NO.: 24-014-100
ENCL NO.: 6

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
160.2					
160.0 / 0.2	**TOPSOIL:** 150mm				
	FILL: sandy silt, trace organics, trace gravel, some clay, brown to dark brown, moist, loose to compact	1	SS	5	160
		2	SS	22	
	dark brown at 1.5m	3	SS	23	159
157.7					
2.5	**FILL:** topsoil	4	SS	12	158
157.0					
3.2	**FILL:** clayey silt, sandy, trace organics, dark grey, moist, stiff to very stiff	5	SS	15	157
					W. L. 156.4 m Mar 05, 2024
155.6					
4.6	**CLAYEY SILT TILL:** sandy, trace gravel, brown to grey, moist, very stiff	6	SS	20	155
	grey below 6.4m	7	SS	17	154
152.6					
7.6	**SANDY SILT TILL:** trace to some clay, trace gravel, grey, moist, compact	8	SS	16	153
					152
		9	SS	14	151
					150
		10	SS	11	149
	very dense below 12.2m	11	SS	50/ 140mm	148
146.4					147
13.8	**END OF BOREHOLE:**	12	SS	50/ 130mm	

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water Level Readings:

Date:	Water Level(mbgl):
Mar. 5, 2024	3.8

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
3	41	44	12

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

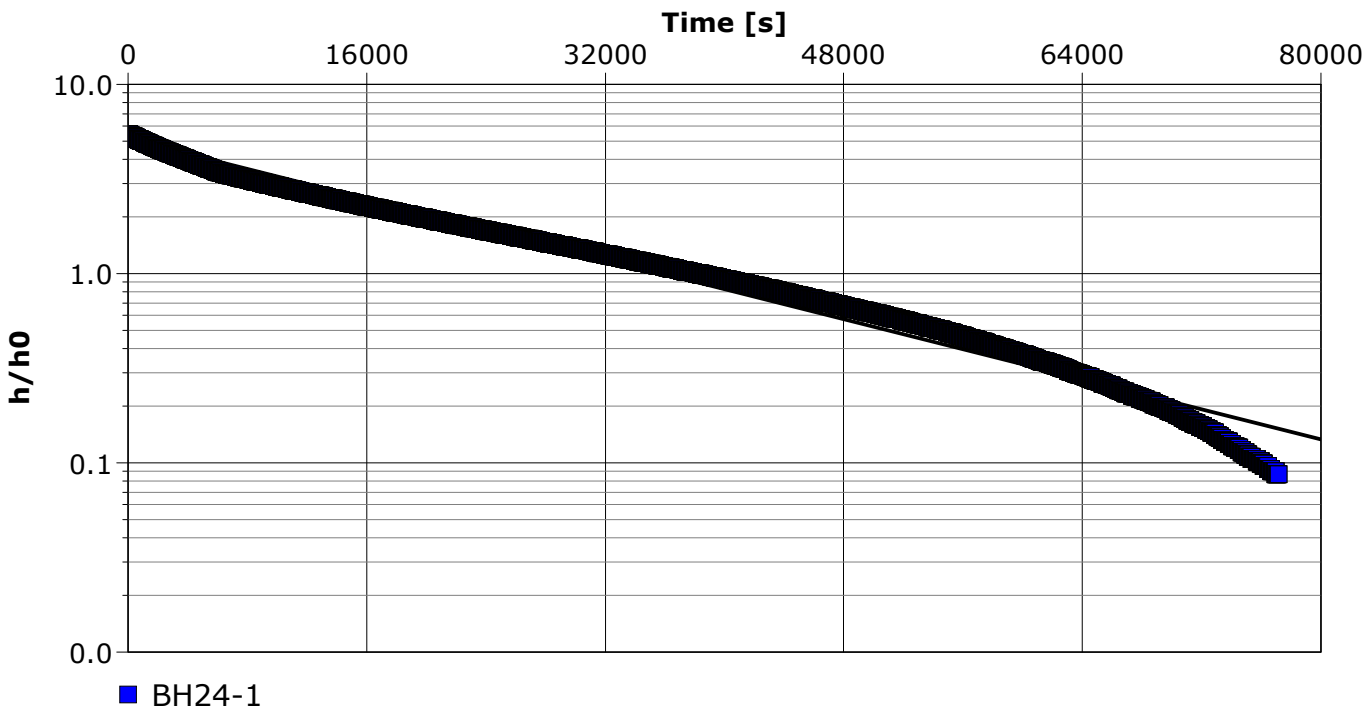
GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG-2021-FINAL 24-014-100GEO.GPJ DS.GDT 24-3-12

Appendix B

	Slug Test Analysis Report
	Project: 1050 Markham Road
	Number: 24-014-100
	Client: CAPREIT

Location: Toronto,ON	Slug Test: BH24-1	Test Well: BH24-1
Test Conducted by: KS		Test Date: 3/5/2024
Analysis Performed by: DS	BH24-1	Analysis Date: 1/25/2024
Aquifer Thickness: 20.00 m		

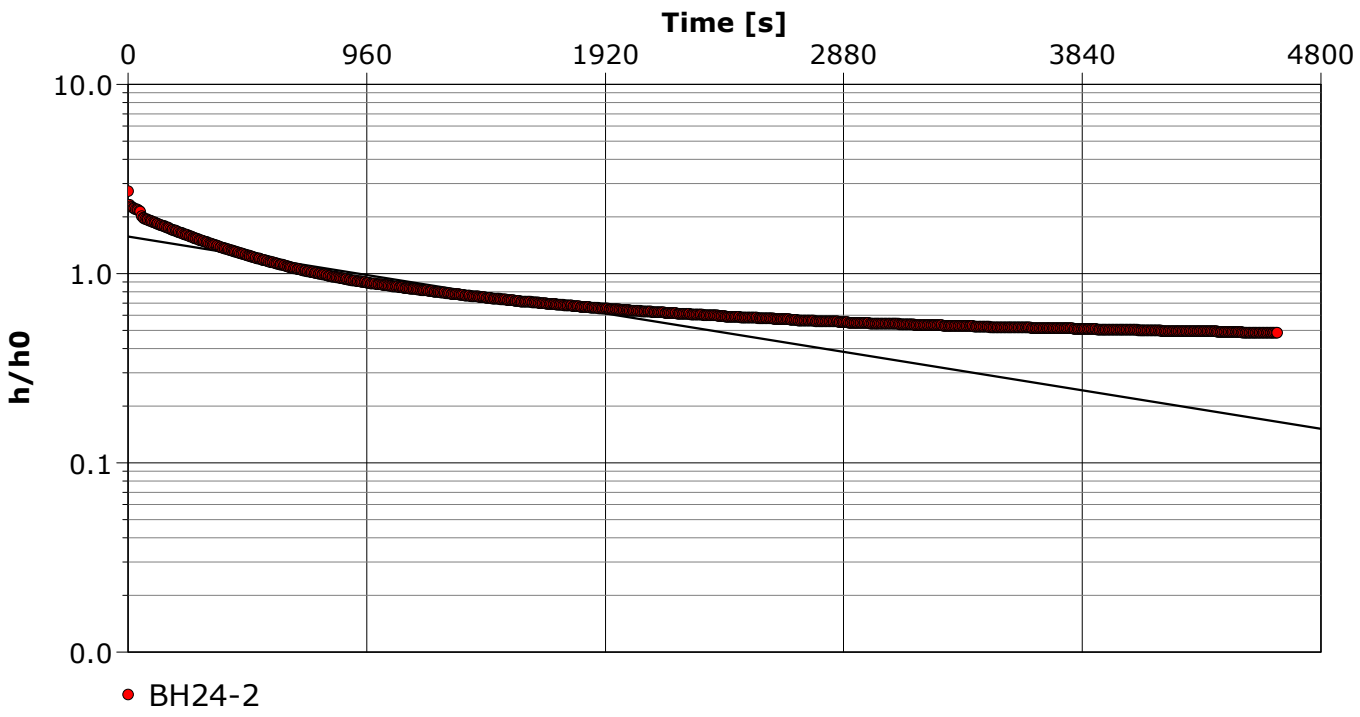


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH24-1	1.80×10^{-8}	

	Slug Test Analysis Report
	Project: 1050 Markham Road
	Number: 24-014-100
	Client: CAPREIT

Location: Toronto,ON	Slug Test: BH24-2	Test Well: BH24-2
Test Conducted by: KS		Test Date: 3/5/2024
Analysis Performed by: DS	BH24-2	Analysis Date: 3/8/2024
Aquifer Thickness: 20.00 m		

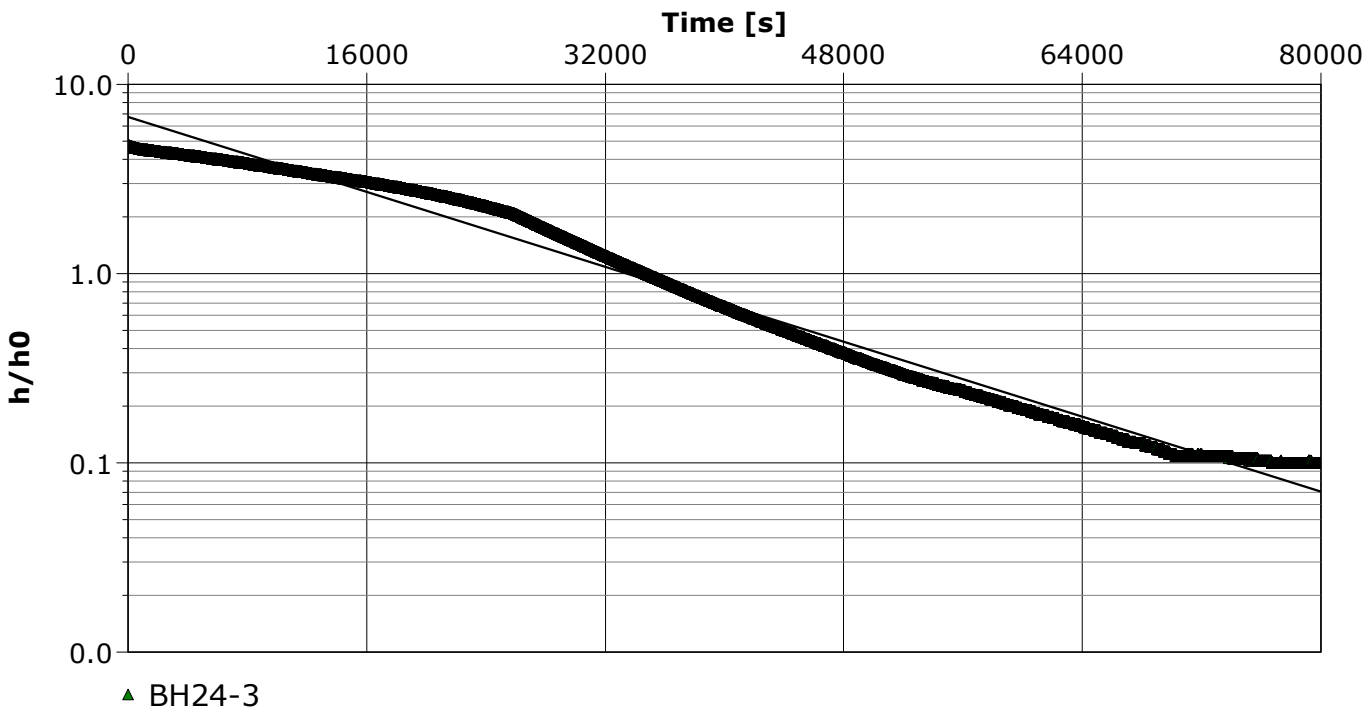


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH24-2	1.81×10^{-7}	

	Slug Test Analysis Report
	Project: 1050 Markham Road
	Number: 24-014-100
	Client: CAPREIT

Location: Toronto,ON	Slug Test: BH24-3	Test Well: BH24-3
Test Conducted by: KS		Test Date: 3/5/2024
Analysis Performed by: DS	BH24-3	Analysis Date: 3/8/2024
Aquifer Thickness: 20.00 m		

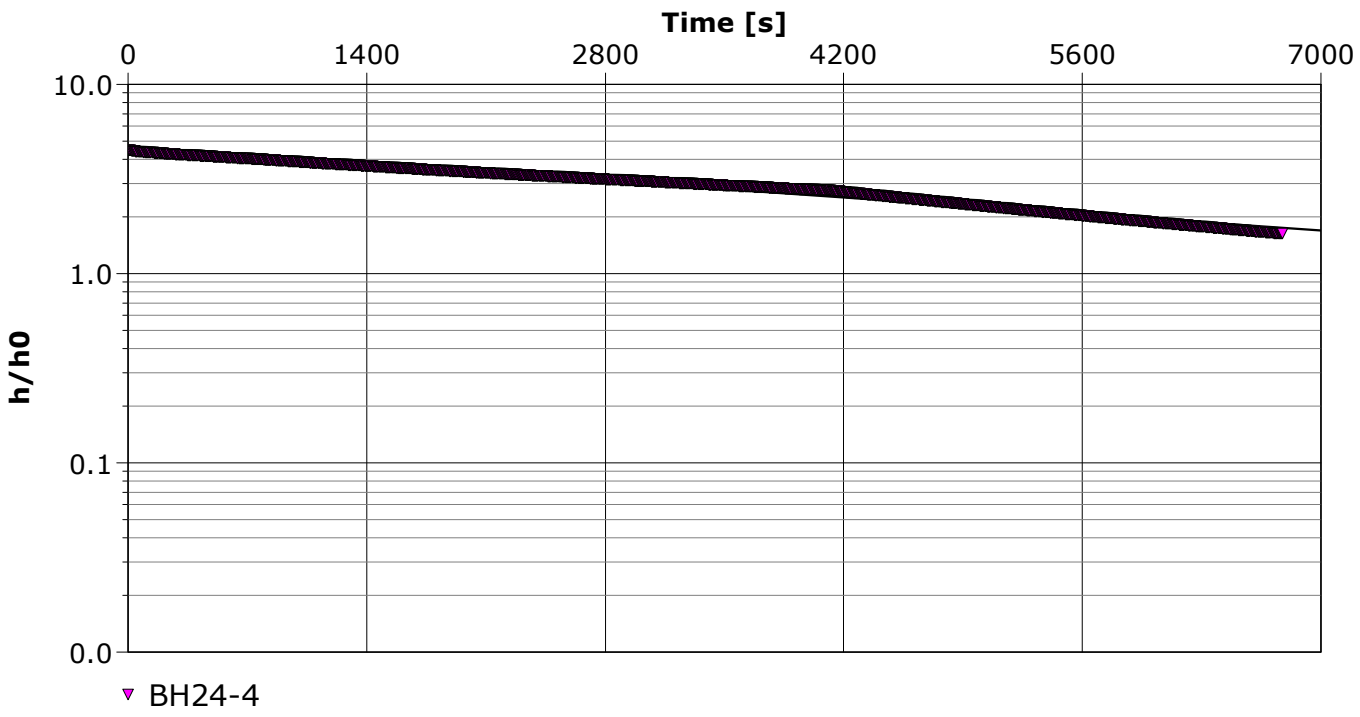


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH24-3	2.02×10^{-8}	

	Slug Test Analysis Report
	Project: 1050 Markham Road
	Number: 24-014-100
	Client: CAPREIT

Location: Toronto,ON	Slug Test: BH24-4	Test Well: BH24-4
Test Conducted by:		Test Date: 3/8/2024
Analysis Performed by: DS	BH24-4	Analysis Date: 3/8/2024
Aquifer Thickness: 20.00 m		

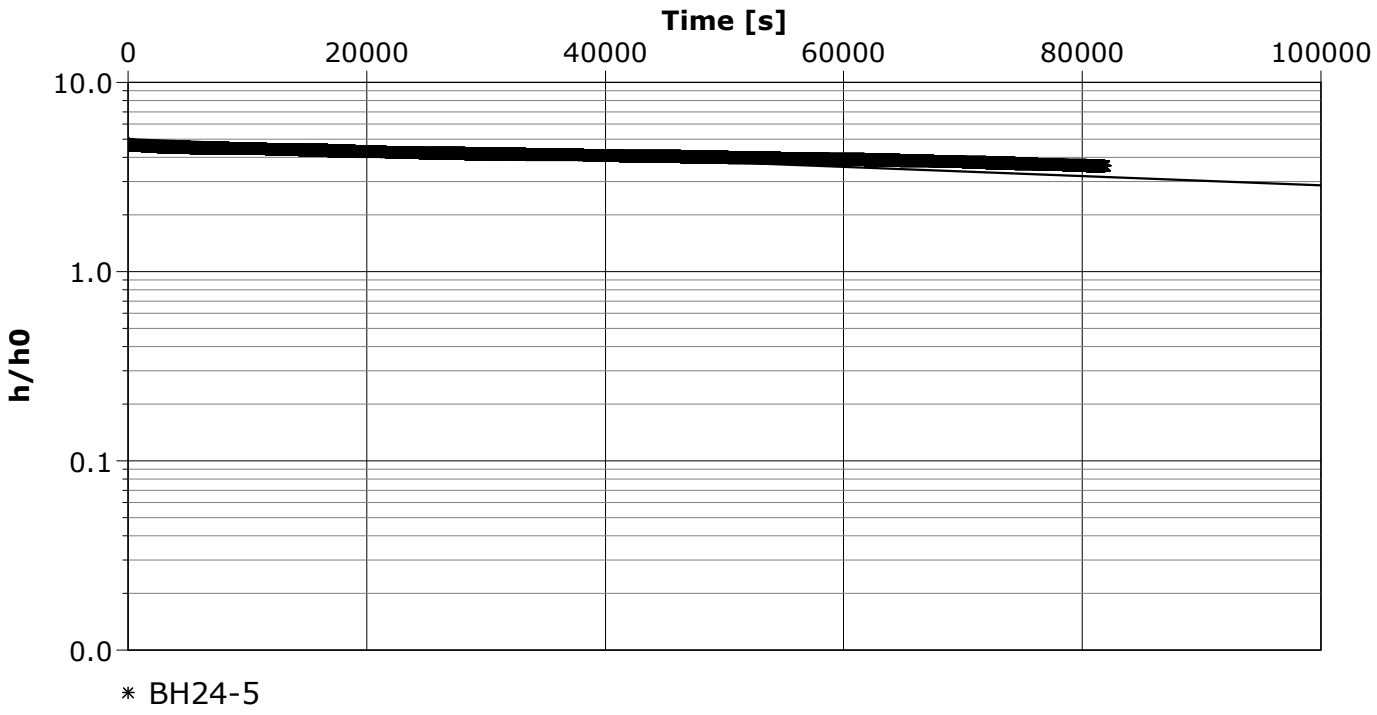


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH24-4	5.54×10^{-8}	

	Slug Test Analysis Report
	Project: 1050 Markham Road
	Number: 24-014-100
	Client: CAPREIT

Location: Toronto,ON	Slug Test: BH24-5	Test Well: BH24-5
Test Conducted by:		Test Date: 3/8/2024
Analysis Performed by: DS	BH24-5	Analysis Date: 3/8/2024
Aquifer Thickness: 20.00 m		



Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH24-5	2.06×10^{-9}	

Appendix C

FINAL REPORT

CA40014-MAR24 R1

24-014-100, 1050 Markham Rd, Sc arborough ON

Prepared for

DS Consultants

FINAL REPORT

First Page

CLIENT DETAILS

Client	DS Consultants
Address	6221 Highway 7 Unit 16 Vaughan, Ontario L4H 0K8. Canada
Contact	Meysam Jafari
Telephone	905-264-9393
Facsimile	905-264-2685
Email	mjafari@dsconsultants.ca
Project	24-014-100, 1050 Markham Rd, Sc arborough ON
Order Number	
Samples	Ground Water (1)

LABORATORY DETAILS

Project Specialist	Brad Moore Hon. B.Sc
Laboratory	SGS Canada Inc.
Address	185 Concession St., Lakefield ON, K0L 2H0
Telephone	705-652-2143
Facsimile	705-652-6365
Email	brad.moore@sgs.com
SGS Reference	CA40014-MAR24
Received	03/05/2024
Approved	03/12/2024
Report Number	CA40014-MAR24 R1
Date Reported	03/12/2024

COMMENTS

RL - SGS Reporting Limit

Nonylphenol Ethoxylates is the sum of nonylphenol monoethoxylate and nonylphenol diethoxylate.

Temperature of Sample upon Receipt: 7 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Chain of Custody Number: 035687

SIGNATORIES

Brad Moore Hon. B.Sc

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Client: DS Consultants
Project: 24-014-100, 1050 Markham Rd, Sc arborough ON
Project Manager: Meysam Jafari
Samplers: Chaitanya

MATRIX: WATER

L1 = SANSEW / WATER / - - Toronto Sewer Use By Law - Sanitary and Combined Sewer Discharge - BL_100_2016

L2 = SANSEW / WATER / - - Toronto Sewer Use By Law - Storm Sewer Discharge - BL_100_2016

Sample Number	8
Sample Name	BH 24-3
Sample Matrix	Ground Water
Sample Date	05/03/2024

Parameter	Units	RL	L1	L2	Result
General Chemistry					
Biochemical Oxygen Demand (BOD5)	mg/L	2	300	15	< 4 ↑
Total Kjeldahl Nitrogen	as N mg/L	0.5	100		< 0.5
Total Suspended Solids	mg/L	2	350	15	68
Metals and Inorganics					
Fluoride	mg/L	0.06	10		0.14
Cyanide (total)	mg/L	0.01	2	0.02	< 0.01
Aluminum (total)	mg/L	0.001	50		0.250
Antimony (total)	mg/L	0.0009	5		< 0.0009
Arsenic (total)	mg/L	0.0002	1	0.02	0.0008
Cadmium (total)	mg/L	0.000003	0.7	0.008	0.000009
Chromium (total)	mg/L	0.00008	4	0.08	0.00107
Cobalt (total)	mg/L	0.000004	5		0.00113
Copper (total)	mg/L	0.001	2	0.04	< 0.001
Lead (total)	mg/L	0.00009	1	0.12	0.00022
Manganese (total)	mg/L	0.00001	5	0.05	0.233
Molybdenum (total)	mg/L	0.0004	5		0.0044
Nickel (total)	mg/L	0.0001	2	0.08	0.0038
Phosphorus (total)	mg/L	0.003	10	0.4	0.019
Selenium (total)	mg/L	0.00004	1	0.02	0.00019
Silver (total)	mg/L	0.00005	5	0.12	< 0.00005
Tin (total)	mg/L	0.00006	5		0.00110

Client: DS Consultants
Project: 24-014-100, 1050 Markham Rd, Sc arborough ON
Project Manager: Meysam Jafari
Samplers: Chaitanya

MATRIX: WATER

L1 = SANSEW / WATER / - - Toronto Sewer Use By Law - Sanitary and Combined Sewer Discharge - BL_100_2016

L2 = SANSEW / WATER / - - Toronto Sewer Use By Law - Storm Sewer Discharge - BL_100_2016

Sample Number	8
Sample Name	BH 24-3
Sample Matrix	Ground Water
Sample Date	05/03/2024

Parameter	Units	RL	L1	L2	Result
Metals and Inorganics (continued)					
Titanium (total)	mg/L	0.0001	5		0.0111
Zinc (total)	mg/L	0.002	2	0.04	0.002
Microbiology					
E. Coli	cfu/100mL	0		200	< 2↑
Nonylphenol and Ethoxylates					
Nonylphenol	mg/L	0.001	0.02	0.001	< 0.001
Nonylphenol Ethoxylates	mg/L	0.01	0.2	0.01	< 0.01
Nonylphenol diethoxylate	mg/L	0.01			< 0.01
Nonylphenol monoethoxylate	mg/L	0.01			< 0.01
Oil and Grease					
Oil & Grease (total)	mg/L	2			< 2
Oil & Grease (animal/vegetable)	mg/L	4	150		< 4
Oil & Grease (mineral/synthetic)	mg/L	4	15		< 4

Client: DS Consultants
Project: 24-014-100, 1050 Markham Rd, Sc arborough ON
Project Manager: Meysam Jafari
Samplers: Chaitanya

MATRIX: WATER

L1 = SANSEW / WATER / - - Toronto Sewer Use By Law - Sanitary and Combined Sewer Discharge - BL_100_2016

L2 = SANSEW / WATER / - - Toronto Sewer Use By Law - Storm Sewer Discharge - BL_100_2016

Sample Number	8
Sample Name	BH 24-3
Sample Matrix	Ground Water
Sample Date	05/03/2024

Parameter	Units	RL	L1	L2	Result
Other (ORP)					
pH	No unit	0.05	11.5	9.5	7.19
Chromium VI	mg/L	0.0002	2	0.04	< 0.0002
Mercury (total)	mg/L	0.00001	0.01	0.0004	0.00001
PAHs					
Benzo(b+j)fluoranthene	mg/L	0.0001			< 0.0001
PCBs					
Polychlorinated Biphenyls (PCBs) - Total	mg/L	0.0001	0.001	0.0004	< 0.0001
Phenols					
4AAP-Phenolics	mg/L	0.002	1	0.008	0.003
SVOCs					
3,3-Dichlorobenzidine	mg/L	0.0005	0.002	0.0008	< 0.0005
di-n-Butyl Phthalate	mg/L	0.002	0.08	0.015	< 0.002
Bis(2-ethylhexyl)phthalate	mg/L	0.002	0.012	0.0088	< 0.002
Pentachlorophenol	mg/L	0.0005	0.005	0.002	< 0.0005
PAHs (Total)	mg/L		0.005	0.002	< 0.001
Perylene	mg/L	0.0005			< 0.0005

Client: DS Consultants
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MATRIX: WATER

L1 = SANSEW / WATER / - - Toronto Sewer Use By Law - Sanitary and Combined Sewer Discharge - BL_100_2016

L2 = SANSEW / WATER / - - Toronto Sewer Use By Law - Storm Sewer Discharge - BL_100_2016

Sample Number	8
Sample Name	BH 24-3
Sample Matrix	Ground Water
Sample Date	05/03/2024

SVOCs - PAHs

Parameter	Units	RL	L1	L2	Result
7Hdibenzo(c,g)carbazole	mg/L	0.0001			< 0.0001
Anthracene	mg/L	0.0001			< 0.0001
Benzo(a)anthracene	mg/L	0.0001			< 0.0001
Benzo(a)pyrene	mg/L	0.0001			< 0.0001
Benzo[e]pyrene	mg/L	0.0001			< 0.0001
Benzo(ghi)perylene	mg/L	0.0002			< 0.0002
Benzo(k)fluoranthene	mg/L	0.0001			< 0.0001
Chrysene	mg/L	0.0001			< 0.0001
Dibenzo(a,h)anthracene	mg/L	0.0001			< 0.0001
Dibenzo(a,i)pyrene	mg/L	0.0001			< 0.0001
Dibenzo(a,j)acridine	mg/L	0.0001			< 0.0001
Fluoranthene	mg/L	0.0001			< 0.0001
Indeno(1,2,3-cd)pyrene	mg/L	0.0002			< 0.0002
Phenanthrene	mg/L	0.0001			< 0.0001
Pyrene	mg/L	0.0001			< 0.0001

Client: DS Consultants
Project: 24-014-100, 1050 Markham Rd, Sc arborough ON
Project Manager: Meysam Jafari
Samplers: Chaitanya

MATRIX: WATER

L1 = SANSEW / WATER / - - Toronto Sewer Use By Law - Sanitary and Combined Sewer Discharge - BL_100_2016

L2 = SANSEW / WATER / - - Toronto Sewer Use By Law - Storm Sewer Discharge - BL_100_2016

Sample Number	8
Sample Name	BH 24-3
Sample Matrix	Ground Water
Sample Date	05/03/2024

Parameter	Units	RL	L1	L2	Result
VOCs					
Chloroform	mg/L	0.0005	0.04	0.002	< 0.0005
1,2-Dichlorobenzene	mg/L	0.0005	0.05	0.0056	< 0.0005
1,4-Dichlorobenzene	mg/L	0.0005	0.08	0.0068	< 0.0005
cis-1,2-Dichloroethylene	mg/L	0.0005	4	0.0056	< 0.0005
trans-1,3-Dichloropropene	mg/L	0.0005	0.14	0.0056	< 0.0005
Methylene Chloride	mg/L	0.0005	2	0.0052	< 0.0005
1,1,2,2-Tetrachloroethane	mg/L	0.0005	1.4	0.017	< 0.0005
Tetrachloroethylene (perchloroethylene)	mg/L	0.0005	1	0.0044	< 0.0005
Trichloroethylene	mg/L	0.0005	0.4	0.0076	< 0.0005
VOCs - BTEX					
Benzene	mg/L	0.0005	0.01	0.002	< 0.0005
Ethylbenzene	mg/L	0.0005	0.16	0.002	< 0.0005
Toluene	mg/L	0.0005	0.016	0.002	< 0.0005
Xylene (total)	mg/L	0.0005	1.4	0.0044	< 0.0005
m-p-xylene	mg/L	0.0005			< 0.0005
o-xylene	mg/L	0.0005			< 0.0005

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	SANSEW / WATER / - - Toronto Sewer Use By Law - Sanitary and Combined Sewer Discharge - BL_100_2016 L1	SANSEW / WATER / - - Toronto Sewer Use By Law - Storm Sewer Discharge - BL_100_2016 L2
BH 24-3					
Total Suspended Solids	SM 2540D	mg/L	68		15
Manganese	SM 3030/EPA 200.8	mg/L	0.233		0.05

QC SUMMARY

Biochemical Oxygen Demand

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Biochemical Oxygen Demand (BOD5)	BOD0013-MAR24	mg/L	2	< 2	16	30	103	70	130	93	70	130

Cyanide by SFA

Method: SM 4500 I Internal ref.: ME-CA-IENVISFA-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Cyanide (total)	SKA0051-MAR24	mg/L	0.01	<0.01	ND	10	93	90	110	85	75	125

Fluoride by Specific Ion Electrode

Method: SM 4500 I Internal ref.: ME-CA-IENVIEWL-LAK-AN-014

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Fluoride	EWL0103-MAR24	mg/L	0.06	<0.06	5	10	98	90	110	93	75	125

QC SUMMARY

Hexavalent Chromium by SFA

Method: EPA218.6/EPA3060A | Internal ref.: ME-CA-[ENVISKA-LAK-AN-012

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Chromium VI	SKA0063-MAR24	mg/L	0.0002	<0.0002	4	20	95	80	120	92	75	125

Mercury by CVAAS

Method: EPA 7471A/SM 3112B | Internal ref.: ME-CA-[ENVISPE-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Mercury (total)	EHG0012-MAR24	mg/L	0.00001	< 0.00001	ND	20	116	80	120	112	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Silver (total)	EMS0090-MAR24	mg/L	0.00005	<0.00005	ND	20	95	90	110	81	70	130
Aluminum (total)	EMS0090-MAR24	mg/L	0.001	<0.001	2	20	97	90	110	103	70	130
Arsenic (total)	EMS0090-MAR24	mg/L	0.0002	<0.0002	4	20	96	90	110	97	70	130
Cadmium (total)	EMS0090-MAR24	mg/L	0.000003	<0.000003	9	20	99	90	110	96	70	130
Cobalt (total)	EMS0090-MAR24	mg/L	0.000004	<0.000004	3	20	97	90	110	94	70	130
Chromium (total)	EMS0090-MAR24	mg/L	0.00008	<0.00008	3	20	99	90	110	97	70	130
Copper (total)	EMS0090-MAR24	mg/L	0.001	<0.001	3	20	98	90	110	83	70	130
Manganese (total)	EMS0090-MAR24	mg/L	0.00001	<0.00001	3	20	101	90	110	93	70	130
Molybdenum (total)	EMS0090-MAR24	mg/L	0.0004	<0.0004	4	20	95	90	110	98	70	130
Nickel (total)	EMS0090-MAR24	mg/L	0.0001	<0.0001	2	20	99	90	110	92	70	130
Lead (total)	EMS0090-MAR24	mg/L	0.00009	<0.00009	2	20	98	90	110	97	70	130
Phosphorus (total)	EMS0090-MAR24	mg/L	0.003	<0.003	11	20	99	90	110	NV	70	130
Antimony (total)	EMS0090-MAR24	mg/L	0.0009	<0.0009	ND	20	105	90	110	98	70	130
Selenium (total)	EMS0090-MAR24	mg/L	0.00004	<0.00004	2	20	100	90	110	98	70	130
Tin (total)	EMS0090-MAR24	mg/L	0.00006	<0.00006	ND	20	92	90	110	NV	70	130
Titanium (total)	EMS0090-MAR24	mg/L	0.0001	<0.0001	3	20	97	90	110	NV	70	130
Zinc (total)	EMS0090-MAR24	mg/L	0.002	<0.002	5	20	101	90	110	99	70	130

QC SUMMARY

Microbiology

Method: SM 9222D | Internal ref.: ME-CA-IENVIMIC-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
E. Coli	BAC9081-MAR24	cfu/100mL	-	ACCEPTED	ACCEPTED							

Nonylphenol and Ethoxylates

Method: ASTM D7065-06 | Internal ref.: ME-CA-IENVIGC-LAK-AN-015

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Nonylphenol diethoxylate	GCM0066-MAR24	mg/L	0.01	<0.01			86	55	120			
Nonylphenol Ethoxylates	GCM0066-MAR24	mg/L	0.01	<0.01								
Nonylphenol monoethoxylate	GCM0066-MAR24	mg/L	0.01	<0.01			86	55	120			
Nonylphenol	GCM0066-MAR24	mg/L	0.001	<0.001			82	55	120			

QC SUMMARY

Oil & Grease

Method: MOE E3401 | Internal ref.: ME-CA-[ENV]GC-LAK-AN-019

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Oil & Grease (total)	GCM0086-MAR24	mg/L	2	<2	NSS	20	110	75	125			

Oil & Grease-AV/MS

Method: MOE E3401/SM 5520F | Internal ref.: ME-CA-[ENV]GC-LAK-AN-019

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Oil & Grease (animal/vegetable)	GCM0086-MAR24	mg/L	4	< 4	NSS	20	NA	70	130			
Oil & Grease (mineral/synthetic)	GCM0086-MAR24	mg/L	4	< 4	NSS	20	NA	70	130			

pH

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
pH	EWL0107-MAR24	No unit	0.05	NA	0		100			NA		

QC SUMMARY

Phenols by SFA

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
4AAP-Phenolics	SKA0064-MAR24	mg/L	0.002	<0.002	7	10	106	80	120	98	75	125

Polychlorinated Biphenyls

Method: MOE E3400/EPA 8082A | Internal ref.: ME-CA-[ENV]GC-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Polychlorinated Biphenyls (PCBs) - Total	GCM0095-MAR24	mg/L	0.0001	<0.0001	NSS	30	99	60	140	NSS	60	140

QC SUMMARY

Semi-Volatile Organics

Method: EPA 3510C/8270D | Internal ref.: ME-CA-[ENV]GC-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
3,3-Dichlorobenzidine	GCM0083-MAR24	mg/L	0.0005	< 0.0005	NSS	30	88	30	130	NSS	30	130
7Hdibenzo(c,g)carbazole	GCM0084-MAR24	mg/L	0.0001	< 0.0001	NSS	30	109	50	140	NSS	50	140
Anthracene	GCM0084-MAR24	mg/L	0.0001	< 0.0001	NSS	30	98	50	140	NSS	50	140
Benzo(a)anthracene	GCM0084-MAR24	mg/L	0.0001	< 0.0001	NSS	30	100	50	140	NSS	50	140
Benzo(a)pyrene	GCM0084-MAR24	mg/L	0.0001	< 0.0001	NSS	30	93	50	140	NSS	50	140
Benzo(b+j)fluoranthene	GCM0084-MAR24	mg/L	0.0001	< 0.0001	NSS	30	109	50	140	NSS	50	140
Benzo[e]pyrene	GCM0084-MAR24	mg/L	0.0001	< 0.0001	NSS	30	102	50	140	NSS	50	140
Benzo(ghi)perylene	GCM0084-MAR24	mg/L	0.0002	< 0.0002	NSS	30	102	50	140	NSS	50	140
Benzo(k)fluoranthene	GCM0084-MAR24	mg/L	0.0001	< 0.0001	NSS	30	93	50	140	NSS	50	140
Bis(2-ethylhexyl)phthalate	GCM0084-MAR24	mg/L	0.002	< 0.002	NSS	30	105	50	140	NSS	50	140
Chrysene	GCM0084-MAR24	mg/L	0.0001	< 0.0001	NSS	30	98	50	140	NSS	50	140
di-n-Butyl Phthalate	GCM0084-MAR24	mg/L	0.002	< 0.002	NSS	30	112	50	140	NSS	50	140
Dibenzo(a,h)anthracene	GCM0084-MAR24	mg/L	0.0001	< 0.0001	NSS	30	102	50	140	NSS	50	140
Dibenzo(a,i)pyrene	GCM0084-MAR24	mg/L	0.0001	< 0.0001	NSS	30	94	50	140	NSS	50	140
Dibenzo(a,j)acridine	GCM0084-MAR24	mg/L	0.0001	< 0.0001	NSS	30	97	50	140	NSS	50	140
Fluoranthene	GCM0084-MAR24	mg/L	0.0001	< 0.0001	NSS	30	103	50	140	NSS	50	140
Indeno(1,2,3-cd)pyrene	GCM0084-MAR24	mg/L	0.0002	< 0.0002	NSS	30	105	50	140	NSS	50	140
Pentachlorophenol	GCM0084-MAR24	mg/L	0.0005	< 0.0005	NSS	30	106	50	140	NSS	50	140
Perylene	GCM0084-MAR24	mg/L	0.0005	< 0.0005	NSS	30	94	50	140	NSS	50	140
Phenanthrene	GCM0084-MAR24	mg/L	0.0001	< 0.0001	NSS	30	98	50	140	NSS	50	140

QC SUMMARY

Semi-Volatile Organics (continued)

Method: EPA 3510C/8270D | Internal ref.: ME-CA-[ENVIGC-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Pyrene	GCM0084-MAR24	mg/L	0.0001	< 0.0001	NSS	30	101	50	140	NSS	50	140

Suspended Solids

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Suspended Solids	EWL0089-MAR24	mg/L	2	< 2	0	10	102	90	110	NA		

Total Nitrogen

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Kjeldahl Nitrogen	SKA0057-MAR24	as N mg/L	0.5	<0.5	1	10	103	90	110	93	75	125

QC SUMMARY

Volatile Organics

Method: EPA 5030B/8260C | Internal ref.: ME-CA-[ENVIGC-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
1,1,2,2-Tetrachloroethane	GCM0057-MAR24	mg/L	0.0005	<0.0005	ND	30	92	60	130	104	50	140
1,2-Dichlorobenzene	GCM0057-MAR24	mg/L	0.0005	<0.0005	ND	30	93	60	130	94	50	140
1,4-Dichlorobenzene	GCM0057-MAR24	mg/L	0.0005	<0.0005	ND	30	95	60	130	93	50	140
Benzene	GCM0057-MAR24	mg/L	0.0005	<0.0005	ND	30	96	60	130	96	50	140
Chloroform	GCM0057-MAR24	mg/L	0.0005	<0.0005	ND	30	94	60	130	95	50	140
cis-1,2-Dichloroethylene	GCM0057-MAR24	mg/L	0.0005	<0.0005	ND	30	94	60	130	96	50	140
Ethylbenzene	GCM0057-MAR24	mg/L	0.0005	<0.0005	ND	30	95	60	130	96	50	140
m-p-xylene	GCM0057-MAR24	mg/L	0.0005	<0.0005	ND	30	95	60	130	96	50	140
Methylene Chloride	GCM0057-MAR24	mg/L	0.0005	<0.0005	ND	30	109	60	130	74	50	140
o-xylene	GCM0057-MAR24	mg/L	0.0005	<0.0005	ND	30	96	60	130	94	50	140
Tetrachloroethylene (perchloroethylene)	GCM0057-MAR24	mg/L	0.0005	<0.0005	ND	30	93	60	130	94	50	140
Toluene	GCM0057-MAR24	mg/L	0.0005	<0.0005	ND	30	94	60	130	96	50	140
trans-1,3-Dichloropropene	GCM0057-MAR24	mg/L	0.0005	<0.0005	ND	30	90	60	130	91	50	140
Trichloroethylene	GCM0057-MAR24	mg/L	0.0005	<0.0005	ND	30	91	60	130	90	50	140

QC SUMMARY

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

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

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

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

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

RL: Reporting limit

RPD: Relative percent difference

AC: Acceptance criteria

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

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

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

LEGEND

FOOTNOTES

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

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

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

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

This report supersedes all previous versions.

-- End of Analytical Report --

Request for Laboratory Services and CHAIN OF CUSTODY

No: 035687

SGS Industries & Environment - Lakefield: 185 Concession St., Lakefield, ON K0L 2H0 Phone: 705-652-2000 Fax: 705-652-6365 Web: www.sgs.com/environment
- London: 657 Consortium Court, London, ON, N6E 2S8 Phone: 519-672-4500 Toll Free: 877-848-8060 Fax: 519-672-0361

Page _____ of _____

Laboratory Information Section - Lab use only

Received By: Alyncer
Received Date: 03/05/24 (mm/dd/yy)
Received Time: 17:15 (hr : min)
Received By (signature): AP
Custody Seal Present: Yes ☑ No ☐
Custody Seal Intact: Yes ☑ No ☐
Cooling Agent Present: Yes ☑ No ☐ Type: ICE
Temperature Upon Receipt (°C) 7 x 3
LAB LIMS #: GA4004-MAR24

REPORT INFORMATION

Company: DS Consultants Ltd.
Contact: Meysam Jafari
Address: 6221 - Hwy 7, Unit 16, Vaughan, ON
Phone: 647-831-5596
Fax:
Email: MJafari@dsconsultants.ca

INVOICE INFORMATION

☑ (same as Report Information)
Company:
Contact: Accounting
Address:
Phone:
Email:

Quotation #:
P.O. #:
Project #: 24-014-100
Site Location/ID: 1050 Markham Rd., Scarborough, ON

TURNAROUND TIME (TAT) REQUIRED

☑ Regular TAT (5-7days)
TAT's are quoted in business days (exclude statutory holidays & weekends).
Samples received after 6pm or on weekends: TAT begins next business day

RUSH TAT (Additional Charges May Apply): ☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 4 Days
PLEASE CONFIRM RUSH FEASIBILITY WITH SGS REPRESENTATIVE PRIOR TO SUBMISSION

Specify Due Date:

*NOTE: DRINKING (POTABLE) WATER SAMPLES FOR HUMAN CONSUMPTION MUST BE SUBMITTED WITH SGS DRINKING WATER CHAIN OF CUSTODY

REGULATIONS

☐ O.Reg 153/04 ☐ O.Reg 406/19
☐ Table 1 ☐ Res/Park Soil Texture: ☐ Coarse
☐ Table 2 ☐ Ind/Com ☐ Medium/Fine
☐ Table 3 ☐ Agri/Other
☐ Table _____ Appx. _____
Soil Volume ☐ <350m3 ☐ >350m3

Other Regulations:
☐ Reg 347/558 (3 Day min TAT)
☐ PWQO ☐ MMER
☐ CCME ☐ Other:
☐ MISA
☐ ODWS Not Reportable *See note

Sewer By-Law:
☑ Sanitary
☑ Storm
Municipality: Toronto

RECORD OF SITE CONDITION (RSC) ☐ YES ☐ NO

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	# OF BOTTLES	MATRIX	Field Filtered (Y/N)	M&I: Metals & Inorganics (incl CrVI, CN,Hg pH,(B(HWS),EC,SAR–soil) (Cl, Na-water)	M&I: Full Metals Suite (ICP metals plus B(HWS-soil only) Hg, CrVI	M&I: ICP Metals only Sb,As,Ba,Be,B,Cd, Cr,Co,Cu,Pb,Mo,Ni,Se,Ag,Ti,U,V,Zn	SVOC: PAHs only	SVOC: SVOCs all incl PAHs, ABNs, CPs	PCB: PCBs Total ☐ Aroclor ☐	PHC: F1-F4 + BTEX	PHC: F1-F4 only no BTEX	VOC: VOCs all incl BTEX	VOC: BTEX only	Pest: Pesticides Organochlorine or specify other	Other: Toronto Storm/Sanitary sewer by-law	Other	Other	Other: Sewer Use: Specify pkg:	Other: Water Characterization Pkg General ☐ Extended ☐	SPLP: Specify tests ☐ Metals ☐ VOC ☐ 1,4-Dioxane ☐ OCP ☐ ABN	TCLP: Specify tests ☐ M&I ☐ VOC ☐ PCB ☐ B(a)P ☐ ABN ☐ Ignit.	COMMENTS:
1	BH 24-3	3/5/24	PM	19	GW	N												☑							Non filtered sample
2																									
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

Observations/Comments/Special Instructions

Sampled By (NAME): Chai Tangal Signature: Date: 03/05/24 (mm/dd/yy)
Relinquished by (NAME): Chai Tangal Signature: Date: 03/05/24 (mm/dd/yy)

Pink Copy - Client
Yellow & White Copy - SGS

Revision #: 1.7
Date of Issue: 07 JUNE 2023

Appendix D

MECP Water Well Record Search (500 m) - 1050 Markham Road, Toronto

TOWNSHIP	UTM	E	N	DATE CNTR	CASING	WATER	PUMP TEST	WELL USE	SCREEN	WELL	WELL TAG	FORMATION
SCARBOROUGH BOROUGH	17 W	642305	4848755	2017-11 7215	2			MO	0012 10	7301165	(Z274523) A238217	SAND GRVL 0001 BRWN SAND SILT 0018 GREY SAND SILT 0022
SCARBOROUGH BOROUGH	17 W	642272	4848770	2017-11 7215	2			MO	0008 10	7301162	(Z274527) A238217	SAND GRVL FILL 0001 BRWN SAND SILT 0014 GREY SAND SILT 0018
SCARBOROUGH BOROUGH	17 W	642441	4848420	2016-06 6926						7269774	(C34869) A190501 P	
SCARBOROUGH BOROUGH	17 W	642448	4848348	2015-08 6032	1.79			MO	0005 10	7248146	(Z194290) A181484	BRWN FILL PCKD 0005 BRWN SILT GRVL SAND 0015
SCARBOROUGH BOROUGH	17 W	642250	4848517	2005-08 6607		9		NU		6929345	(Z34959) A005019 A	22
SCARBOROUGH BOROUGH	17 W	642121	4848712	2014-01 7241	2			MT	0013 10	7216178	(Z184650) A159277	BLCK 0000 BRWN FILL SILT 0010 BRWN SILT SNDY 0016 GREY SILT SNDY 0023
SCARBOROUGH BOROUGH	17 W	642424	4848294	2019-09 7147	1.25			MO	0004 5	7343996	(4NPZOB7Q) A269800	GREY 0001 BRWN 0009
SCARBOROUGH BOROUGH	17 W	642350	4848560	2011-11 7383						7175864	(M07868) A099216 P	
SCARBOROUGH BOROUGH	17 W	642350	4848560	2011-06 7383						7166359	(M07850) A099216 P	
SCARBOROUGH BOROUGH	17 W	642387	4848479	2009-11 7215				TH	0010 10	7135571	(Z104627) A049088	BRWN FILL 0006 BRWN CLAY DRY 0012 GREY TILL SLTY WBRG 0016 GREY CLAY SLTY 0020
SCARBOROUGH BOROUGH	17 W	642339	4848327	2008-10 6607						7125146	(M03963) A074944 A	
SCARBOROUGH BOROUGH	17 W	641956	4848632	2008-11 7215						7117903	(Z93481) A	
SCARBOROUGH BOROUGH	17 W	642371	4848510	2005-09 7075	1.76	FR 0016			0010 13	6929396	(Z32448) A027089	BRWN SAND SILT FILL 0004 BRWN CLAY SILT CLAY 0010 GREY CLAY SILT TILL 0023
SCARBOROUGH BOROUGH	17 W	642394	4848305	2019-08 6032						7356112	(C44558) A102034 P	
SCARBOROUGH BOROUGH	17 W	642467	4848345	2021-08 6926						7412419	(C55109) A310634 P	
SCARBOROUGH BOROUGH	17 W	642367	4848552	2021-11 7644						7409810	(Z377339) A340505 P	
SCARBOROUGH BOROUGH	17 W	642368	4848557	2021-11 7644						7409809	(Z377336) A330486 P	
SCARBOROUGH BOROUGH	17 W	642374	4848533	2021-12 7644						7409808	(Z377332) A340506 P	
SCARBOROUGH BOROUGH	17 W	642338	4848516	2021-12 7644						7409807	(Z377335) A340503 P	
SCARBOROUGH BOROUGH	17 W	642334	4848539	2021-12 7644						7409806	(Z377334) A340490 P	
SCARBOROUGH BOROUGH	17 W	642389	4848346	2020-11 6926						7397615	(C51157) A310634 P	
SCARBOROUGH BOROUGH	17 W	642423	4848543	2019-04 7147	1.97	UT 0020		MO	0013 10	7333114	(HL93ZDHJ) A266387	BLCK 0001 BRWN SILT SAND 0023
SCARBOROUGH BOROUGH	17 W	642278	4848743	2019-11 6988						7356338	(C45787) A276614 P	
SCARBOROUGH BOROUGH	17 W	642436	4848298	2019-09 7147	1.25			MO	0007 5	7343995	(VRHJF8IO) A269799	GREY 0001 BRWN 0012
SCARBOROUGH BOROUGH	17 W	642376	4848779	2019-11 7230	2.04	UT 0021		MT	0049 10	7349817	(Z319660) A277471	BRWN FILL DNSE 0003 BRWN SILT TILL SNDY 0020 BRWN SAND GRVL HARD 0035 BRWN SAND TILL BLDR 0040 BRWN MSND HARD 0045 BRWN SAND TILL HARD 0059
SCARBOROUGH BOROUGH	17 W	642261	4848524	2019-08 7241	2			MT	0008 10	7344957	(Z323403) A267998	BLCK ---- 0000 BRWN FILL 0003 BRWN CLAY SILT 0010 GREY CLAY SILT 0018

SCARBOROUGH BOROUGH	17 W	642273	4848492	2019-08 7241	2			MT	0009 10	7344956	(Z323401) A267997	BLCK ---- 0000 BRWN FILL 0003 BRWN CLAY SILT 0010 GREY CLAY SILT 0019
SCARBOROUGH BOROUGH	17 W	642300	4848475	2019-08 7241	2			MT	0013 10	7344955	(Z323402) A267996	BLCK ---- 0000 BRWN FILL 0003 BRWN CLAY SILT 0010 GREY CLAY SILT 0023
SCARBOROUGH BOROUGH	17 W	642281	4848474	2019-08 7241	2			MO	0015 10	7344776	(Z319153) A270810	---- 0010 BRWN SAND SILT 0014 GREY SILT CLAY WBRG 0025
SCARBOROUGH BOROUGH	17 W	642270	4848465	2019-08 7241	2			MO	0010 10	7344775	(Z319154) A270811	---- 0010 BRWN SILT SAND 0015 GREY SILT CLAY 0020
SCARBOROUGH BOROUGH	17 W	642392	4848523	2020-12 7725						7377493	(C49828) A297037 P	