Hydrogeological Investigation
4721 & 5061 Stouffville Rd
Hwy 48 & Stouffville Road Development
Whitchurch-Stouffville, Ontario

Prepared For:

Times Group Corporation

Project #: 19-043-103
Date: April 4, 2025

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19-043-103 **April 4, 2025**

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Via email: hamid@timesgroupcorp.com

RE: Hydrogeological Investigation – 4721 & 5061 Stouffville Road, Whitchurch-Stouffville, ON

DS Consultants Ltd. (DS) was retained by Times Group Corporation to conduct an additional Hydrogeological Investigation of the site located on the northeast corner of the properties located at 4721 & 5061 Stouffville Road, Whitchurch-Stouffville, ON (Site). The site is currently a part of a rural parcel used for agricultural purposes. It is understood that the proposed development will have a 19 to 29-storey high-rise buildings with three (3) levels of underground parking proposed to extend to 249.35 meters above sea level (masl) along the east side of the proposed building and two (2) levels of underground parking proposed to extend to 250.60 masl on the western side of the Building. In addition, the Site is proposed to have a permanent subfloor and perimeter foundation drainage system. It is further understood that the purpose of this Hydrogeological Investigation was to better understand the opportunities and constraints associated with the future development, and identify constraints associated with the Oak Ridges Aquifer Complex (ORAC) by drilling additional boreholes and installing monitoring wells at the target elevation of the proposed P2-P3 level permanent groundwater drainage elevation. The findings from this hydrogeological investigation were then used to estimate the construction dewatering volume and permanent drainage volume associated with the proposed P2-P3 level underground structure.

Based on the results of our investigation, the following conclusions are presented:

1. In May 2019, DS drilled one (1) borehole (BH19-5) equipped with a monitoring well within the boundary limits as part of the geotechnical, environmental, and hydrogeological investigations to a depth of 15.2 meters below ground surface (mbgs) (239.1 masl). In February 2021, DS drilled five (5) boreholes and equipped all boreholes with monitoring wells within the site boundary. The boreholes were advanced to depths ranging from 12.3 to 15.8 mbgs. Monitoring wells were screened to depths ranging from 6.0 to 15.8 mbgs.

2. In October 2024, DS drilled twelve (12) boreholes with five (5) boreholes equipped with monitoring wells within the site boundary as part of the geotechnical and hydrogeological investigations. The boreholes were advanced to depths ranging from 15.3 to 23.4 mbgs. Monitoring wells were screened to depths ranging from 7.1 to 9.1 mbgs. In February 2026, DS advanced a borehole (BH25-1) to 37.1 mbgs, to determine (if any) the extent of a deeper aquifer at the Site. A monitoring well was installed in BH25-1 to a depth of 21.3 mbgs.

3. The topography at the site ranges from approximately 254.3 to 256.7 masl generally sloping south. Willowgrove Creek is located approximately 1.5 km west of the site. Willowgrove Creek is a branch of Little Rouge Creek, which ultimately flows into Lake Ontario located approximately 25 km south of the Site. A creek is located east adjacent to the site intersecting Highway 48, and a provincially significant wetlands are located along the eastern limits of the site.

4. The overburden geology at the site generally consisted of clayey silt and silty clay overlying a sand and gravel confined aquifer.

5. As part of the hydrogeological investigation, DS completed a search of the Ministry of Environment Conservation and parks (MECP) water well records (WWRs) database. Based on the MECP WWR search, there are forty-five (45) water wells within 500 m of the site. Twenty-six (26) wells were noted as domestic (DO) wells, two (2) wells were noted for livestock (ST), one (1) well was noted for commercial (CO) use, and two (2) wells were noted as a public supply (PS) well. All other wells were noted as test holes, monitoring well, not in use or unknown. All other wells were noted as test holes, monitoring well, not in use or unknown.

6. Most communities of Stouffville continue to be served by municipal groundwater, where significant quantities of groundwater are extracted from the Oak Ridges Moraine (ORM) to service municipal water supply. A door-to-door water well survey is recommended within the study area to confirm the presence and use of identified wells.

7. Groundwater levels were measured in all available monitoring wells advanced in 2021 between January 25th and June 21st, 2021, by DS. Groundwater levels were measured in monitoring wells advanced in 2024 on November 14, 2024. The groundwater level in BH25-1 was measured on March 7th and March 24th, 2025. Groundwater levels ranged from 252.7 to 254.8 masl in monitoring wells screened in the till overburden. Sub-artesian conditions were encountered in monitoring wells screened in the underlying cohesionless deposits. Groundwater levels in monitoring wells screened in the underlying cohesionless deposits ranged from 252.8 to 256.5 masl.

8. Based on groundwater elevations, the flow direction is inferred to be southeast towards the drainage ditch, the wetland and the creek located east adjacent to the site intersecting Highway 48. DS is currently undertaking continuous groundwater level monitoring at the Site for one (1) year.

9. In total, four (4) Single Well Response Tests (slug tests) were completed by DS at the site between May 2019 and February 2021, and an additional five (5) slug tests were conducted in November 2024, and one (1) test was conducted at BH25-1 in February 2025 to estimate hydraulic conductivity (k) for the representative geological units in which the wells were screened. The k-values ranged between 3.1 X 10^{-7} to 4.9 x 10^{-6} m/s in the underlying cohesionless unit and 1.9 X 10^{-9} to 7.5 x 10^{-7} m/s in the overlying clayey silt material, indicative of medium to high permeability lithology in the lower unit and low to medium permeability in the upper unit.

10. One (1) unfiltered groundwater sample was collected from monitoring well BH19-5 and BH24-5 on October 7th, and November 15th, 2024, respectively. Samples were 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 York Region sanitary and storm sewer by-law 2021_102. The reported analytical results indicate manganese exceeded the York Region storm sewer criteria from BH24-5. No exceedances were reported against York Region sanitary sewer criteria and against both criteria from BH19-5.

11. The total estimated daily rate for short term construction is estimated to be approximately 54,000 L/day (54 m^3/day) for P2 (east side) and 72,000 L/day (72 m^3/day) for P3 (west side), with a total combined rate of 126,000 L/day (126 m^3/day). This value incorporates a 100% safety factor. The estimated zone of influence (ZOI) is approximately 83 m and 71 m for P2 and P3 sides, respectively. An EASR is recommended to be submitted to the MECP for construction dewatering prior to construction.

12. An additional 340,000 Liters discharged over a 48-hour period (340 m^3 over a 48-hour period) of storm water from a 25 mm precipitation even should be accounted for. Surface water and stormwater contributions during construction are no longer included in the construction groundwater taking EASR and PTTW limits as of July 1st, 2021. Stormwater contributions are to be addressed under other activity requirements.

13. Following the construction of the underground structure, long-term groundwater flow to the underfloor drainage system for the building will be a function of the upward flux and from drainage along the foundation wall. Based on the assumed design, the estimated permanent theoretical flow is approximately 22,800 L/day (22.8 m^3/day) and 26,400 L/day (26.4 m^3/day) for P2 and P3, respectively with a combined rate of 49,000 L/day (49 m^3/day) with a 20% safety factor. Since the estimated maximum permanent drainage rate is below 50,000 L/day, a PTTW will not be required for long-term discharge. These values can change based on actual soil and groundwater conditions at the site and are to be confirmed during construction.

14. Based on results of the pre-development and post-development site water balance completed, the proposed developments will in general produce a decrease in annual evapotranspiration (11,702 m^3/year), a reduction in annual infiltration (3,756 m^3/year) and a general increase in annual runoff (12,763 m^3/year). The effects are mainly the result of increased impervious area and decreased pervious areas of the Site. Low Impact Development (LID) measures are recommended to reduce the infiltration deficit and meet pre-development conditions.

15. The site is designated as countryside area under O.Reg 140/02: Oak Ridges Moraine Conservation Plan. Countryside Areas provide an agricultural and rural transition and buffer between the Natural Core Areas and Natural Linkage Areas and the urbanized Settlement Areas. Infrastructure uses are permitted in Countryside Areas.

16. The Site and study area are located within the Toronto Region Source Protection Area (SPA). The Site and study area are located within a Highly Vulnerable Aquifer (HVA) with a score of 6, indicating moderate risk to the aquifer from construction. However, since construction is anticipated within the

overlying till, construction is not anticipated to impact the underlying sand aquifer. The site is also located within a Significant Groundwater Recharge (SGRA). Given the low permeability of the overlying till material identified during the field investigation, the site does not readily support recharge.

17. The site and the study area are located within a municipal Wellhead Protection Area-Quantity (WHPA-Q). The site is categorized to be at moderate risk for both water taking without returning it to the same source (WHPA-Q1), and for reducing recharge to the area (WHPA-Q2). Any WHPA-Q areas where significant or moderate drinking water stress has been identified is an area where significant drinking water quantity threat activities can occur. In these areas, future activities must return water to the same source and must not reduce recharge.

18. 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 was (1) active PTTWs within 1 km of the site, where the source was surface water. Therefore, groundwater interferences from surrounding activities may occur.

19. The wetland falls within the zone of influence during construction dewatering. Mitigation measures should be enacted to minizine adverse effects to the creek and wetlands. A wetland water balance risk evaluation may be required for the site from the TRCA prior to development. DS recommended monitoring the water features across the site and obtaining surface water samples to establish base line water quality conditions at the site.

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

DS Consultants Ltd.

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APPENDICES

1.0 INTRODUCTION

DS Consultants Ltd. (DS) was retained by Times Group Corporation to conduct a Hydrogeological Investigation of the site located on the northeast corner of the properties located at 4721 & 5061 Stouffville Road, Whitchurch-Stouffville, ON (Site). The site is in a rural area currently used for agricultural purposes. The site is part of a larger development located at 4721 and 5061 Stouffville road, part of a rural parcel of land. DS understands that the purpose of this Hydrogeological Investigation is to better understand the opportunities and constraints associated with the future development, and identify constraints associated with the Oak Ridges Aquifer Complex (ORAC) and estimate construction dewatering volumes and permanent drainage volume associated with the underground structure.

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;
- Field work including monitoring the well drilling program consisting of a total of nineteen (19) boreholes and twelve (12) monitoring wells;
- Conducting single well response tests (slug tests) to determine hydraulic conductivity values across the site;
- Characterize the stratigraphy and measure the ground water levels across the site;
- Estimate construction dewatering volumes and permanent drainage volumes for three (3) levels of underground parking; and
- Assess potential constraints of the site associated with future proposed development

2.0 FIELD INVESTIGATION

2.1 Previous Field Investigation

In May 2019, DS drilled one (1) borehole (BH19-5) equipped with a monitoring well within the boundary limits as part of the geotechnical, environmental, and hydrogeological investigations to a depth of 15.2 mbgs (239.1 masl). Sub-artesian conditions have been encountered at BH19-5, as water levels were found to be above the ground surface in May 2019. One (1) single well response test was completed at BH19-5 in 2019 yield a hydraulic conductivity value of 3.1 x 10^{-6} m/s for the screened silty sand unit.

In February 2021, DS drilled five (5) boreholes and equipped all boreholes with monitoring wells within the site boundary as part of the preliminary geotechnical and hydrogeological investigations. The boreholes were advanced to depths ranging from 12.3 to 15.8 mbgs. Monitoring wells were screened to depths ranging from 6.0 to 15.8 mbgs. All wells were completed with 50 mm diameter PVC pipes with 1.5 or 3.05 m well screens and were installed using above ground mounted protective casings. Three (3) single well response tests (SWRTs) were completed by performing a rising head test (slug test) to estimate hydraulic conductivity values of screened soils at the site.

2.2 Current Field Investigation

In October 2024, DS drilled twelve (12) boreholes with five (5) boreholes equipped with monitoring wells within the site boundary as part of the geotechnical and hydrogeological investigations. The boreholes were advanced to depths ranging from 15.3 to 23.4 mbgs. Monitoring wells were screened to depths ranging from 7.1 to 9.1 mbgs. In February 2026, DS advanced a borehole (BH25-1) to 37.1 mbgs, to determine (if any) the extent of the aquifer at the Site. A monitoring well was installed in BH25-1 to a depth of 21.3 mbgs.

All wells were completed with 50 mm diameter PVC pipes with 1.5 or 3.05 m well screens and were installed using above ground mounted protective casings. All monitoring wells were developed before any use to allow for groundwater level monitoring, hydraulic conductivity testing, and to assess groundwater quality. Six (6) single well response tests (SWRTs) were completed by performing a rising head test (slug test) to estimate hydraulic conductivity values of screened soils at the site. The borehole (BH) and monitoring well (MW) location plan is shown in **Figure 3**.

3.0 SITE SETTING

3.1 Physiography and Drainage

The site is currently being used for agricultural purposes. The topography at the site ranges from approximately 254.3 to 256.7 masl generally sloping south. Willowgrove Creek is located approximately 1.5 km west of the site. Willowgrove Creek is a branch of Little Rouge Creek, which ultimately flows into Lake Ontario located approximately 25 km south of the Site. A creek is located east adjacent to the site intersecting Highway 48, and provincially significant wetlands are located along the eastern limits of the site. The natural heritage map is shown in **Appendix E.** Drainage is generally controlled by streams and the local topography of the site.

3.2 Geology

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

3.2.1 Quaternary Geology

According to the Ontario Geological Survey mapping across the region, the site lies within the South Slope physiographic region of southern Ontario and is characterized by drumlinized till plains. The site borders the Oak Ridges Moraine (ORM) physiographic region to the north. However, according to the Ministry of

Natural Resources and Forestry, the site lies within the ORM boundary. The ORM is characterized as a linear, regionally high elevation ridge having hummocky topography that runs east to west, which is situated north of the Greater Toronto Area, and stretches approximately 160 km from the Trent River in the east to the Niagara Escarpment to the west. The ORM contains an abundant thickness of granular water bearing strata within its core that is the source for several groundwater fed tributaries that originate along the north and south slopes of the moraine. Based on a search of the MECP water well records the aquifer extends to approximately 30 mbgs within the study area. There is a possibility that the aquifer may extend beyond the approximated depth. The surficial geology at the site is characterized as clay to silt-textured till derived from glaciolacustrine deposits or shale. The overburden geology at the site generally consists of clayey silt and silty clay till overlying a sand and gravel confined aquifer. The surficial geology map is shown in **Figure 2.**

3.2.2 Bedrock Geology

According to the Ontario Geological Survey mapping across the region the bedrock at the site is predominantly comprised of shale, limestone, dolostone, siltstone of the Georgian Bay Formation; Blue Mountain Formation; Billings Formation; Collingwood Member; and Eastview Member. Bedrock was not encountered during the current investigation. Due to the thickness of the overburden and deep nature of the expected contact, it is not expected that bedrock will influence the groundwater system in respect to the current hydrogeological investigation.

3.2.3 Site Geology

On-site subsurface soils were interpreted from the boreholes/monitoring wells (BHs/MWs) drilled by DS. The locations of the BHs/MWs are shown on **Figure 3** and detailed subsurface conditions are presented on the borehole Logs in **Appendix A**. The subsurface conditions in the boreholes are summarized in the following paragraphs, and the geologic cross sections (A-A') is presented in **Figure 5.**

Topsoil/Fill: A surficial layer of topsoil of 125 to 3800 mm thick was found in all boreholes. It should be noted that the thickness of the topsoil explored at the borehole locations may not be representative of the site and should not be relied on to calculate the amount of topsoil at the site. Below the topsoil, fill materials and/or weathered/disturbed soils consisting of clayey silt to silty clay and sandy silt to silty sand were encountered in all boreholes, extending to depths varied from 0.8 to 2.4 m below ground surface. These soils were found traces of rootlets and topsoil inclusions.

Clayey Silt TO Silty Clay (Till): Cohesive deposits of clayey silt to silty clay (till) were encountered in all boreholes, extending to depths ranging from 9.0 m to 37.1 m below existing ground surface. Boreholes BH24-3 to BH24-5, BH24-9, BH24-12 and BH25-1 were terminated in the clayey silt to silty clay (till). These soils were found to be weathered/disturbed due to ploughing activities in the past. Traces of rootlets and topsoil inclusions were also observed in the weathered deposits. Occasional sand seams and cobble/boulder were present within the clayey silt to silty clay (till) deposits. These deposits were found in a firm to hard consistency.

Sandy Silt to Silty Sand Till: Sandy silt to silty sand till deposits were encountered in all boreholes, extending to depths of 12.0 to 23.4 m below existing grade. Sandy silt to silty sand till deposits were found to be in a compact to very dense state. Occasional sand seams and cobble/boulder were present within the sandy silt to silty sand till deposits.

Cohesionless Sandy Soils (Silt, Sandy Silt to Silty Sand and Sand): Cohesionless water bearing soils consisting of silt, sandy silt to silty sand and sand were encountered at various depths in all boreholes except for boreholes BH24-4 to BH24-6. The cohesionless soils were present in a compact to very dense state.

4.0 HYDROGEOLOGY

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

4.1 Hydrostratigraphy

The review of sub-surface soils and based on regional mapping from the Oak Ridges Moraine Groundwater Program mapping. Five (5) hydrostratigraphic units were identified in the vicinity of the site from youngest to oldest:

- **Oak Ridges Aquifer Complex (ORAC):** The ORAC sediments overlie a regional unconformity with infill tunnel channels forming a prominent east-west ridge. The ORAC sediments generally consist of silt and fine sands, but also include gravel seams and some clay. The aquifer is generally unconfined except for areas where it underlies the Halton Till. The ORM sediments are considered high recharge areas.

- **Lower Newmarket Till:** The Newmarket till is a thick aquitard, characterized by low hydraulic conductivity and forms an extensive sheet with various heterogeneous soil characteristics.

- **Thorncliffe Formation:** formed of poorly exposed, interbedded lake sediments and till. It generally comprises of sand and silt, clay, and till. The aquifer is confined by the Newmarket fill aquitard. The unit is characterized by sandy formations with high hydraulic conductivity.

- **Sunnybrook Drift:** Aquitard material separating the Thorncliffe deposits form the Scarborough Formation generally described as clast poor mud consisting of silt and clay.

- **Scarborough Formation:** The Scarborough formation is an aquifer formed of organic rich sands over silt and clays from melt water from glaciation which occurred about 40,000 to 90,000 years ago.

4.2 Local Groundwater Use

As part of the hydrogeological investigation, DS completed a search of the MECP water well records (WWRs) database. Based on the MECP WWR search, there are forty-five (45) water wells within 500 m of the site (**Appendix C**). Twenty-six (26) wells were noted as domestic (DO) wells, two (2) wells were noted for livestock

(ST), one (1) well was noted for commercial (CO) use, and two (2) wells were noted as a public supply (PS) well. All other wells were noted as test holes, monitoring well, not in use or unknown. **Figure 1** shows the MECP water well location plan. Most communities of Whitchurch-Stouffville continue to be served by municipal groundwater, where significant quantities of groundwater are extracted from the ORM to service municipal water supply. A door-to-door water well survey is recommended within the study area to confirm the presence and use of identified wells.

4.3 Groundwater Levels

Groundwater levels were measured in all available monitoring wells advanced in 2021 between January 25th and June 21st, 2021, by DS. Groundwater levels were measured in monitoring wells advanced in 2024 on November 14, 2024. The previously installed wells in 2021 were all found damaged during this monitoring event. The groundwater level in BH25-1 was measured on March 7th and March 24th, 2025. **Table 4-1** presents the groundwater levels in all monitoring wells. Groundwater levels ranged from 252.7 to 254.8 masl in monitoring wells screened in the till overburden (well depths ranging from 6.0 to 9.1 mbgs). Sub-artesian conditions were encountered in monitoring wells screened in the underlying cohesionless deposits (well depths ranging from 12.1 to 21.3 mbgs). Groundwater levels in monitoring wells screened in the underlying cohesionless deposits ranged from 252.8 to 256.5 masl.

Near ground surface groundwater levels, indicate that an underlying confined layer is under substantial pressure. The interpreted shallow groundwater contour map for the water level measurements is shown in **Figure 4.** Based on groundwater elevations, the flow direction is inferred to be southeast towards the drainage ditch, the wetland and the creek located east adjacent to the site intersecting Highway 48. The groundwater levels are subject to seasonal fluctuations and may vary in response to changing climate conditions and may also affect the direction of the shallow groundwater flow direction at the Site.

Table 4-1: Groundwater Levels in Monitoring Wells

Well ID	Ground Elevation (masl)	Screened Interval (mbgs)	Date	Stick-up (m)	WL (top of pip) (m)	Depth to Water (mbgs)	Groundwater Elevation (masl)
BH21-1	254.5	12.2-15.2	25-Feb-21	0.8	1.1	0.3	254.2
			13-Apr-21		2.2	1.4	253.1
			18-May-21		2.1	1.3	253.2
			21-Jun-21		2	1.3	253.2
			16-Jul-21		2.3	1.5	253
			23-Aug-21		2.4	1.6	252.9
			14-Sep-21		2.5	1.7	252.8
			13-Oct-21		2.5	1.7	252.8
			15-Nov-21		2.5	1.7	252.8
			13-Dec-21		2.5	1.7	252.8

			11-Jan-22		2.3	1.5	253.0
			15-Feb-22		2.3	1.5	253.0
			14-Mar-22		2.2	1.4	253.1
			19-Apr-22		2	1.2	253.3
BH21-2	255.2	9.1-12.1	25-Feb-21	0.9		Frozen	
			13-Apr-21		2	1.1	254.1
			18-May-21		1.3	0.4	254.8
			21-Jun-21		2.4	1.5	253.7
			16-Jul-21		1.7	0.8	254.4
			23-Aug-21		2	1.1	254.1
			14-Sep-21		2	1.1	254.1
			13-Oct-21		1.7	0.8	254.5
			15-Nov-21		1.5	0.6	254.6
			13-Dec-21		1.3	0.4	254.9
			11-Jan-22		1.3	0.3	254.9
			15-Feb-22		1.5	0.6	254.6
			14-Mar-22		1.2	0.3	254.9
			19-Apr-22		1.2	0.3	254.9
BH21-3	256.6	4.5-6.0	25-Feb-21	1	4.4	3.4	253.2
			13-Apr-21		4.1	3.1	253.5
			18-May-21		4.1	3.1	253.5
			21-Jun-21		4	3	253.6
			16-Jul-21		4.7	3.7	252.9
			23-Aug-21		4.8	3.8	252.8
			14-Sep-21		4.9	3.9	252.7
			13-Oct-21		4.9	3.9	252.7
			15-Nov-21		4.8	3.8	252.8
			13-Dec-21		4.4	3.4	253.2
			11-Jan-22		4.2	3.2	253.4
			15-Feb-22		4.5	3.5	253.1
			14-Mar-22		4.3	3.3	253.3
			19-Apr-22		3.8	2.8	253.8
BH21-4	256.7	10.7-12.2	25-Feb-21	0.9	2.6	1.7	255
			13-Apr-21		1.2	0.3	256.4
			25-Feb-21			Frozen	
			18-May-21		1.1	0.2	256.5
			21-Jun-21		1.1	0.2	256.5
			16-Jul-21		1.3	0.4	256.3
			23-Aug-21		1.3	0.4	256.3
			14-Sep-21		1.4	0.5	256.2
			13-Oct-21		1.4	0.5	256.2
			15-Nov-21		1.4	0.5	256.2
			13-Dec-21		1.4	0.5	256.2

			11-Jan-22		1.4	0.5	256.2
			15-Feb-22		1.4	0.5	256.2
			14-Mar-22		1.4	0.5	256.2
			19-Apr-22		1.4	0.5	256.2
BH21-5	255.6	9.2-12.2	13-Apr-21	0.9	2.9	2	253.6
			18-May-21		1	0.1	255.5
			21-Jun-21		2.1	1.2	254.4
			23-Aug-21		1.8	0.9	254.7
			14-Sep-21		1.6	0.7	254.9
			13-Oct-21		1.2	0.4	255.3
			15-Nov-21		1.1	0.3	255.3
			13-Dec-21		0.8	0	255.6
			11-Jan-22		0.9	0.1	255.5
			15-Feb-22		1.1	0.3	255.3
			14-Mar-22		0.8	-0.1	255.7
			19-Apr-22		0.7	-0.2	255.8
BH19-5	254.3	12.2-15.2	13-Apr-21	0.8	0.8	0	254.3
			18-May-21		0.9	0.1	254.2
			21-Jun-21		1	0.2	254.1
			16-Jul-21		1.3	0.5	253.8
			23-Aug-21		-	Not accessible	Not accessible
			14-Sep-21		1.5	0.7	253.6
			13-Oct-21		1.2	0.4	253.9
			15-Nov-21		1	0.3	254.0
			13-Dec-21		0.8	0	254.3
			11-Jan-22		0.7	-0.1	254.4
			15-Feb-22		0.7	-0.1	254.4
			14-Mar-22		0.7	-0.1	254.4
			19-Apr-22		0.7	-0.1	254.4
			07-Oct-24		1.2	0.4	253.9
BH24-1	256.6	6.1-9.1	13-Nov-24	0.9	2.7	1.8	254.8
BH24-4	255.4	4.6-7.6	13-Nov-24	0.9	2.2	1.3	254.1
BH24-5	254.9	4.6-7.7	13-Nov-24	0.9	2.3	1.4	253.5
BH24-8	254.5	4.1-7.1	13-Nov-24	0.9	2.3	1.4	253.1
BH24-9	255.8	5.6-8.6	13-Nov-24	0.9	3.1	2.2	253.6
BH25-1	254.3	16.3-21.3	07-Mar-25	0.94	1.09	0.2	254.1
			24-Mar-25		0.78	-0.2	254.5

4.4 Single Well Response Test Analysis

In total, four (4) Single Well Response Tests (slug tests) were completed by DS at the site between May 2019 and February 2021. An additional five (5) slug tests were conducted in November 2024, and one (1) test was conducted at BH25-1 in February 2025 to estimate hydraulic conductivity (k) for the representative

geological units in which the wells were screened. The testing was completed using data loggers placed at the bottom of the monitoring wells to accurately measure the change in the hydraulic head versus time. Hydraulic conductivity (k) values were calculated using the Bouwer and Rice method using the AquiferTest® Software. The semi-log plots for normalized drawdown versus time are provided in **Appendix B.** The k-values ranged between 3.1 X 10^{-7} to 4.9 x 10^{-6} m/s in the underlying cohesionless unit and 1.9 X 10^{-9} to 7.5 x 10^{-7} m/s in the overlying clayey silt material, indicative of medium to high permeability lithology in the lower unit and low to medium permeability in the upper unit. **Table 4-2** presents the Hydraulic Conductivity (k) values for the representative geological units.

Table 4-2: Summary of Hydraulic Conductivity (k) Test Results

Well ID	Screened Interval (mbgs)	Screened Formation	K-value (m/s)
BH21-1	12.2-15.2	Sand and Gravel, Silty Sand Till	1.6 x 10^{-6}
BH21-3	4.5-6.0	Sand	4.9 x 10^{-6}
BH21-4	10.7-12.2	Sandy Silt Till	6.8 x 10^{-7}
BH19-5	12.2-15.2	Silty Sand to Sandy Silt, Sand and Gravel	3.1 x 10^{-7}
BH25-1	16.3-21.3	Silty Sand and Silty Sand to Sandy Silt Till	3.2 x 10^{-7}
		Geomean	8.8 x 10^{-7}
BH24-1	6.1-9.1	Silty Clay Till & Clayey Silt	1.1 x 10^{-8}
BH24-4	4.6-7.6	Clayey Silt to Silty Clay Till	7.5 x 10^{-7}
BH24-5	4.6-7.6	Clayey Silt	7.1 x 10^{-8}
BH24-8	4.1-7.1	Clayey Silt Till & Clayey Silt	7.5 x 10^{-8}
BH24-9	5.6-8.6	Clayey Silt	1.9 x 10^{-9}
		Geomean	3.8 x 10^{-8}

4.5 Groundwater Quality Analysis

To assess the suitability for discharge of groundwater to the York Region sewers, one (1) unfiltered groundwater sample was collected from monitoring wells BH19-5 and BH24-5 on October 7th and November 15th, 2024, respectively. 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 York Region Sewer Use Bylaw 2021_102. The reported analytical results indicate manganese exceeded the York Region storm sewer criteria from BH24-5. No exceedances were reported against York

Region sanitary sewer criteria from both samples. **Table 4-3** presents a summary of the exceeded parameters, and the certificate of analysis is provided in **Appendix C.**

Table 4-3: Parameters in Groundwater Exceeding the York Region Sewer Use Bylaw

Parameter	Unit	York Region Storm Sewer By-Law Criteria	York Region Sanitary Sewer By-Law Criteria	BH19-5	BH24-5
Manganese	mg/L	0.15	5	0.0131	**0.323**
Note: 0.00- Exceeded Storm Bylaw **<u>0.00</u>**- Exceeded Sanitary Bylaw					

5.0 CONSTRUCTION DEWATERING- UNSEALED EXCAVATION

Construction dewatering is anticipated within the site boundaries for the proposed development. Construction dewatering estimates were based on the site area indicated on site plan designs. The current proposed development is to consist of a 19 to 29-storey high-rise building with P3 extending to 249.35 masl along the east side of the proposed building P2 extending to 250.60 masl on the western side of the Building. Footings are estimated to extend 2.5m below the P2 floor slab (248.10 masl) and P3 floor slab (246.85 masl). The groundwater level should be lowered 1 m below the footings of P2 and P3 to 247.10 masl and 245.85 mas, respectively. Dewatering will be required for the excavation below the groundwater table, and depressurization of the aquifer will be required for any excavations below the estimated safe excavation depths (SEDs). SEDs are discussed in the geotechnical report under a separate cover. The following section calculates the estimated dewatering required during the construction of the proposed developments using the steady-state flow equation for an unsealed excavation.

5.1 Total Estimation of Flow Rate- (Short Term/Construction Dewatering)

This section calculates the estimated dewatering needed considering the open-cut excavation methods using the Dupuit expression for an unconfined aquifer in steady-state conditions.

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

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

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

Where,

	P2 (West)	P3 (East)
H- Initial Elevation of Water Table (m)	8.4	11
h-Final Elevation of Water Table (m)	1	1
K- Hydraulic Conductivity (m/s)	1.6×10^{-7} (geomean for area)	2.9×10^{-7} (geomean for area)
Ro- Radius of Influence (m)	83	71
Re- Equivalent Radius (m)	74	54.7
A- Area (m^2)	17,300	9,400
C- Dimensionless Constant	3	3
Q- Flow Rate (L/day)	**27,000**	**36,000**
Q- Maximum Flow Rate (m^3/day) 100% safety factor	**54,000**	**72,000**

The total estimated daily rate for short term construction is estimated to be approximately **54,000 L/day (54 m^3/day)** for P2 (east side) and **72,000 L/day (72 m^3/day)** for P3 (west side), with a total combined rate of **126,000 L/day (126 m^3/day).** This value incorporates a 100% safety factor. 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 value to account for unforeseeable conditions that may arise during construction.

Surface water runoff and precipitation may accumulate in the excavation resulting in additional water discharge. Water discharge will depend on the size of the excavation, precipitation intensity and excavation method. To represent a 'significant' precipitation event, an estimated 25 mm precipitation event in 24 hours was used to estimate potential storm water discharge. This would account for approximately **340,000 L discharged over a 48-hour period (340 m^3over a 48-hour period)** for the entire Site. Surface water and stormwater contributions during construction are no longer included in the construction groundwater taking EASR and PTTW limits as of July 1st, 2021. Stormwater contributions are to be addressed under other activity requirements.

5.2 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 is approximately 83 m and 71 m for P2 and P3 sides, respectively.

5.3 Permanent Drainage (Long-term Discharge)

A subfloor and perimeter drainage system (PDS) will be required to be implemented to manage groundwater long-term. Continuous groundwater collection and discharge to the Region's sewer will be required. Alternatively, the underground parking structures may be designed as water-tight structures, and groundwater discharge will not be required. Following the construction of the underground structure, long-term groundwater flow to the underfloor drainage system for the building will be a function of the upward flux and drainage along the foundation wall. To estimate the groundwater flow to the future sub-,drain the Dupuit equation was used to obtain a flow rate.

	P2 (West)	P3 (East)
H- Initial Elevation of Water Table (m)	6.4	7.0
h-Final Elevation of Water Table (m)	0.5	0.5
K- Hydraulic Conductivity (m/s)	1.6×10^{-7} (geomean for area)	2.9×10^{-7} (geomean for area)
Ro- Radius of Influence (m)	81	65
Re- Equivalent Radius (m)	74.2	54.7
A- Area (m^2)	17,300	9,400
C- Dimensionless Constant	3	3
Q- Flow Rate (m^3/day)	**19,000**	**22,000**
Q- Maximum Flow Rate (m^3/day) 20% safety factor	**22,800**	**26,400**

Based on the assumed design, the estimated permanent theoretical flow is approximately **22,800 L/day (22.8 m^3/day)** and **26,400 L/day (26.8 m^3/day)** for P2 and P3, respectively with a combined rate of **49,000 L/day (49 m^3/day)** with a 20% safety factor. The drainage control system around and beneath the buildings should be designed with enough capacity to handle the expected permanent volume. This value is recommended to be verified once the underground construction is completed, and access is provided to DS to assess actual flow rates at the sumps.

5.4 Permit Requirements

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

An EASR is required to be submitted to the 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.

Since the expected design dewatering rates for the unsealed excavation is above 50,000 L/day, an EASR application is required for short-term dewatering during construction.

Since the estimated maximum permanent drainage rate is below 50,000 L/day, a PTTW will not be required for long-term discharge. These values can change based on actual soil and groundwater conditions at the site and will be confirmed during construction.

5.4.2 Discharge Permits

A discharge permit may be required from the York Region if private water is to be sent to the storm sewer system for construction dewatering and permanent drainage.

6.0 SITE WATER BALANCE

To understand and compare existing hydrologic conditions, a Thornthwaite site water balance was completed. The Thornthwaite water balance (Thornthwaite, 1948; Mather, 1978; 1979) is an accounting type method used to analyze the allocation of water among various components of the hydrologic cycle. Inputs to the model are monthly temperature, Site latitude, precipitation, and stormwater run-off. Outputs include monthly potential and actual evapotranspiration, evaporation, water surplus, total infiltration, and total runoff. For ease of calculation, a spreadsheet model was used for the computation.

When precipitation (P) occurs, it can either runoff (R) through the surface water system, infiltrate (I) to the water table, or evaporate/evapotranspiration (ET) from the earth's surface and vegetation. The sum of R and I is termed as the water surplus (S). When long-term averages of P, R, I and ET are used, there is no net change in groundwater storage (ST). Annually, however, there is a potential for small changes in ST. The annual water budget can be stated as **P = ET + R + I + ST** and the components are discussed below.

6.1 Pre-Development Water Balance

The Site has a total approximate area of 26,748 m^2 and is predominantly comprised of agricultural land. **Figure 6A** shows the pre-development conceptual model considered for establishing current hydrologic conditions. To predict outputs of the pre-development water balance, various inputs were entered into the Thornthwaite model including monthly precipitation and temperature, site latitude, water holding capacity values for native soils and factors of infiltration. Various inputs and outputs of the model are summarized below.

The average annual precipitation rate for the area is approximately 895 mm/year. In the pervious area of the Site, the PET is estimated to be 612 mm/year, which is approximately 68% of the total annual precipitation rate.

Precipitation (P)

Based on the 30-year average for the Richmond Hill Climate Station in Ontario, the average precipitation for the area is about 895 mm/year for the period between 1981 and 2010. Also, the average monthly temperature from this station has been used. The monthly distribution of precipitation is presented in **Table 1, Appendix F.**

Storage (St)

Groundwater storage (ST) of native soils for the existing Site was estimated using values of Water Holding Capacity (mm) of respective land use and soil types identified in Table 3.1 of the Storm Water Management (SWM) Planning & Design Manual (MOE, March 2003). The land uses, soil types and respective water

holding capacities chosen to represent existing conditions at the Site include the following with their respective water holding capacity applied to March for monthly calculations:

- Agricultural/Moderately Rooted Crops, Silt Soils– 200 mm

Using the procedures outlined in the SWM Planning & Design Manual for the above land use and soil type, the annual change in storage is zero (0).

Evapotranspiration (Et)

Monthly Potential Evapotranspiration (PET) is estimated using monthly temperature data and is defined as a water loss from a homogeneous vegetation-covered area that never lacks water (Thornthwaite,1948; Mather, 1978). In the Thornthwaite water balance model, PET is calculated using the Hamon equation (Hamon, 1061);

PET Hamon = 13.97 * d * D2 * Wt

Where:
d = the number of days in the month
D = the mean monthly hours of daylight in units of 12 hours
Wt = a saturated water vapour density term = 4.95 * e0.627/100
T = the monthly mean temperature in degrees Celsius

The calculated Actual Evapotranspiration (AET) is based on PET and changes in ST (Δ ST). Where there is not enough P to satisfy PET, a reduction in ST occurs. As a result, volumes of AET are less than PET. Also, it is assumed that evaporation will occur and will amount to approximately 15% of the total precipitation for an impervious cover.

Precipitation Surplus (S)

Precipitation surplus is calculated as P–ET. For pervious areas, ET is considered AET and for impervious areas, ET is evaporation.

Infiltration (I) and Runoff (R)

For pervious areas, precipitation surplus has two (2) components in the Thornthwaite model: a runoff component (overland flow that occurs when soil moisture capacity is exceeded) and an infiltration component. The accumulation of infiltration factors for topography, soil types and cover as prescribed in Table 3.1 of the SWM Planning & Design Manual give infiltration factors for existing conditions on the Site as shown below in **Table 6-1**. The runoff component calculated in the pre-development model is the remaining volume of precipitation surplus following AET, ET, and infiltration.

Based on the above, the resulting annual evapotranspiration, infiltration and runoff volumes for each area of the Site during the pre-development period is summarized in **Table 6-1 below.**

Table 6-1 - Existing Conditions – Infiltration Factor

Land uses / soil types	Topography	Soil	Cover	Total Infiltration Factor
Agricultural/Moderately Rooted Crop	0.3	0.2	0.1	0.6

Table 6-2 – Summary of Pre-Development Water Balance

Land Uses / Soil Types	ET Volume (m^3/year)	AET Volume (m^3/year)	Infiltration Volume (m^3/year)	Runoff Volume (m^3/year)
Agricultural/Moderately Rooted Crop	NIL	15,409	5,122	3,414

The detailed calculations are provided in **Table 2, Appendix E**

6.2 Post Development Water Balance

Post-development conditions include impervious areas and pervious areas of park area (urban lawn), with silt loam soils. To predict outputs of the post-development water balance, the same 30-year average climate data and site latitude inputs were used. Changes in land use including landscaped areas include a reduction in soil water holding capacity inputs and factors of infiltration. **Figure 6B** shows the post-development conceptual model considered for establishing current hydrologic conditions. Various inputs and outputs of the post-development model are presented in **Table 3, Appendix F.**

PRECIPITATION (P)

Based on the 30-year average for the Richmond Hill WWTP Climate Station, the average precipitation for the area is about 895 mm/year for the period between 1981 and 2010. Also, the average monthly temperature from this station has been used. The monthly distribution of precipitation is presented in **Table 1, Appendix F.**

Storage (St)

The land uses, soil types and respective water holding capacities chosen to represent existing conditions at the Site including the following with their respective water holding capacity applied to March for monthly calculations:

- Park (Urban Lawns)/Silt Loam – 125 mm

Like the pre-development conditions, using the procedures outlined in the SWM Planning & Design Manual for each land use, the annual change in storage is 0. The monthly distribution of ST for each of the land use/soil types is presented in **Table 3, Appendix F**.

Evapotranspiration (Et)

The proposed plans for development during the post-construction period will result in an increase in the total impervious hard surfaces across the Site. The total area of impervious surfaces following the proposed plans for construction is approximately 20,063 m^2. In the impervious areas, it is assumed that only evaporation will occur and will amount to approximately 15% of the total precipitation. Considering a total annual precipitation of 895 mm/year, evaporation is estimated at 122 mm/year. On this basis, the total annual volume of evaporation is estimated at 134 m^3/year. The detailed calculations for evaporation are included in **Table 3, Appendix F**.

For post-development pervious areas, monthly PET is estimated using the same inputs and calculations described in the pre-development model respective of land use and soil moisture holding capacity. In the post-development scenario, annual AET is 3,707 m^3/year for the pervious landscaped/developmental area of the Site. The monthly distribution of post-development AET and detailed calculations are presented in **Table 3, Appendix F**.

Precipitation Surplus (S)

For post-development pervious surfaces at the Site, precipitation surplus is calculated as the difference between precipitation and actual evapotranspiration (P–AET), which is estimated to be 358 mm/year for pervious landscaped areas.

For Impervious surfaces at the Site, surplus is P-ET where ET is estimated at 15% of P. The resulting precipitation surplus is about 134 mm/yr. The more detailed calculations are included in **Table 3, Appendix F**.

Infiltration (I) and Runoff (R)

The accumulation of infiltration factors for topography, soil types and cover are prescribed in Table 3.1 of the SWM Planning & Design Manual. The annual volume of post-development infiltration for the development is estimated at 1,366 m^3/year.

The runoff component calculated in the post-development model is the remaining volume of precipitation surplus following infiltration. Considering the precipitation surpluses and the total infiltration volume, the total runoff for the development is approximately 16,177 m^3/year. Detailed calculations and the monthly distribution of infiltration and runoff are presented in **Table 3, Appendix F.**

6.3 Site Water Balance Results

Based on results of the pre-development and post-development water balance completed, the proposed developments will in general produce a decrease in annual evapotranspiration over the Site, a reduction in annual infiltration and a general increase in annual runoff at the Site. The effects are mainly the result of increased impervious area and decreased pervious areas of the Site. The proposed development will produce an infiltration deficit of 3,756 m^3/year and an increase in annual runoff of 12,763 m^3/year.

Table 6-3 below summarizes the pre- and post-development conditions with and without mitigation measures. LID measures are recommended to reduce the infiltration deficit and meet pre-development conditions. In-situ infiltration tests will be conducted once LID inverts are provided to DS for review. A minimum 1 m clearance must be maintained between the bottom invert of LID measures and the groundwater table. A mitigated water balance will be provided once LID design is provided to DS for review.

Table 6-3- Summary of Water Balance Analysis – Pre-Development and Post-Development

Hydrologic Output	Pre-Development	Post-Development	Change (Pre- to Post Development)
Proposed Development Area (m^2)	26,748	26,748	0
Precipitation (m^3/year)	23,945	23,945	0
Total Evaporation (m^3/year)	0	2,694	2,694
Total AET (m^3/year)	15,409	3,707	-11,702
Total Infiltration (m^3/year)	5,122	1,366	-3,756
Total Runoff (m^3/year)	3,414	16,177	12,763

7.0 POTENTIAL IMPACTS

The potential impacts associated with a development occurring at the site are presented in the sections below.

7.1 Oak Ridges Moraine Conservation Plan

The Site falls under O.Reg 140/02: Oak Ridges Moraine Conservation Plan. The ORM Conservation Plan is an ecologically based plan that provides land use and resource management direction for land and water within the Moraine. The site is categorized is designated as countryside area.

Countryside Areas provide an agricultural and rural transition and buffer between the Natural Core Areas and Natural Linkage Areas and the urbanized Settlement Areas. Infrastructure uses are permitted in Countryside Areas. Residential developments, and small-scall commercial, industrial, and institutional uses are permitted in Countryside Areas. Additional permitted land uses are outlined in section 12(3) and section 13(3) of O.Reg 140/02. The Ontario Ministry of Natural Resources and Forestry Map is shown in **Appendix E.**

7.2 Local Groundwater Use

The MECP water well record search identified multiple water supply wells within the study area. Prior to any development, it is recommended that a door-to-door water well survey be conducted within the study area to confirm the presence and the use of the water supply wells identified in the MEC WWRs, and to assess potential short-term and long-term impacts to private water wells that may occur from dewatering activities at the site.

7.3 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 where the source was surface water. Therefore, groundwater interferences from surrounding activities may occur. The PTTW search is summarized in **Table 7-1** below.

Table 7-1: PTTW Search within 1 km of Site

Permit Number	Permit Holder Name	Purpose	Specific Purpose	Max Litres Per Day	Source Type	Distance from Site (km)
2307-ALLT4C	63 Golf Inc. operating as Spring Lakes Golf Club	Commercial	Golf Course Irrigation	3,410,000	Surface Water	0.99

7.4 Source Protection Area

The site is located within the Toronto Region Source Protection Area (SPA). The site was identified to be within an area of significant groundwater recharge with a designated score of 6. Significant groundwater recharge areas are characterized by porous soils such as sand and gravel, which allow water to seep easily to the ground. A recharge area is considered significant when it helps maintain water levels in an aquifer that supplies a community with drinking water. Groundwater impacts as a result of construction should be assessed and minimize potential impacts to drinking water.

7.5 Highly Vulnerable Aquifer & Significant Groundwater Recharge Area (SGRA)

The site is located within a Highly Vulnerable Aquifer (HVA) with a score of 6, indicating a moderate risk to the aquifer from construction activities. However, since construction is anticipated within the overlying till, construction is not anticipated to impact the underlying sand aquifer. HVAs are aquifers that are more susceptible to contamination generally consisting of granular material (i.e., sand & gravel, and fractured rock near the surface). The Site is also located within a Significant Groundwater Recharge Area (SGRA) where storm water can easily seep into the ground and replenish the aquifer. SGRAs help maintain the water level in the aquifers that supply drinking water in the area. Given the low permeability of the overlying till material identified during the field investigation, the site does not readily support recharge.

7.6 Wellhead Protection Area

The site and the study area are located within a municipal Wellhead Protection Area-Quantity (WHPA-Q). The site is categorized to be at moderate risk for both water taking without returning it to the same source (WHPA-Q1), and for reducing recharge to the area (WHPA-Q2). Any WHPA-Q areas where significant or moderate drinking water stress has been identified is an area where significant drinking water quantity

threat activities can occur. In these areas, future activities must return water to the same source and must not reduce recharge. Areas where a PTTW is required under a moderate risk WHPA-Q must demonstrate that the water taking can be maintained on a sustainable basis; will not affect the ability of the aquifer to meet the municipal water supply requirements for the current and planned service capacity; and will ensure the hydrological integrity of municipal wells will be maintained.

7.7 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.

7.8 Surface Water

A creek intersects highway 48 located east of the site and provincially significant wetlands are located along the eastern limits of the site. The wetland falls within the zone of influence during construction dewatering. Mitigation measures should be enacted to minizine adverse effects to the creek and wetlands. A wetland water balance risk evaluation may be required for the site from the TRCA prior to development. DS recommended monitoring the water features across the site and obtaining surface water samples to establish base line water quality conditions at the site.

8.0 LIMITATIONS

This report was prepared for the sole use of Life Construction Inc. the addressee to provide an assessment of the hydrogeological conditions on the property. The information presented in this report is based on information collected during the completion of the hydrogeological investigation by DS Consultants Ltd. DS Consultants Ltd. was required to use and rely upon various information sources produced by other parties. The information provides in this report reflects DS' judgment in light of the information available at the time of report preparation. This report may not be relied upon by any other person or entity without the written authorization of DS Consultants Ltd. The scope of services performed in the execution of this investigation may not be appropriate to satisfy the needs of other users, and any use or reuse of this documents or findings, conclusions and recommendations represented herein, is at the sole risk of said users. The conclusions drawn from the Hydrogeological report were based on information at selected observation and sampling locations. Different conditions between and beyond these locations may become apparent during future investigations or on-site work, which could not be detected or anticipated at the time of this investigation. DS Consultants Ltd. cannot be held responsible for hydrogeological conditions at the site that was not apparent from the available information.

Should you have any questions regarding these findings, please do not hesitate to contact the undersigned.

DS Consultants Ltd.

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Reviewed By:

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Senior Project Manager (Hydrogeology)

9.0 REFERENCES

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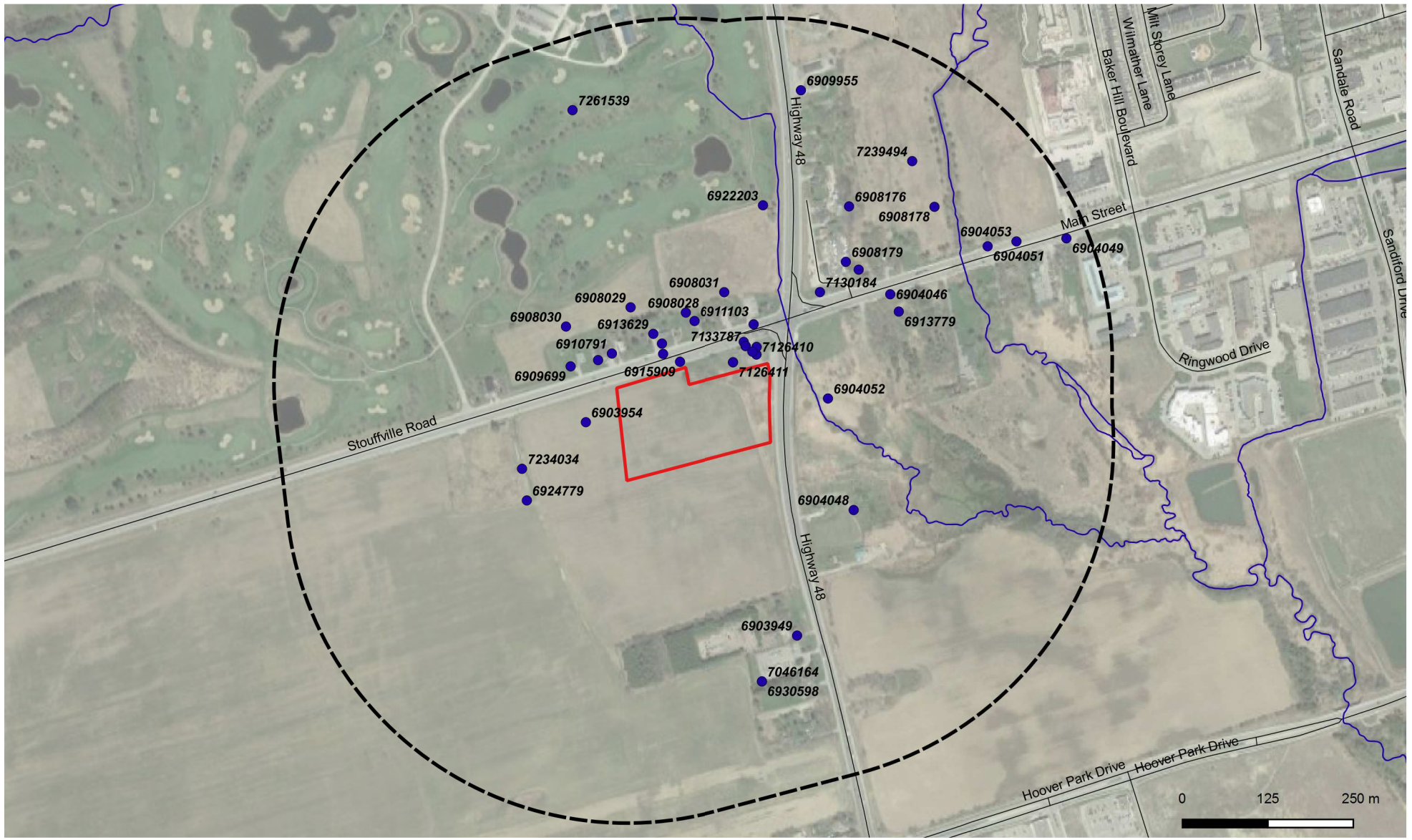
Ontario Regulation 153/04 made under the Environmental Protection Act, July 1, 2011.

Ontario Regulation 245/11- Environmental Activity and Sector Registry.

Figures

C:\0Sharon\19-043-100 4721 and 5061 Stouffville Road_Times Group\1-QGIS\HydroG-101\NE Corner\Figure 1 – Site Location and MECP Well Records.qgs



Legend

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

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Project: HYDROGEOLOGICAL INVESTIGATION
5061-4721 Stouffville Road, Whitchurch-Stouffville, ON

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

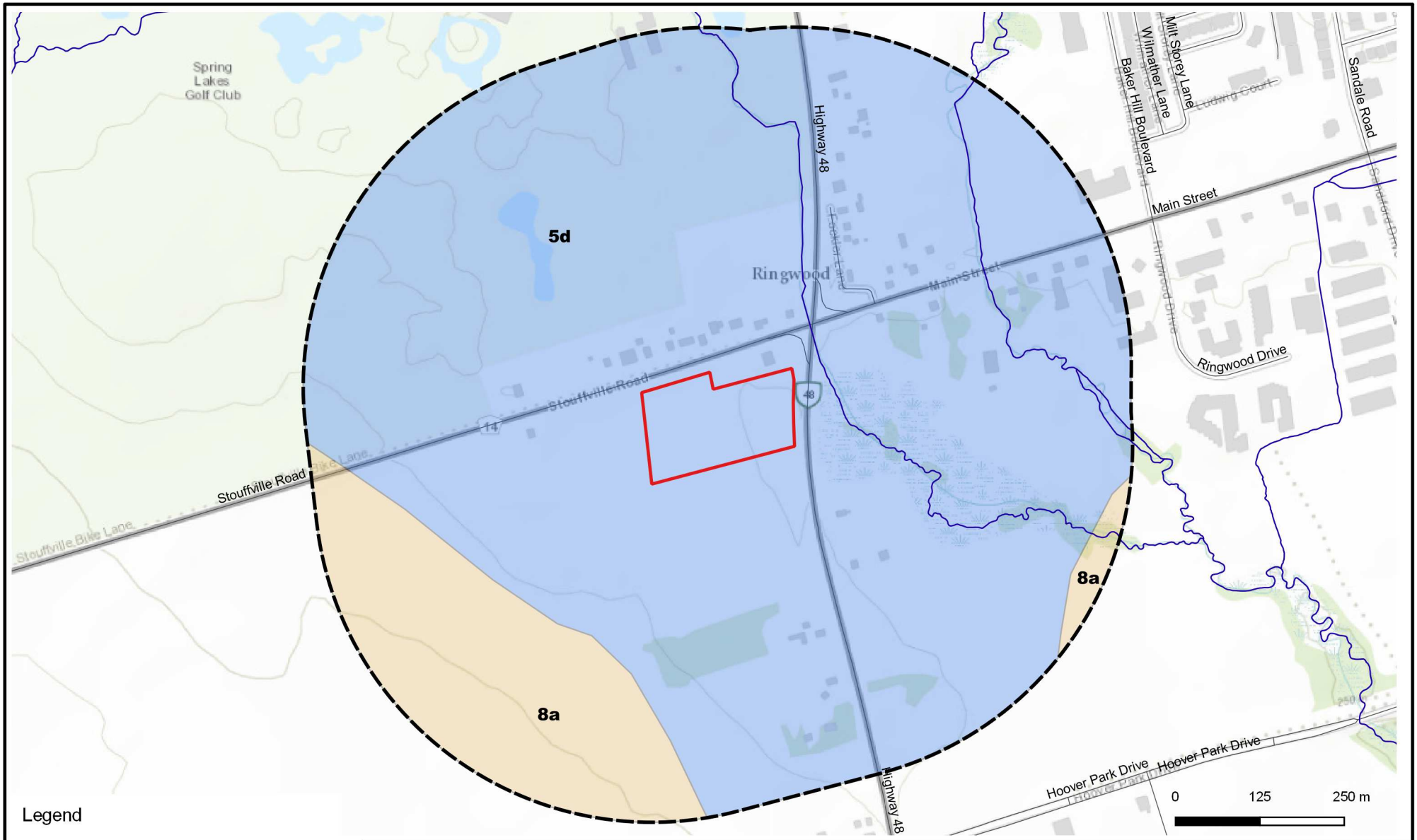
N

Client: TIMES GROUP

Size:	Approved By:	Drawn By:	Date:
8.5 x 11	D.G	S.Y	June 2021
Rev: 0	Scale: As Shown	Project No.: 19-043-101	Figure No.: 1

Image/Map Source: *Google Satellite Image*

C:\0Sharon\19-043-100 4721 and 5061 Stouffville Road_Times Group\1-QGIS\HydroG-101\NE Corner\Figure 2 – Surficial Geology Map.qgs



Legend

- 500m Buffer
- Approx Property Boundary
- 5d - Till
- 8a- Fine-textured Glacial Lake Deposits

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Project: HYDROGEOLOGICAL INVESTIGATION
5061-4721 Stouffville Road, Whitchurch-Stouffville, ON

Title: **SURFICIAL GEOLOGY MAP**

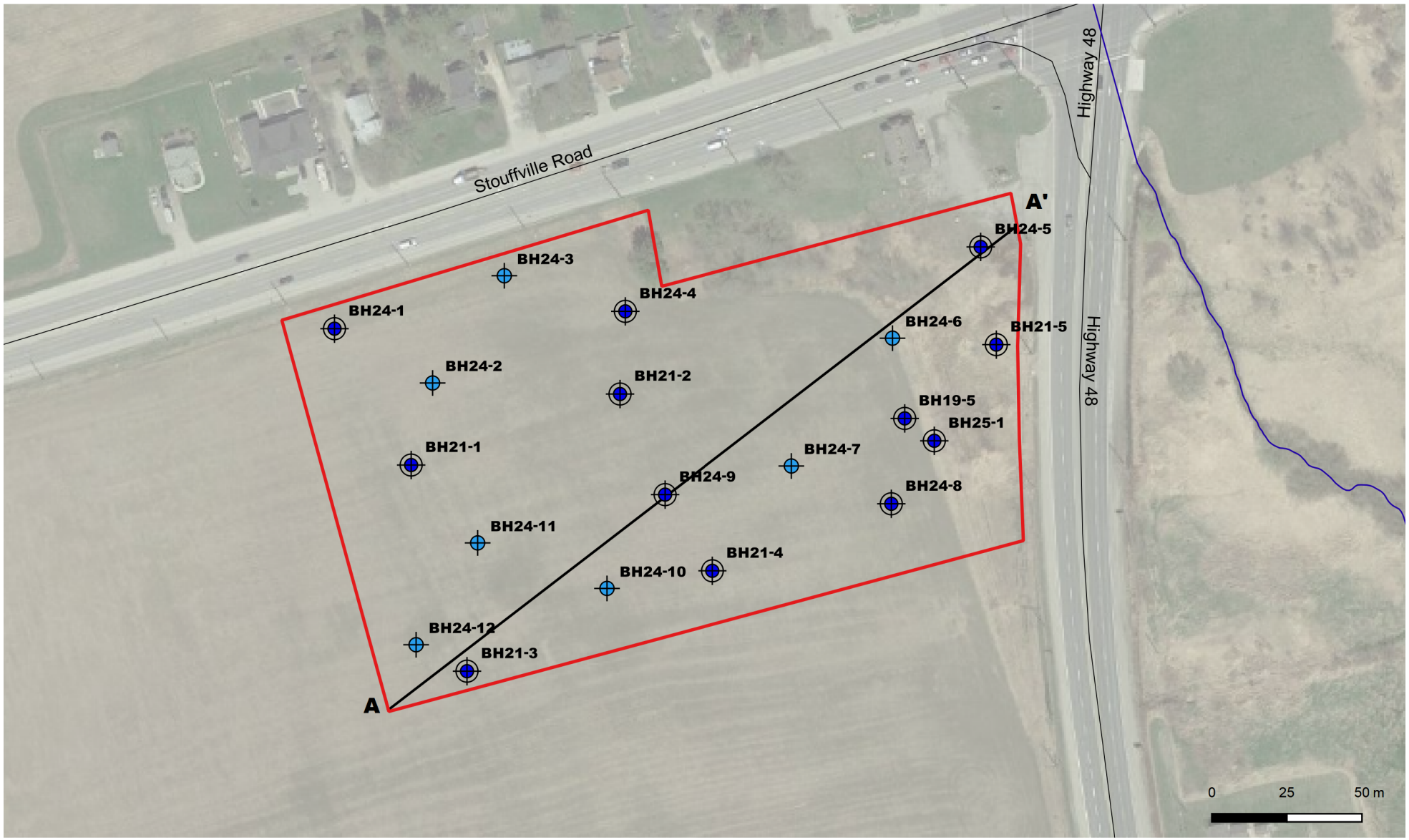
N

Client: TIMES GROUP

Size:	Approved By:	Drawn By:	Date:
8.5 x 11	D.G	S.Y	June 2021
Rev: 0	Scale: As Shown	Project No.: 19-043-101	Figure No.: 2

Image/Map Source: *Esri Topo Map & https://www.mndm.gov.on.ca/*

J:\-GIS\2019 PROJECTS\19-043-100 4721 and 5061 Stouffville Road_Times Group\1-QGIS\HydroG-101\NE Corner\Figure 3 – Borehole and Monitoring Well Locations.qgs



Legend

- Approx Property Boundary
- Cross Section
- Borehole
- Monitoring Well

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www.dsconsultants.ca

Project: HYDROGEOLOGICAL INVESTIGATION
5061-4721 Stouffville Road, Whitchurch-Stouffville, ON

Title: **BOREHOLE AND MONITORING WELL LOCATIONS**

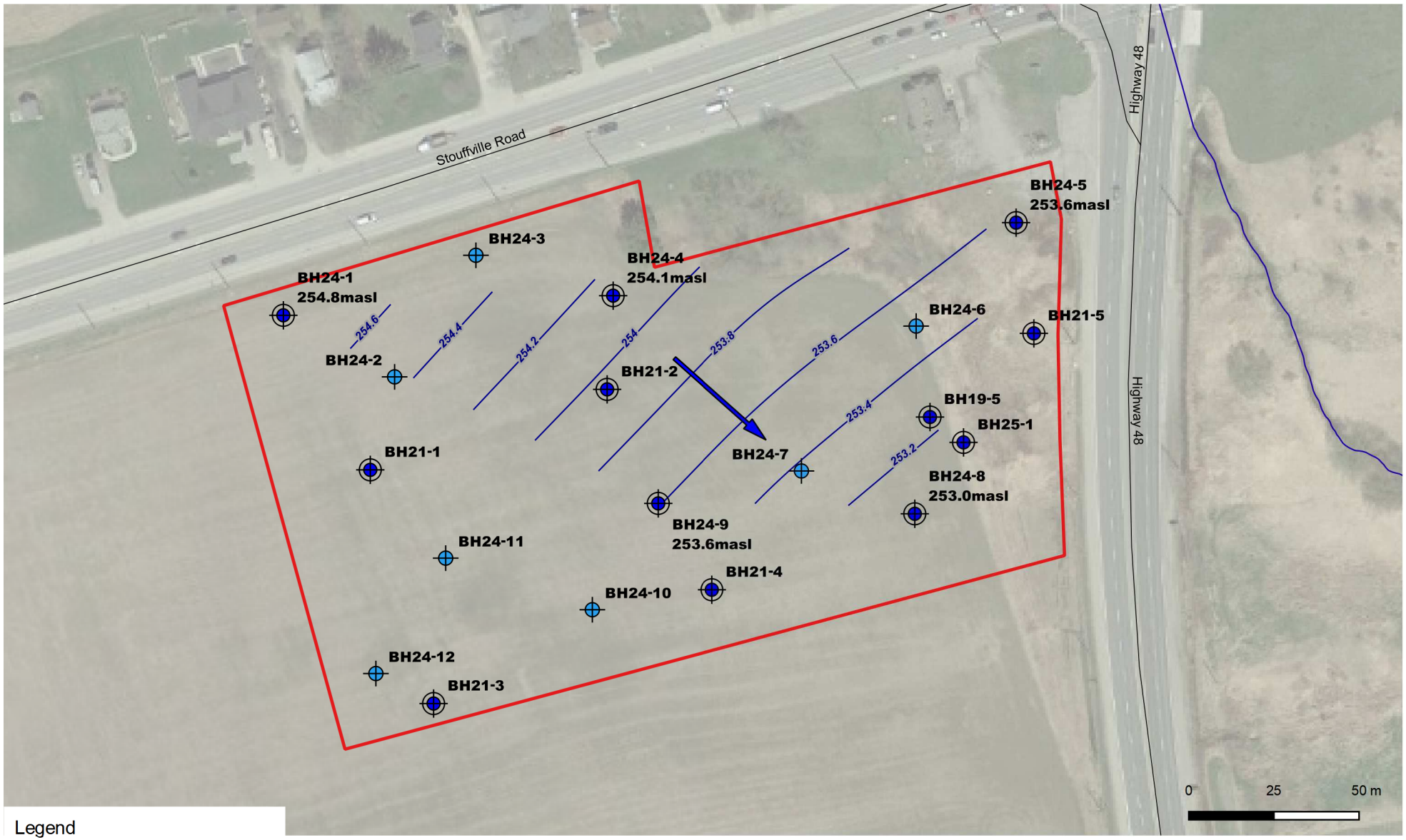
N

Client: TIMES GROUP

Size:	Approved By:	Drawn By:	Date:
8.5 x 11	D.S	S.Y	April 2025
Rev: 0	Scale: As Shown	Project No.: 19-043-101	Figure No.: 3

Image/Map Source: *Google Satellite Image*

J:\-GIS\2019 PROJECTS\19-043-100 4721 and 5061 Stouffville Road_Times Group\1-QGIS\HydroG-101\NE Corner\Figure 4 - GW Elevation Contours and Flow



Legend

- Approx Property Boundary
- Borehole
- Monitoring Well
- Groundwater Flow Direction
- Groundwater Elevation Contour (Nov 13, 2024)

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Project: HYDROGEOLOGICAL INVESTIGATION
5061-4721 Stouffville Road, Whitchurch-Stouffville, ON

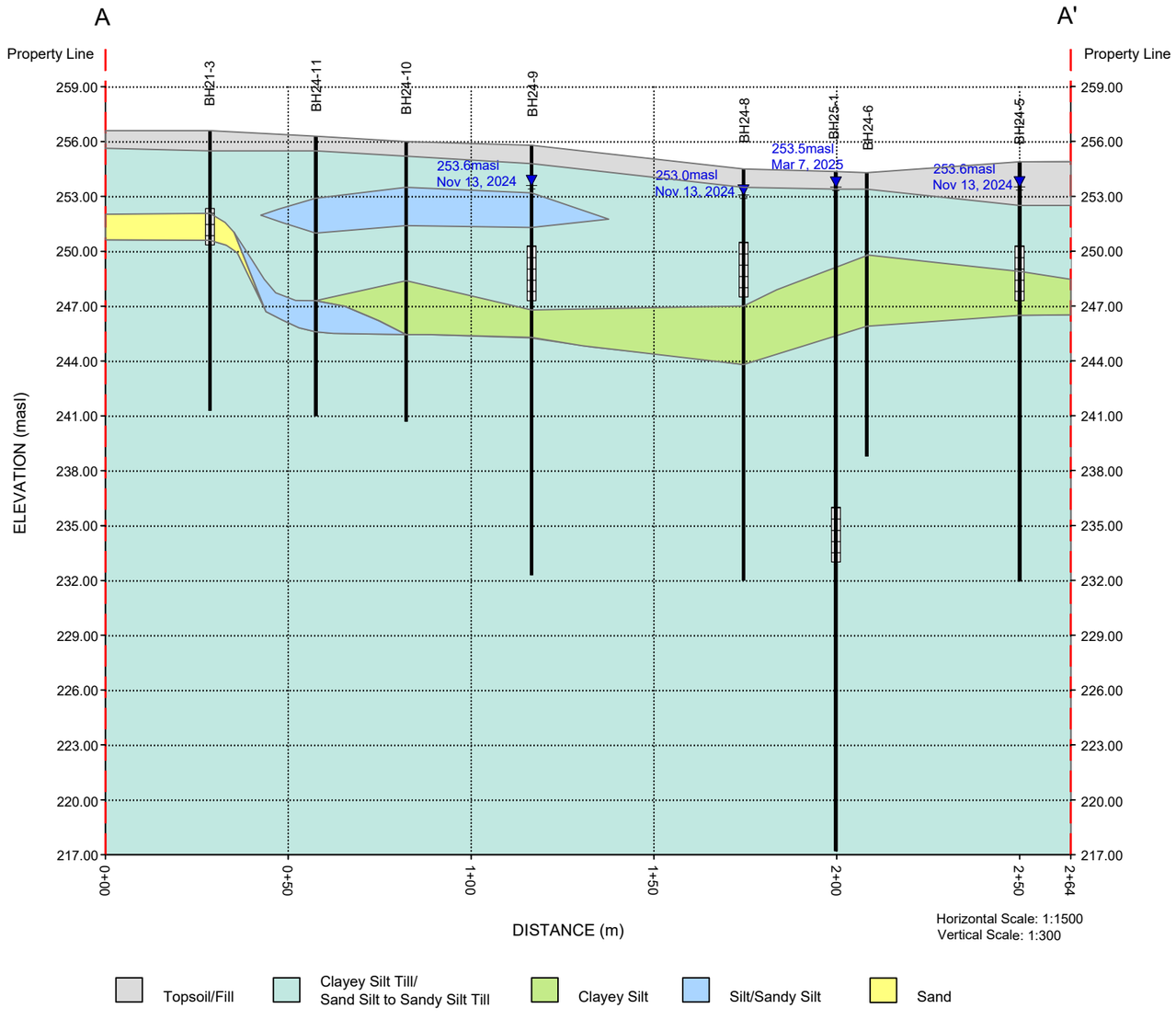
Title: **INFERRED GROUNDWATER CONTOURS AND FLOW DIRECTION MAP**

N

Client: TIMES GROUP

Size:	Approved By:	Drawn By:	Date:
8.5 x 11	D.S	S.Y	April 2025
Rev: 0	Scale: As Shown	Project No.: 19-043-101	Figure No.: 4

Image/Map Source: *Google Satellite Image*



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Client: TIMES GROUP

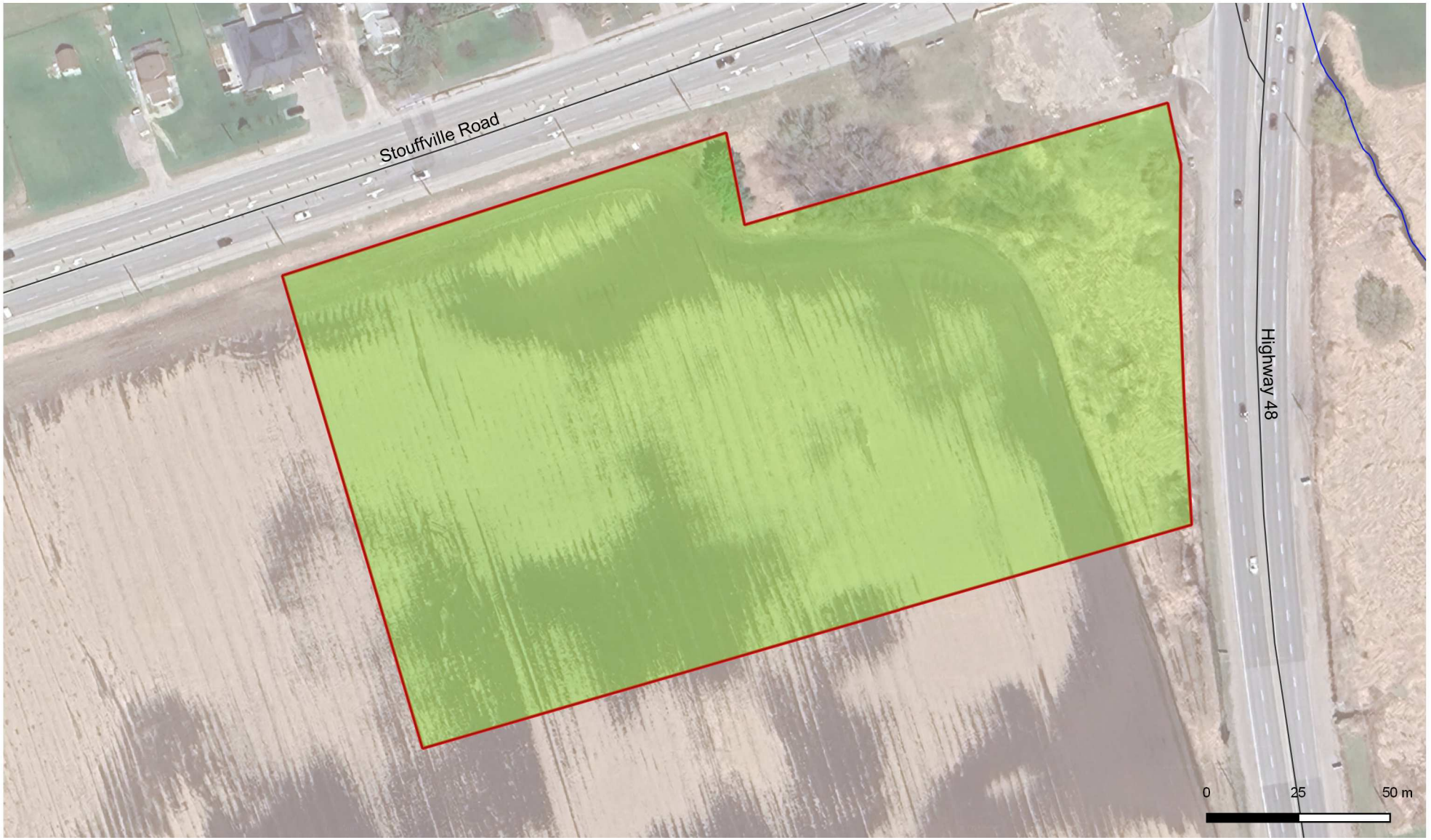
Project: HYDROGEOLOGICAL INVESTIGATION
5061-4721 Stouffville Road, Whitchurch-Stouffville, ON

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

Size:	Approved By:	Drawn By:	Date:
11 X 17	D.S	S.Y	April 2025
Rev.	Scale: As Shown	Project No: 19-043-101	Figure No. **5**

Path:j:\-gis\2019 projects\19-043-100 4721 and 5061 stouffville road_times group\7-misc\cad\geological cross section - ne.dwg

J:\-GIS\2019 PROJECTS\19-043-100 4721 and 5061 Stouffville Road_Times Group\1-QGIS\HydroG-101\NE Corner\Waterbalance\Figure 1 - Pre Development Landuse.qgs



Legend

- Approx Property Boundary
- Agricultural and Open Space

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Project: HYDROGEOLOGICAL INVESTIGATION
5061-4721 Stouffville Road, Whitchurch-Stouffville, ON

Title: **PRE DEVELOPMENT LANDUSE**

N

Client: TIMES GROUP

Size:	Approved By:	Drawn By:	Date:
8.5 x 11	D.G	S.Y	December 2024
Rev: 0	Scale: As Shown	Project No.: 19-043-100	Figure No.: **6A**

Image/Map Source: *Google Satellite Image*

J:\-GIS\2019 PROJECTS\19-043-100 4721 and 5061 Stouffville Road_Times Group\1-QGIS\HydroG-101\NE Corner\Waterbalance\Figure 2 - Post Development Landuse.qgs

Legend

- Approx Property Boundary
- Building
- Open Space
- Road/Driveway/Parking

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Project: HYDROGEOLOGICAL INVESTIGATION
5061-4721 Stouffville Road, Whitchurch-Stouffville, ON

Title: **POST DEVELOPMENT LANDUSE**

N

Client: TIMES GROUP

Size:	Approved By:	Drawn By:	Date:
8.5 x 11	D.G	S.Y	December 2024
Rev: 0	Scale: As Shown	Project No.: 19-043-100	Figure No.: **6B**

Image/Map Source: *Google Satellite Image*

Appendix A

DS CONSULTANTS LTD.
Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH19-5

PROJECT: Preliminary Geotechnical Investigation
CLIENT: Times Group Corp
PROJECT LOCATION: 4721 to 5061 Stouffville Road, Whitchurch-Stouffville, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1 N 4869147.9 E 637851

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: May/01/2019

REF. NO.: 19-043-100
ENCL NO.: 6

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
254.3					W. L. 254.6 m May 23, 2019	254
254.2 0.1	**TOPSOIL:** 125mm	1	SS	5		
253.5 0.8	**FILL:** silty clay, trace sand, brown, moist, firm					
1	**SANDY SILT TILL:** trace to some clay, some gravel, occasional cobble/boulder, brown, wet, compact to very dense	2	SS	10		253
		3	SS	14		
2		4	SS	78		252
3	some clay, grey, moist below 3.1m	5	SS	94		251
4						250
5		6	SS	86		249
248.2 6.1	**CLAYEY SILT TILL:** sandy, trace gravel, grey, moist, hard	7	SS	40		248
7 246.7 7.6	**SILT TO SANDY SILT:** some clay, grey, moist, dense	8	SS	46		247
8 245.2 9.1	**CLAYEY SILT TILL:** sandy, trace gravel/ cobble, grey, moist, hard	9	SS	36		246
10						245
11		10	SS	47		244
12 242.1 12.2	**SILTY SAND TO SANDY SILT TILL:** trace to some clay, trace cobbles, grey, moist, very dense	11	SS	86		243
13 241.0 13.3	**SAND AND GRAVEL:** trace silt, grey, wet, dense					242
14		12	SS	39		241
15 239.1 15.2	**END OF BOREHOLE**					240

Notes:
1) 50mm dia. monitoring well installed at 15.2 mbgl upon completion.
2) Water level readings:

Date:	W.L. Depth (m):
May 23, 2019	-0.30 (above ground surface)

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
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)

METHANE AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
19	33	38	10

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

DS SOIL LOG 19-043-100; 4271 STOUFFVILLE.GPJ DS.GDT 7/16/19

DS CONSULTANTS LTD.
Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH21-1

PROJECT: Geotechnical Investigation - Additional Work
CLIENT: Times Group
PROJECT LOCATION: 4721 and 5061 Stouffville Rd, Whitchurch-Stouffvill, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1 N 4869159.459 E 637854.913

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Feb-11-2021

REF. NO.: 19-043-101
ENCL NO.: 8

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS "N" 0.3 m
254.5 / 0.0	**TOPSOIL:** 300mm	1	SS	7
254.2 / 0.3	**CLAYEY SILT:** some sand, trace gravel, brown, moist, firm (weathered)			
253.7 / 0.8	**SILTY SAND:** trace clay, trace gravel, brown, wet, compact	2	SS	17
253.5 / 1.0	**SANDY SILT TILL:** trace clay, trace gravel, brown, moist, compact to dense	3	SS	17
		4	SS	20
		5	SS	36
	grey below 4.5m	6	SS	31
248.5 / 6.0	**CLAYEY SILT TILL:** some sand, trace gravel, grey, moist, very stiff	7	SS	25
		8	SS	19
		9	SS	17
		10	SS	22
242.3 / 12.2	**SAND AND GRAVEL:** silty, trace cobble, trace clay, grey, saturated, compact	11	SS	29
240.8 / 13.7	**SILTY SAND TILL:** trace clay, trace gravel, brown, wet, compact to very dense	12	SS	21
		13	SS	52
238.7 / 15.8	**END OF BOREHOLE**			

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water level readings:

Date:	W.L. Depth (m):
April 13, 2021	1.37
Feb. 25, 2021	0.4

W. L. 254.1 m Feb 21, 2025
W. L. 253.1 m Apr 13, 2021

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)

METHANE AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
2	17	54	27

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH21-2

PROJECT: Geotechnical Investigation - Additional Work
CLIENT: Times Group
PROJECT LOCATION: 4721 and 5061 Stouffville Rd, Whitchurch-Stouffvill, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1 N 4869127.615 E 637803.503

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Feb-11-2021

REF. NO.: 19-043-101
ENCL NO.: 9

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
255.2 / 0.0	**TOPSOIL:** 300mm	1	SS	13	W. L. 255.2 m Feb 21, 2025	255
254.4 / 0.8	**SANDY SILT:** trace clay, trace gravel, trace organics, brown, moist, compact (weathered)	2	SS	14		254
	CLAYEY SILT TILL: sandy, trace gravel/ cobble, grey, moist, stiff to hard	3	SS	24	W. L. 254.1 m Apr 13, 2021	253
	No recovery at 2.3m	4	SS	60		
252.2 / 3.0	**SANDY SILT TILL:** clay seams, trace gravel/ cobble, grey, moist, dense to very dense	5	SS	37		252
	some clay below 4.5m	6	SS	33		251
		7	SS	58		250
247.7 / 7.5	**CLAYEY SILT TILL:** some sand to sandy, trace gravel/ cobble, grey, moist, very stiff to hard	8	SS	25		249
		9	SS	30		248
244.5 / 10.7	**SANDY SILT TILL:** some clay, trace gravel/ cobble, grey, wet, compact	10	SS	15		247
243.0 / 12.2	**SAND:** trace clay, trace gravel, grey, saturated	11	SS	disturbed		246
241.5 / 13.7	**SANDY SILT TILL:** trace clay, trace gravel/ cobble, grey, moist, very dense	12	SS	50/ 125mm		245
239.7 / 15.5	**END OF BOREHOLE**	13	SS	50/ 100mm		244
	Notes: 1) 50mm dia. monitoring well installed upon completion. 2) Water level readings: Date: W.L. Depth (m): April 13, 2021 1.18 Feb. 25, 2021 - 0.02 (above ground)					243
						242
						241
						240

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)

METHANE AND GRAIN SIZE DISTRIBUTION (%)

	GR	SA	SI	CL
5	9	30	46	15
9	0	2	62	36

DS SOIL LOG 19-043-101 4721 AND 5061 STOUFFVILLE RD ADDITIONAL WORK_TIMES GROUP.GPJ DS.GDT 21-5-3

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 BH21-3

PROJECT: Geotechnical Investigation - Additional Work
CLIENT: Times Group
PROJECT LOCATION: 4721 and 5061 Stouffville Rd, Whitchurch-Stouffvill, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1 N 4869091.791 E 637696.023

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Feb-16-2021

REF. NO.: 19-043-101
ENCL NO.: 10

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
256.6 / 0.0	**TOPSOIL:** 380mm					
256.2 / 0.4	**CLAYEY SILT:** trace clay, trace gravel, trace topsoil, dark brown, moist, stiff to very stiff (weathered)	1	SS	21		256
255.5 / 1.1	**CLAYEY SILT TILL:** sandy, trace gravel, sand seams, brown, moist, stiff	2	SS	11		
254.3 / 2.3	**SANDY SILT TILL:** some clay, trace gravel/ cobbles, brown, moist, compact to dense	3	SS	11		255
		4	SS	22		254
		5	SS	36	W. L. 253.3 m W. L. 253.1 m Feb 21, 2025	
252.1 / 4.5	**SAND:** some silt, trace clay, brown, saturated	6	SS	disturbed		252
250.6 / 6.0	**CLAYEY SILT TILL:** sandy, trace gravel, sand seams, grey, moist, very stiff to hard	7	SS	86/ 230mm		251
		8	SS	86/ 280mm		250
	trace sand below 9m	9	SS	24		249
245.9 / 10.7	**SANDY SILT TO SILTY SAND TILL:** trace clay, trace gravel, grey, wet, dense to very dense	10	SS	50/ 125mm		248
		11	SS	40		247
	moist below 13.7m	12	SS	50/ 125mm		246
241.3 / 15.3	**END OF BOREHOLE**	13	SS	50/ 125mm		245
						244
						243
						242

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water level readings:

Date:	W.L. Depth (m):
April 13, 2021	3.3
Feb. 25, 2021	3.5

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)

METHANE AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
4	30	55	11
7	47	37	9

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

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG 19-043-101 4721 AND 5061 STOUFFVILLE RD ADDITIONAL WORK_TIMES GROUP.GPJ DS.GDT 21-5-3

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LOG OF BOREHOLE BH21-4

PROJECT: Geotechnical Investigation - Additional Work
CLIENT: Times Group
PROJECT LOCATION: 4721 and 5061 Stouffville Rd, Whitchurch-Stouffvill, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1 N 4869153.844 E 637681.724

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Feb-12-2021

REF. NO.: 19-043-101
ENCL NO.: 11

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS "N" 0.3 m	ELEVATION
256.7 / 0.0	**TOPSOILAND SILT:** 330mm				
256.4 / 0.3	**CLAYEY SILT:** trace gravel, trace topsoil, brown, moist, very stiff (weathered)	1	SS	16	
255.9 / 0.8	**CLAYEY SILT TILL:** sandy, trace gravel, brown, moist, very stiff	2	SS	15	
255.2 / 1.5	**SANDY SILT TILL:** trace clay, trace gravel/ cobble, brown, very moist, compact	3	SS	18	
		4	SS	22	
253.7 / 3.0	**SANDY SILT:** trace clay, brown, wet, dense	5	SS	36	
252.2 / 4.5	**CLAYEY SILT TILL:** some sand, trace gravel, grey, moist, very stiff to hard	6	SS	20	
		7	SS	34	
		8	SS	45	
		9	SS	47	
246.0 / 10.7	**SANDY SILT TILL:** some clay, trace gravel/ cobble, grey, very moist, very dense	10	SS	50/ 125mm	
244.4 / 12.3	**END OF BOREHOLE**	11	SS	50/ 125mm	

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water level readings:

Date:	W.L. Depth (m):
April 13, 2021	0.28
Feb. 25, 2021	1.9

W. L. 256.4 m Apr 13, 2021
W. L. 254.8 m Feb 21, 2025

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 (%)

METHANE AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
3	16	54	27

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

DS SOIL LOG 19-043-101 4721 AND 5061 STOUFFVILLE RD ADDITIONAL WORK_TIMES GROUP.GPJ DS.GDT 21-5-3

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LOG OF BOREHOLE BH21-5

PROJECT: Geotechnical Investigation - Additional Work
CLIENT: Times Group
PROJECT LOCATION: 4721 and 5061 Stouffville Rd, Whitchurch-Stouffvill, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1 N 4869178.503 E 637758.266

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Feb-12-2021

REF. NO.: 19-043-101
ENCL NO.: 12

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
255.6 / 0.0	**TOPSOIL:** 330mm				
255.3 / 0.3	**CLAYEY SILT:** trace sand, trace topsoil, brown, moist, stiff (weathered)	1	SS	9	
254.5 / 1.1	**CLAYEY SILT TILL:** sandy, trace gravel/ cobble, grey, moist, very stiff to hard	2	SS	16	
		3	SS	15	
	grey below 2.7m	4	SS	43	
		5	SS	21	
	sand seams below 4.5m	6	SS	26	
		7	SS	25	
		8	SS	20	
246.6 / 9.0	**SANDY SILT TILL:** some clay, trace gravel/ cobble, grey, moist, very dense	9	SS	50/ 50mm	
244.9 / 10.7	**SAND:** some silt, trace clay, trace gravel, brown, wet, very dense	10	SS	94/ 280mm	
244.7 / 10.9	**SANDY SILT TILL:** trace clay, trace gravel, grey, moist, very dense				
243.1 / 12.5	**END OF BOREHOLE**	11	SS	50/ 25mm	

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water level readings:

Date:	W.L. Depth (m):
April 13, 2021	0.30
Feb. 25, 2021	- 0.02 (above ground)

W. L. 255.6 m
Feb 21, 2025
Apr 13, 2021

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)
METHANE 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

DS SOIL LOG 19-043-101 4721 AND 5061 STOUFFVILLE RD ADDITIONAL WORK_TIMES GROUP.GPJ DS.GDT 21-5-3

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LOG OF BOREHOLE BH24-1

PROJECT: Geotechnical Investigation
CLIENT: Times Group Corporation
PROJECT LOCATION: 5061 Stouffville Road, Whitchurch-Stouffville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4869173.7 E 637660.6

DRILLING DATA
Method: Hollow Stem Auger/Mud Rotary
Diameter: 200mm
Date: Oct-24-2024

REF. NO.: 19-043-103
ENCL NO.: 2

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
256.6 / 0.0	**TOPSOIL:** 270mm				
256.3 / 0.3	**FILL:** sandy silt, trace rootlets, trace gravel, dark brown to brown, moist, compact	1	SS	11	256
255.8 / 0.8	**FILL:** clayey silt, sandy, trace organics, trace cobble, dark brown to brown, moist, stiff	2	SS	14	
255.0 / 1.6	**SANDY SILT TILL:** trace to some clay, trace gravel, occasional cobble, brown, moist, compact to dense	3	SS	21	255
	clayey silt till layer at 2.6m	4	SS	34	254
253.6 / 3.0	**SILTY SAND:** trace clay, brown, wet, dense	5	SS	34	253
252.1 / 4.5	**SILTY CLAY TILL:** sandy, trace gravel, occasional cobble, grey, moist, hard	6	SS	75	252
		7	SS	54	251
249.1 / 7.5	**CLAYEY SILT:** trace sand, grey, moist, hard	8	SS	39	250
247.6 / 9.0	**SANDY SILT TO SILTY SAND TILL:** trace to some clay, trace gravel, occasional cobble, grey, moist to very moist, very dense	9	SS	50/ 130mm	249
		10	SS	50/ 130mm	248
		11	SS	50/ 130mm	247
		12	SS	50/ 130mm	246
		13	SS	50/ 130mm	245
		14	SS	50/	244
					243
					242
					241
					240

W. L. 254.7 m
Nov 19, 2024

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
Switched to Mud Rotary				
	4	30	46	20
	6	36	46	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 19-043-103GEO.GPJ DS.GDT 24-11-27

LOG OF BOREHOLE BH24-1

PROJECT: Geotechnical Investigation
CLIENT: Times Group Corporation
PROJECT LOCATION: 5061 Stouffville Road, Whitchurch-Stouffville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4869173.7 E 637660.6

DRILLING DATA
Method: Hollow Stem Auger/Mud Rotary
Diameter: 200mm
Date: Oct-24-2024

REF. NO.: 19-043-103
ENCL NO.: 2

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS 0.3 m "N"	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 TO SILTY SAND TILL: trace to some clay, trace gravel, occasional cobble, grey, moist to very moist, very dense(Continued)				130mm						
18			15	SS	50/ 130mm		239		○		
19							238				
20			16	SS	50/ 130mm		237		○		
21							236				
	cobbles/boulders at 21.3m		17	SS	50/ 25mm		235				
22							234				
23 233.6											
23.0	**END OF BOREHOLE:** Notes: 1) 50mm dia. monitoring well installed upon completion. 2) Water Level Readings: Date: Water Level(mbgl): Nov. 19, 2024 1.9		18	SS	50/ 75mm				○		

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

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH24-2

PROJECT: Geotechnical Investigation
CLIENT: Times Group Corporation
PROJECT LOCATION: 5061 Stouffville Road, Whitchurch-Stouffville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4869156.4 E 637693.6

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Oct-28-2024

REF. NO.: 19-043-103
ENCL NO.: 3

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
256.3 / 0.0	**TOPSOIL:** 270mm				
0.3 / 255.3	**FILL:** clayey silt, trace rootlets, trace organics, trace gravel, dark brown to brown, moist, stiff	1	SS	9	256
		2	SS	10	
1.0	**CLAYEY SILT TILL:** sandy, trace gravel, brown, moist, stiff to very stiff	3	SS	10	255
2					
	silt layer at 2.3m	4	SS	23	254
253.3					
3.0	**SILT:** trace to some clay, trace sand, brown, wet, dense	5	SS	36	253
4					
251.7					252
251.6 / 4.6	**SAND:** trace silt, trace clay, grey, wet, dense	6	SS	31	
4.8	**CLAYEY SILT TILL:** sandy, trace gravel, occasional cobble, grey, moist, hard				251
6		7	SS	50/ 100mm	250
7					249
	silt layer at 7.6m	8	SS	33	
8					248
9		9	SS	50/ 130mm	247
10					
245.8					246
10.5	**SANDY SILT TO SILTY SAND TILL:** trace to some clay, trace gravel, grey, very moist, very dense	10	SS	50/ 130mm	
11	silt layer at 10.7m				245
12		11	SS	50/ 100mm	244
13					243
14		12	SS	50/ 130mm	
15					242
240.8		13	SS	50/ 100mm	241
15.5	**END OF BOREHOLE:**				

Notes:
1) Water encountered at 3.0m during drilling.

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

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG-2021-FINAL 19-043-103GEO.GPJ DS.GDT 24-11-27

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LOG OF BOREHOLE BH24-3

PROJECT: Geotechnical Investigation
CLIENT: Times Group Corporation
PROJECT LOCATION: 5061 Stouffville Road, Whitchurch-Stouffville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4869192.4 E 637716.7

DRILLING DATA
Method: Hollow Stem Auger/Mud Rotary
Diameter: 200mm
Date: Oct-26-2024

REF. NO.: 19-043-103
ENCL NO.: 4

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
256.2 / 0.0	**TOPSOIL:** 250mm						256
0.3 / 255.3	**FILL:** sandy silt, trace rootlets, trace gravel, dark brown to brown, moist, loose to compact		1	SS	8		
0.9	**CLAYEY SILT TILL:** sandy, trace gravel, occasional cobble, brown, moist, very stiff		2	SS	15		255
2 / 253.8			3	SS	17		
2.4 / 253.2	**SILT:** trace to some clay, trace sand, brown, moist to wet, dense		4	SS	37		254
3.0	**CLAYEY SILT TILL:** sandy, trace gravel, grey, moist, stiff to hard		5	SS	12		253
4							252
5			6	SS	30		
6							251
7 / 248.7			7	SS	26		250
7.5 / 247.2	**CLAYEY SILT:** trace sand, grey, moist, very stiff		8	SS	26		249
9.0	**SANDY SILT TO SILTY SAND TILL:** trace to some clay, trace gravel, occasional cobble, grey, moist to very moist, very dense		9	SS	50/ 100mm		248
10			10	SS	50/ 130mm		247
11			11	SS	50/ 100mm		246
12			12	SS	50/ 130mm		245
13			13	SS	50/ 130mm		244
14			14	SS	50/		243
15							242
16							241
17							240

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

Switched to Mud Rotary

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 19-043-103GEO.GPJ DS.GDT 24-11-27

LOG OF BOREHOLE BH24-3

PROJECT: Geotechnical Investigation
CLIENT: Times Group Corporation
PROJECT LOCATION: 5061 Stouffville Road, Whitchurch-Stouffville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4869192.4 E 637716.7

DRILLING DATA
Method: Hollow Stem Auger/Mud Rotary
Diameter: 200mm
Date: Oct-26-2024

REF. NO.: 19-043-103
ENCL NO.: 4

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS 0.3 m "N"	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 TO SILTY SAND TILL: trace to some clay, trace gravel, occasional cobble, grey, moist to very moist, very dense(Continued)				75mm		239				
18											
			15	SS	50/ 50mm		238				
19											
236.4							237				
20 19.8	**CLAYEY SILT TILL:** sandy, trace gravel, grey, moist, hard		16	SS	50/ 100mm				○		
21							236				
			17	SS	50/ 130mm		235		○		
22							234				
23											
232.8			18	SS	50/ 130mm		233		⊕		6 39 39 16
23.4	**END OF BOREHOLE:** Notes: 1) Water encountered at 2.4m during drilling.										

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

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH24-4

PROJECT: Geotechnical Investigation
CLIENT: Times Group Corporation
PROJECT LOCATION: 5061 Stouffville Road, Whitchurch-Stouffville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4869181.5 E 637757.2

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Oct-28-2024

REF. NO.: 19-043-103
ENCL NO.: 5

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS "N" 0.3 m	GROUND WATER CONDITIONS	ELEVATION
255.4							
255.2 0.0	**TOPSOIL:** 250mm						
0.3	**FILL:** clayey silt, trace rootlets, trace organics, trace gravel, dark brown to brown, moist, stiff to very stiff		1	SS	10		255
254.4 1.0			2	SS	20		254
	CLAYEY SILT TO SILTY CLAY TILL: sandy, trace gravel, brown, moist, stiff to hard		3	SS	13	W. L. 254.0 m Nov 19, 2024	253
			4	SS	42		252
	grey below 3.0 m		5	SS	26		251
			6	SS	32		250
	silt layer at 6.1 m		7	SS	54		249
			8	SS	19		248
246.4 9.0	**SANDY SILT TILL:** trace to some clay, trace gravel, occasional cobble, grey, moist, very dense		9	SS	50/ 130mm		247
			10	SS	81		246
243.4 12.0	**CLAYEY SILT TILL:** sandy, trace gravel, occasional cobble, grey, moist, hard		11	SS	50/ 130mm		245
			12	SS	50/ 130mm		244
239.9 15.5	**END OF BOREHOLE:** Notes: 1) 50mm dia. monitoring well installed upon completion. 2) Water Level Readings:		13	SS	50/ 100mm		243 242 241 240

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
1	22	51	26

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 19-043-103GEO.GPJ DS.GDT 24-11-27

LOG OF BOREHOLE BH24-4

PROJECT: Geotechnical Investigation
CLIENT: Times Group Corporation
PROJECT LOCATION: 5061 Stouffville Road, Whitchurch-Stouffville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4869181.5 E 637757.2

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Oct-28-2024

REF. NO.: 19-043-103
ENCL NO.: 5

SOIL PROFILE			SAMPLES			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 / NATURAL MOISTURE CONTENT / LIQUID LIMIT (w_P w w_L) WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m							GR SA SI CL
	Date: Water Level(mbgl): Nov. 19, 2024 1.4											

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 BH24-5

PROJECT: Geotechnical Investigation
CLIENT: Times Group Corporation
PROJECT LOCATION: 5061 Stouffville Road, Whitchurch-Stouffville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4869205.3 E 637875.1

DRILLING DATA
Method: Hollow Stem Auger/Mud Rotary
Diameter: 200mm
Date: Nov-05-2024

REF. NO.: 19-043-103
ENCL NO.: 6

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
254.9							
254.8 0.1	**TOPSOIL:** 150mm						
254.4 0.5	**FILL:** sandy silt, trace rootlets, brown, moist, dense		1	SS	30		
1	**FILL:** clayey silt, trace to some organics, trace rootlets, dark grey, moist, firm		2	SS	5		254
253.2 1.7	mixed with organics at 0.8m **FILL:** silty sand, trace clay, trace gravel, brown, wet, loose to compact		3	SS	4	▽	
2 252.5 2.4	**CLAYEY SILT TILL:** trace to some sand, trace gravel, brown, moist, stiff to hard		4	SS	13		
3			5	SS	65		252
4			6	SS	50/ 150mm		251
	grey below 4.6m		7	SS	46		250
5 249.6 5.3	**CLAYEY SILT:** silt interbeds, trace to some sand, trace gravel, grey, moist, very stiff to hard		8	SS	58		249
6			9	SS	31		
7			10	SS	35		248
8			11	SS	23		247
246.5 8.4	**CLAYEY SILT TILL:** sandy, trace gravel, grey, moist, very stiff		12	SS	17		
9			13	SS	25		246
10 244.4 10.5	**SANDY SILT TO SILTY SAND TILL:** trace to some clay, trace gravel, occasional cobble, grey, very moist to wet, compact to very dense						245
11			14	SS	20		244
12	very dense below 12.0m		15	SS	50/ 150mm		243
13							242
14	wet below 13.7m		16	SS	50/ 130mm		241
15							240
			17	SS	50/ 130mm		
16							239
17			18	SS	50/		238

W. L. 253.4 m
Nov 19, 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

Switched to Mud Rotary

2 10 71 17

Continued Next Page

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

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

LOG OF BOREHOLE BH24-5

PROJECT: Geotechnical Investigation
CLIENT: Times Group Corporation
PROJECT LOCATION: 5061 Stouffville Road, Whitchurch-Stouffville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4869205.3 E 637875.1

DRILLING DATA
Method: Hollow Stem Auger/Mud Rotary
Diameter: 200mm
Date: Nov-05-2024

REF. NO.: 19-043-103
ENCL NO.: 6

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	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
18	**SANDY SILT TO SILTY SAND TILL:** trace to some clay, trace gravel, occasional cobble, grey, very moist to wet, compact to very dense(Continued)				130mm		237					
	gravelly at 18.3m		19	SS	50/ 75mm		236					
20			20	SS	50/ 100mm		235					
21 233.6							234					
21.3	**CLAYEY SILT TILL:** sandy, trace gravel, grey, moist, hard		21	SS	50/ 130mm		233					
23 231.9							232					
23.0	**END OF BOREHOLE:** Notes: 1) 50mm dia. monitoring well installed beside original location. 2) Water Level Readings: Date: Water Level(mbgl): Nov. 19, 2024 1.5		22	SS	50/ 100mm							

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 BH24-6

PROJECT: Geotechnical Investigation
CLIENT: Times Group Corporation
PROJECT LOCATION: 5061 Stouffville Road, Whitchurch-Stouffville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4869174.4 E 637846.4

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Oct-31-2024

REF. NO.: 19-043-103
ENCL NO.: 7

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
254.4							
254.2 0.0	**TOPSOIL:** 230mm		1	SS	7		254
0.2	**FILL:** clayey silt, trace rootlets, trace organics, trace gravel, dark brown to brown, moist, firm						
253.5 0.9	**CLAYEY SILT TILLL:** sandy, trace gravel, occasional cobble, brown, moist, very stiff to hard		2	SS	19		253
			3	SS	21		
			4	SS	24		252
	grey below 3.1m		5	SS	35		251
			6	SS	18		
249.9 4.5	**CLAYEY SILT:** frequent silt layers, trace sand, grey, moist, stiff to very stiff		7	SS	17		250
			8	SS	11		249
	trace gravel below 6.1m		9	SS	12		248
			10	SS	26		247
			11	SS	21		
246.0 8.4	**CLAYEY SILT TILL:** sandy, trace gravel, grey, moist, very stiff		12	SS	19		246
			13	SS	17		245
243.9 10.5	**SANDY SILT TO SILTY SAND TILL:** trace to some clay, trace gravel, grey, very moist to wet, compact to very dense		14	SS	20		244
			15	SS	63		242
	wet at 13.7m		16	SS	17		241
							240
239.0			17	SS	50/ 75mm		239
15.4	**END OF BOREHOLE:** Notes: 1) Water encountered at 4.0m during drilling.						

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 BH24-7

PROJECT: Geotechnical Investigation
CLIENT: Times Group Corporation
PROJECT LOCATION: 5061 Stouffville Road, Whitchurch-Stouffville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4869131.3 E 637813.6

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Nov-01-2024

REF. NO.: 19-043-103
ENCL NO.: 8

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
254.8					
254.8 / 0.0	**TOPSOIL:** 250mm				
0.3 / 253.9	**FILL:** clayey silt, trace rootlets, trace organics, trace gravel, dark brown to brown, moist, stiff	1	SS	8	254
0.9	**CLAYEY SILT TILLL:** sandy, trace gravel, occasional cobble, brown, moist, stiff to hard	2	SS	13	
		3	SS	17	253
		4	SS	52	
		5	SS	36	252
251.0					
3.8 / 250.3	**SANDY SILT TILL:** trace to some clay, trace gravel, brown to grey, moist, very dense	6	SS	50/ 130mm	251
4.5	**CLAYEY SILT TILL:** sandy, frequent silt pockets, trace gravel, occasional cobble, grey, moist, very stiff to hard	7	SS	49	
		8	SS	27	250
		9	SS	54	
		10	SS	26	249
		11	SS	24	
		12	SS	22	248
		13	SS	25	
		14	SS	disturbed	247
242.8					
12.0	**SAND:** some gravel, trace silt, trace clay, grey, wet, very dense	15	SS	69	246
241.3					
13.5	**SANDY SILT TILL:** trace to some clay, trace gravel, grey, very moist, very dense	16	SS	63	245
239.3		17	SS	50/ 75mm	244
15.5	**END OF BOREHOLE:**				243

Notes:
1) Water encountered at 3.8 m during drilling.

242 241 240

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
15	73	9	1

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 19-043-103GEO.GPJ DS.GDT 24-11-27

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LOG OF BOREHOLE BH24-8

PROJECT: Geotechnical Investigation
CLIENT: Times Group Corporation
PROJECT LOCATION: 5061 Stouffville Road, Whitchurch-Stouffville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4869119.5 E 637847.1

DRILLING DATA
Method: Hollow Stem Auger/Mud Rotary
Diameter: 200mm
Date: Oct-30-2024

REF. NO.: 19-043-103
ENCL NO.: 9

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS "N" 0.3 m	ELEVATION
254.5 / 0.0	**TOPSOIL:** 250mm				
0.3 / 253.5	**FILL:** clayey silt, trace rootlets, trace organics, trace gravel, dark brown to brown, moist, firm	1	SS	6	254
1.0	**CLAYEY SILT TILLL:** some sand, trace gravel, occasional cobble, brown, moist, stiff to hard	2	SS	8	
		3	SS	14	253
		4	SS	22	252
		5	SS	38	251
	grey below 3.8m	6	SS	72	
		7	SS	50/100mm	250
248.5		8	SS	36	249
6.0	**CLAYEY SILT:** silt seams/layers, trace sand, grey, moist, very stiff to hard	9	SS	39	248
		10	SS	23	247
		11	SS	21	
		12	SS	15	246
	trace gravel at 9.1m	13	SS	16	245
243.8					244
10.7	**SANDY SILT TO SILTY SAND TILL:** trace to some clay, trace gravel, grey, moist, very dense	14	SS	67	243
		15	SS	50/130mm	242
		16	SS	50/130mm	241
		17	SS	50/130mm	240
					239
					238

W. L. 252.9 m
Nov 19, 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
Switched to Mud Rotary at 3.1m				
	1	8	72	18
	7	44	42	7

Continued Next Page

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

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

LOG OF BOREHOLE BH24-8

PROJECT: Geotechnical Investigation
CLIENT: Times Group Corporation
PROJECT LOCATION: 5061 Stouffville Road, Whitchurch-Stouffville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4869119.5 E 637847.1

DRILLING DATA
Method: Hollow Stem Auger/Mud Rotary
Diameter: 200mm
Date: Oct-30-2024

REF. NO.: 19-043-103
ENCL NO.: 9

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	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 TO SILTY SAND TILL: trace to some clay, trace gravel, grey, moist, very dense(Continued)		18	SS	50/ 130mm		237					
			19	SS	50/ 100mm		236					
							235					
234.5			20	SS	50/ 130mm							
20.0	**SILT:** trace to some clay, trace sand, trace gravel, grey, moist, very dense						234					
233.2												
21.3	**SILTY SAND TO SANDY SILT TILL:** trace clay, trace gravel, grey, moist, very dense		21	SS	50/ 75mm		233					
							232					
231.1			22	SS	50/ 130mm							
23.4	**END OF BOREHOLE:** Notes: 1) 50mm dia. monitoring well installed upon completion. 2) Water Level Readings: Date: Water Level(mbgl): Nov. 19, 2024 1.6											

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 19-043-103GEO.GPJ DS.GDT 24-11-27

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LOG OF BOREHOLE BH24-9

PROJECT: Geotechnical Investigation
CLIENT: Times Group Corporation
PROJECT LOCATION: 5061 Stouffville Road, Whitchurch-Stouffville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4869120.9 E 637771.7

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Oct-29-2024

REF. NO.: 19-043-103
ENCL NO.: 10

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS "N" 0.3 m	ELEVATION
255.8 / 0.0	**TOPSOIL:** 270mm				
0.3 / 254.8	**FILL:** clayey silt, trace rootlets, trace organics, trace gravel, dark brown to brown, moist, stiff	1	SS	8	255
1.0	**CLAYEY SILT TILL:** sandy, trace gravel, brown, moist, stiff to hard	2	SS	12	
2 / 253.2		3	SS	11	254
2.6	**SILT:** trace clay, trace sand, brown to grey, wet, dense	4	SS	32	253
3 / 251.3		5	SS	31	252
4.5	**CLAYEY SILT TILL:** sandy, trace gravel, grey, moist, very stiff to hard	6	SS	25	251
5					
6		7	SS	34	250
7					249
8 / 246.8		8	SS	30	248
9.0	**CLAYEY SILT:** trace sand, silt layers, grey, moist, hard	9	SS	30	247
10 / 245.3					246
10.5	**SANDY SILT TO SILTY SAND TILL:** trace to some clay, trace gravel, occasional cobble, grey, moist to very moist, very dense	10	SS	50/ 30mm	245
11		11	SS	50/ 30mm	244
12		12	SS	50/ 30mm	243
13		13	SS	50/ 100mm	242
14		14	SS	50/	241
15					240
16					239
17					

GROUND WATER CONDITIONS: W. L. 250.8 m, Nov 19, 2024

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)

SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × 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	
0	9	88	3	

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 19-043-103GEO.GPJ DS.GDT 24-11-27

LOG OF BOREHOLE BH24-9

PROJECT: Geotechnical Investigation
CLIENT: Times Group Corporation
PROJECT LOCATION: 5061 Stouffville Road, Whitchurch-Stouffville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4869120.9 E 637771.7

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Oct-29-2024

REF. NO.: 19-043-103
ENCL NO.: 10

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	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 TO SILTY SAND TILL: trace to some clay, trace gravel, occasional cobble, grey, moist to very moist, very dense(Continued)				130mm							
237.7 18.1	**CLAYEY SILT TILL:** sandy, trace gravel, grey, moist, hard sand and gravel layer at 18.4m		15	SS	50/ 130mm		238		○			
							237					
			16	SS	50/ 75mm		236		○			
							235					
			17	SS	50/ 130mm		234		○			
232.6							233					
23.2	**END OF BOREHOLE:** Notes: 1) 50mm dia. monitoring well installed upon completion. 2) Water Level Readings: Date: Water Level(mbgl): Nov. 19, 2024 5.0		18	SS	50/ 30mm				○			

DS SOIL LOG-2021-FINAL 19-043-103GEO.GPJ DS.GDT 24-11-27

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 BH24-10

PROJECT: Geotechnical Investigation
CLIENT: Times Group Corporation
PROJECT LOCATION: 5061 Stouffville Road, Whitchurch-Stouffville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4869089.4 E 637753

DRILLING DATA
Method: Hollow Stem Auger/Mud Rotary
Diameter: 200mm
Date: Nov-04-2024

REF. NO.: 19-043-103
ENCL NO.: 11

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
256.0					
256.0 / 0.0	**TOPSOIL:** 150mm				
0.2 / 255.2	**FILL:** silty sand, some clay, trace gravel, trace rootlets, dark brown to brown, moist, compact	1	SS	17	
0.8	**CLAYEY SILT TILL:** sandy, trace gravel, brown, moist, stiff to very stiff	2	SS	24	
	sandy silt pockets at 1.5m	3	SS	14	
253.5					
2.5 / 252.7	**SILT:** trace to some clay, trace sand, trace gravel, brown, wet, compact to dense	4	SS	19	
3.3 / 251.4	**SILTY SAND:** clayey silt pockets, brown, wet, dense	5	SS	36	Switched to Mud Rotary
		6	SS	42	
4.6	**CLAYEY SILT TILL:** sandy, trace gravel, grey, moist, very stiff to hard	7	SS	32	
		8	SS	31	
		9	SS	42	
	silt pockets below 6.9m	10	SS	29	
248.4					
7.6	**CLAYEY SILT:** frequent silt layers, trace sand, grey, moist, very stiff	11	SS	17	1 2 76 21
	trace gravel at 8.4m	12	SS	27	
		13	SS	23	
245.5					
10.5	**SANDY SILT TO SILTY SAND TILL:** trace clay, trace gravel, occasional cobble, grey, very moist to wet, very dense	14	SS	50/ 130mm	auger grinding
	gravelly at 12.2m	15	SS	50/ 130mm	
		16	SS	50/ 150mm	
240.7					
15.3	**END OF BOREHOLE:**	17	SS	50/ 75mm	

Notes:
1) Water encountered at 2.5m during drilling.

GROUND WATER CONDITIONS

ELEVATION: 255, 254, 253, 252, 251, 250, 249, 248, 247, 246, 245, 244, 243, 242, 241

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)

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 BH24-11

PROJECT: Geotechnical Investigation
CLIENT: Times Group Corporation
PROJECT LOCATION: 5061 Stouffville Road, Whitchurch-Stouffville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4869103.6 E 637709.7

DRILLING DATA
Method: Hollow Stem Auger/Mud Rotary
Diameter: 200mm
Date: Nov-04-2024

REF. NO.: 19-043-103
ENCL NO.: 12

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS "N" 0.3 m	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
256.3 / 0.0	**TOPSOIL:** 250mm					
255.5 / 0.8	**FILL:** silty clay, trace rootlets, trace gravel, trace organics, dark brown to brown, moist, stiff	1	SS	8	256	
	CLAYEY SILT TILL: sandy, trace gravel, brown, moist, stiff to hard sandy silt pockets at 1.5m	2	SS	11		
		3	SS	13	255	
		4	SS	19	254	
252.9 / 3.4	**SILT:** trace sand, trace gravel, brown, very moist, dense	5	SS	33	253	Switched to Mud Rotary
252.5 / 3.8	**SILTY SAND:** trace clay, brown, wet, dense	6	SS	40	252	
	silt pockets at 4.6m	7	SS	47		
251.0 / 5.3	**CLAYEY SILT TILL:** some sand to sandy, trace gravel, occasional cobble, grey, moist, very stiff to hard	8	SS	41	251	
		9	SS	50/150mm	250	
		10	SS	50/130mm		
		11	SS	74	249	
247.3 / 9.0	wet silt layer, very stiff at 8.4m **SILT:** trace sand, trace clay, grey, moist, dense	12	SS	22	248	7 14 61 18
		13	SS	39	247	
245.6 / 10.7	**SANDY SILT TO SILTY SAND TILL:** trace to some clay, trace gravel, occasional cobble, grey, moist to wet, very dense	14	SS	50/150mm	246	
		15	SS	50/130mm	245	
		16	SS	50/130mm	244	
241.3 / 15.0					243	
241.0 / 15.3	**CLAYEY SILT TILL:** sandy, trace gravel, occasional cobble, grey, moist, hard	17	SS	50/150mm	242	
	END OF BOREHOLE: Notes: 1) Water encountered at 2.7m during drilling.				241	

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

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 19-043-103GEO.GPJ DS.GDT 24-11-27

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LOG OF BOREHOLE BH24-12

PROJECT: Geotechnical Investigation
CLIENT: Times Group Corporation
PROJECT LOCATION: 5061 Stouffville Road, Whitchurch-Stouffville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4869069.4 E 637689.9

DRILLING DATA
Method: Hollow Stem Auger/Mud Rotary
Diameter: 200mm
Date: Oct-23-2024

REF. NO.: 19-043-103
ENCL NO.: 13

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
256.6					
256.4 0.0	**TOPSOIL:** 250mm				
0.3 255.6	**FILL:** silty clay, trace rootlets, trace gravel, trace organics, dark brown to brown, moist, stiff	1	SS	11	256
1.0 255.1	**CLAYEY SILT:** trace sand, trace gravel, brown, moist, stiff	2	SS	11	
1.5 254.3	**SILTY SAND:** trace clay, some gravel, brown, moist, dense	3	SS	44	255
2.3 252.1	**CLAYEY SILT TILL:** sandy, trace gravel, brown, moist, very stiff	4	SS	16	254
		5	SS	20	253
4.5 250.6	**SANDY SILT TO SAND:** trace clay, brown, wet, dense	6	SS	35	252
6.0 249.1	**CLAYEY SILT TILL:** sandy, trace gravel, grey, moist, very stiff	7	SS	28	251
7.5 246.1	**CLAYEY SILT:** trace sand, grey, moist, very stiff to hard silt layer at 9.1m	8	SS	49	250
		9	SS	23	249
10.5 244.6	**SANDY SILT TILL:** trace to some clay, trace gravel, occasional cobble, grey, moist, very dense	10	SS	50/ 130mm	248
12.0 243.1	**SANDY SILT:** trace clay, grey, wet, very dense	11	SS	50/ 130mm	247
13.5	**SANDY SILT TO SILTY SAND TILL:** trace clay, trace gravel, occasional cobble, grey, moist to very moist, very dense	12	SS	50/ 100mm	246
		13	SS	50/ 130mm	245
					244
					243
					242
					241
					240

Switched to Mud Rotary

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

LOG OF BOREHOLE BH24-12

PROJECT: Geotechnical Investigation
CLIENT: Times Group Corporation
PROJECT LOCATION: 5061 Stouffville Road, Whitchurch-Stouffville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4869069.4 E 637689.9

DRILLING DATA
Method: Hollow Stem Auger/Mud Rotary
Diameter: 200mm
Date: Oct-23-2024

REF. NO.: 19-043-103
ENCL NO.: 13

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	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
18	**SANDY SILT TO SILTY SAND TILL:** trace clay, trace gravel, occasional cobble, grey, moist to very moist, very dense(Continued)		14	SS	50/ 130mm		239					
238.3												
18.3	**CLAYEY SILT TILL:** sandy, trace gravel, grey, moist, hard		15	SS	50/ 130mm		238					9 41 37 13
19												
20			16	SS	50/ 130mm		237					
21							236					
22			17	SS	50/ 130mm		235					
233.6							234					
23.0	**END OF BOREHOLE:** Notes: 1) Water encountered at 4.6m during drilling.		18	SS	50/ 100mm							

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 BH25-1

PROJECT: Geotechnical Investigation
CLIENT: Times Group Corporation
PROJECT LOCATION: 5061 Stouffville Road, Whitchurch-Stouffville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4869140.7 E 637861

DRILLING DATA
Method: Hollow Stem Auger/Mud Rotary
Diameter: 200mm
Date: Feb-26-2025

REF. NO.: 19-043-103
ENCL NO.: 14

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS "N" 0.3 m	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
254.3						
254.0 / 0.2	**TOPSOIL:** 200mm					
	FILL: clayey silt, trace organics, trace rootlets, trace sand to some sand, brown, moist, soft to stiff	1	SS	3	W. L. 254.5 m Mar 24, 2025	
		2	SS	4	W. L. 253.5 m Mar 07, 2025	
252.6						
1.7	**CLAYEY SILT TO SILTY CLAY TILL:** sandy, trace gravel, brown to grey, moist, stiff to hard	3	SS	11	252	
		4	SS	24		
	silty sand layer at 3.1m	5	SS	44	251	Switched to Mud Rotary
	grey below 4.6m	6	SS	31	250	
		7	SS	36	249	
		8	SS	18	248	
	stiff at 9.1m	9	SS	9	247	4 23 48 25
243.6					246	
10.7	**SILTY SAND TO SANDY SILT TILL:** trace to some clay, trace to some gravel, cobble/boulder, grey, very moist to wet, compact to very dense	10	SS	28	245	
	clayey silt till layers below 12.5m	11	SS	50/ 75mm	244	
		12	SS	21	243	9 48 35 8
239.3					242	
15.0	**SILTY SAND:** trace clay, trace gravel, grey, very moist to wet, very dense (till - like)	13	SS	45	241	
		14	SS	65	240	8 61 27 4
236.3					239	
18.0	**SILTY SAND TO SANDY SILT TILL:** trace clay, trace to some gravel, cobble/boulder, grey, very moist to wet, very dense	15	SS	50/ 100mm	238	
		16	SS	50/ 75mm	237	3 32 57 8
233.0					236	
21.3		17	SS	50/ 75mm	235	
					234	
					233	

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)

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 19-043-103GEO.GPJ DS.GDT 25-4-2

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LOG OF BOREHOLE BH25-1

PROJECT: Geotechnical Investigation
CLIENT: Times Group Corporation
PROJECT LOCATION: 5061 Stouffville Road, Whitchurch-Stouffville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4869140.7 E 637861

DRILLING DATA
Method: Hollow Stem Auger/Mud Rotary
Diameter: 200mm
Date: Feb-26-2025

REF. NO.: 19-043-103
ENCL NO.: 14

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS "N" 0.3 m	ELEVATION
254.3					
254.0 / 0.2	**TOPSOIL:** 200mm				
	FILL: clayey silt, trace organics, trace rootlets, trace sand to some sand, brown, moist, soft to stiff	1	SS	3	
		2	SS	4	
252.6					
1.7	**CLAYEY SILT TO SILTY CLAY TILL:** sandy, trace gravel, brown to grey, moist, stiff to hard	3	SS	11	
		4	SS	24	
	silty sand layer at 3.1m	5	SS	44	
	grey below 4.6m	6	SS	31	
		7	SS	36	
		8	SS	18	
	stiff at 9.1m	9	SS	9	
243.6					
10.7	**SILTY SAND TO SANDY SILT TILL:** trace to some clay, trace to some gravel, cobble/boulder, grey, very moist to wet, compact to very dense	10	SS	28	
	clayey silt till layers below 12.5m	11	SS	50/75mm	
		12	SS	21	
239.3					
15.0	**SILTY SAND:** trace clay, trace gravel, grey, very moist to wet, very dense (till - like)	13	SS	45	
		14	SS	65	
236.3					
18.0	**SILTY SAND TO SANDY SILT TILL:** trace clay, trace to some gravel, cobble/boulder, grey, very moist to wet, very dense	15	SS	50/100mm	
		16	SS	50/75mm	
233.0					
21.3		17	SS	50/75mm	

GROUND WATER CONDITIONS: W. L. 254.1 m, Mar 07, 2025

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)

SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × 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
Switched to Mud Rotary				
	4	23	48	25
	9	48	35	8
	8	61	27	4
	3	32	57	8

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

LOG OF BOREHOLE BH25-1

PROJECT: Geotechnical Investigation
CLIENT: Times Group Corporation
PROJECT LOCATION: 5061 Stouffville Road, Whitchurch-Stouffville, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1 N 4869140.7 E 637861

DRILLING DATA
Method: Hollow Stem Auger/Mud Rotary
Diameter: 200mm
Date: Feb-26-2025

REF. NO.: 19-043-103
ENCL NO.: 14

ELEV / DEPTH (m)	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
	SILTY CLAY TO CLAYEY SILT TILL: some sand to sandy, trace gravel, occasional cobble, grey, moist, hard(Continued)						232					
			18	SS	41		231		○			
			19	SS	48		230		○			
			20	SS	42		229		○			
			21	SS	64		228		○			
	boulder at 28.9m		22	SS	50/ 50mm		227					auger grinding
			23	SS	50/ 100mm		226		○			
			24	SS	50/ 130mm		225		○			
			25	SS	50/ 130mm		224		○			
			26	SS	50/ 100mm		223		○			4 41 39 16
217.2			27	SS	73		222		○			
37.1	**END OF BOREHOLE:**						221					
	Notes: 1) 50mm dia. monitoring well installed upon completion. 2) Water Level Readings: Date: Water Level(mbgl): Mar. 7, 2025 0.20 Mar. 24, 2025 -(0.20) above ground surface						220					
							219					
							218					

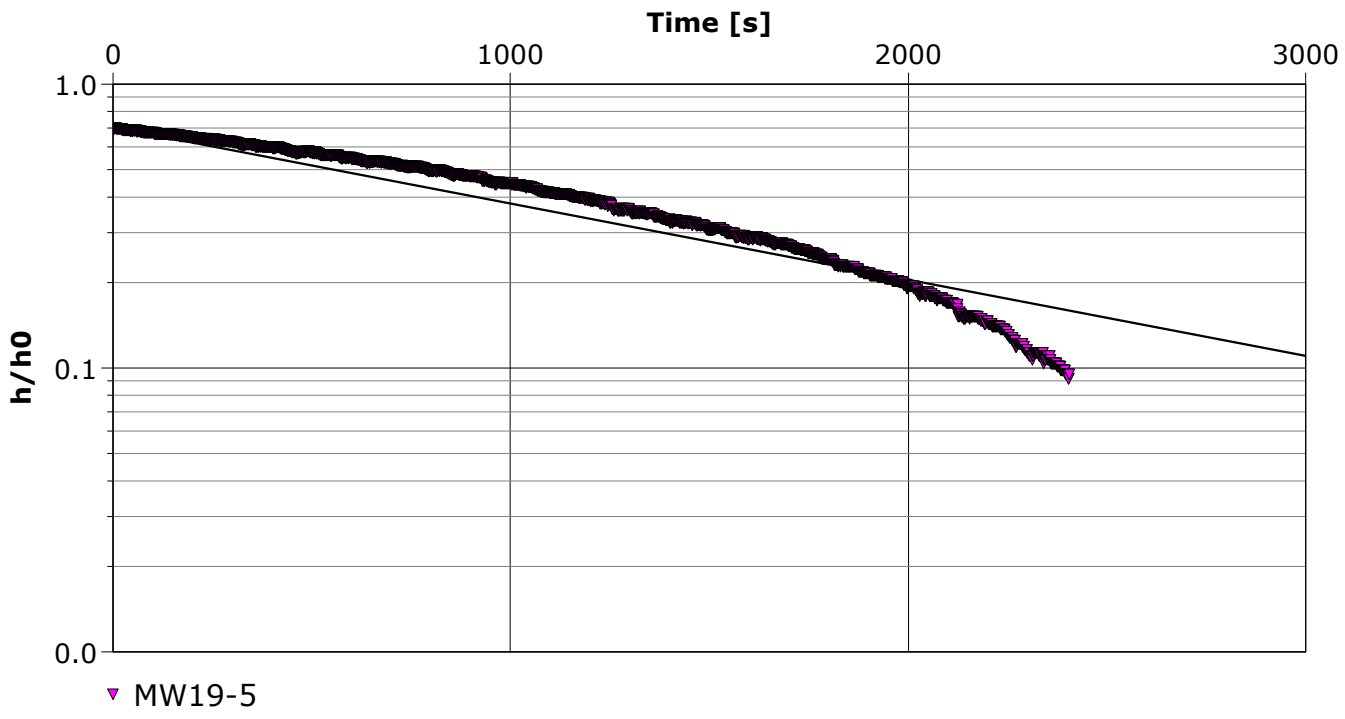
GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

Appendix B

	Slug Test Analysis Report
	Project: 4721-5061 Stouffville Road
	Number: 19-043-100
	Client: Times Group

Location: Stouffville Road	Slug Test: MW19-5	Test Well: MW19-5
Test Conducted by: PP		Test Date: 2019-05-24
Analysis Performed by: DG	MW19-5	Analysis Date: 2019-05-27
Aquifer Thickness:		

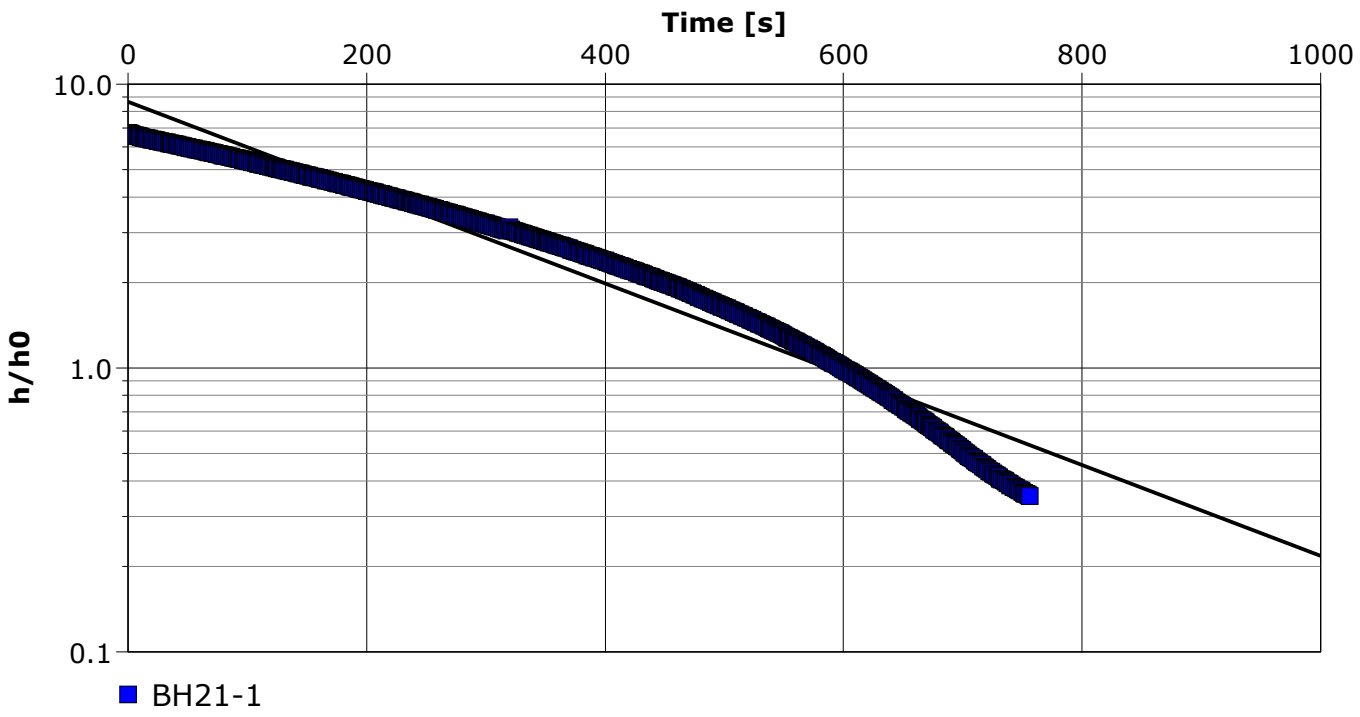


Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
MW19-5	3.10×10^{-7}	

	Slug Test Analysis Report
	Project: 4721-5061 Stouffville Road
	Number: 19-043-101
	Client: Times Group

Location: Whitchurch-Stouffville	Slug Test: BH21-1	Test Well: BH21-1
Test Conducted by: MP		Test Date: 2021-02-25
Analysis Performed by: DG	BH21-1	Analysis Date: 2019-05-27
Aquifer Thickness: 15.80 m		

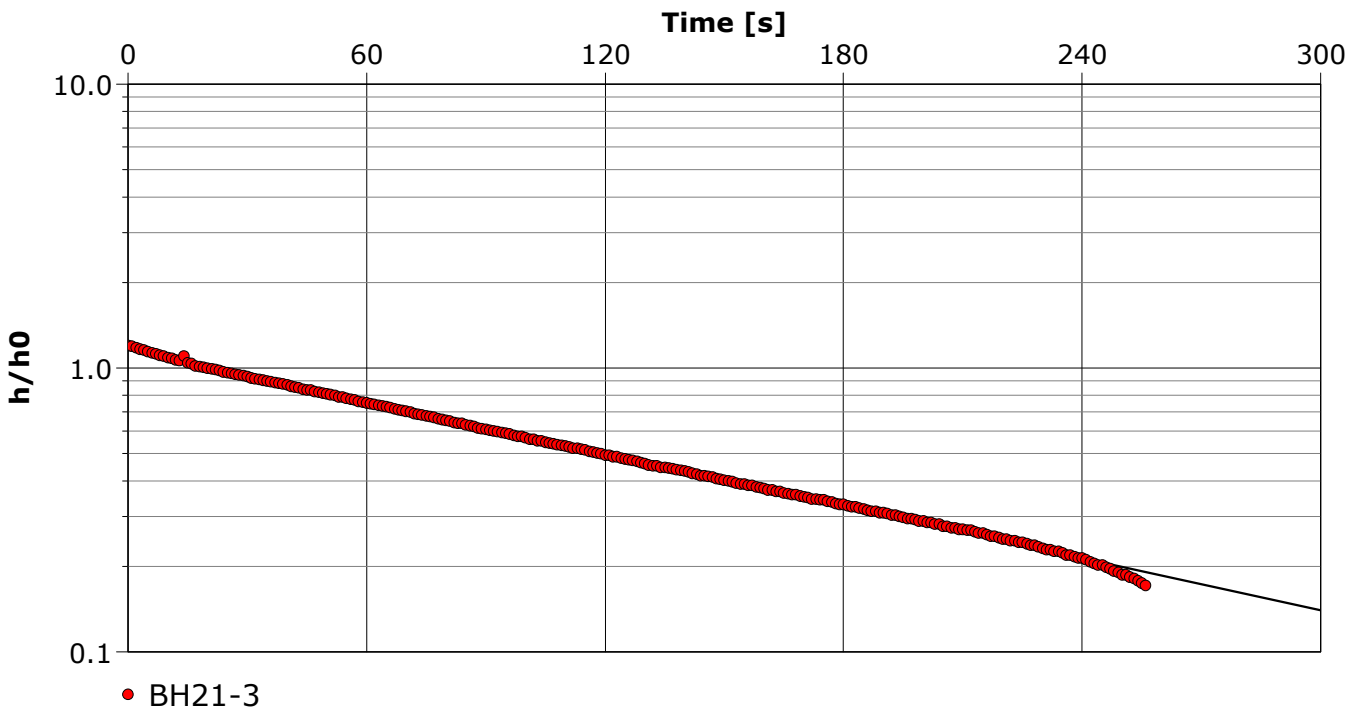


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH21-1	1.61×10^{-6}	

	Slug Test Analysis Report
	Project: 4721-5061 Stouffville Road
	Number: 19-043-101
	Client: Times Group

Location: Whitchurch-Stouffville	Slug Test: BH21-3	Test Well: BH21-3
Test Conducted by: MP		Test Date: 2021-02-25
Analysis Performed by: DG	BH21-3	Analysis Date: 2019-05-27
Aquifer Thickness: 16.30 m		

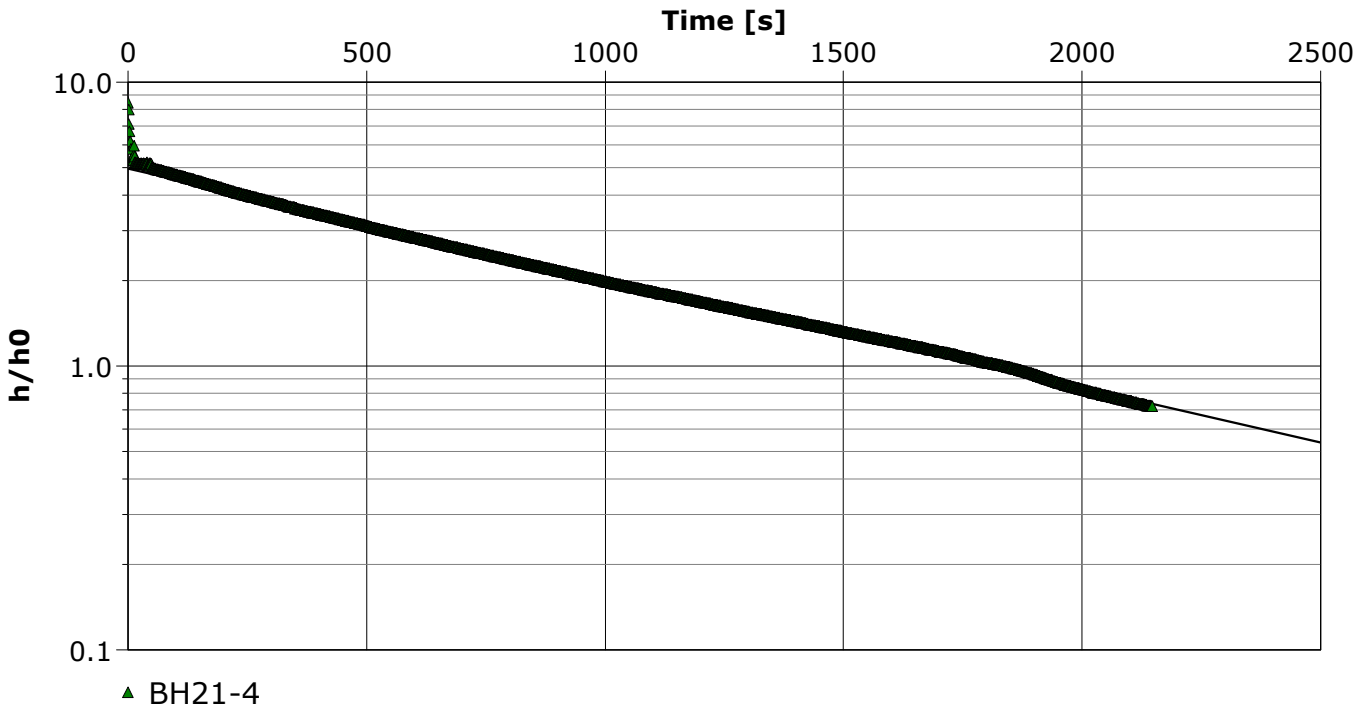


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH21-3	4.89×10^{-6}	

	Slug Test Analysis Report
	Project: 4721-5061 Stouffville Road
	Number: 19-043-101
	Client: Times Group

Location: Whitchurch-Stouffville	Slug Test: BH21-4	Test Well: BH21-4
Test Conducted by: MP		Test Date: 2021-02-25
Analysis Performed by: DG	BH21-4	Analysis Date: 2019-05-27
Aquifer Thickness: 15.30 m		

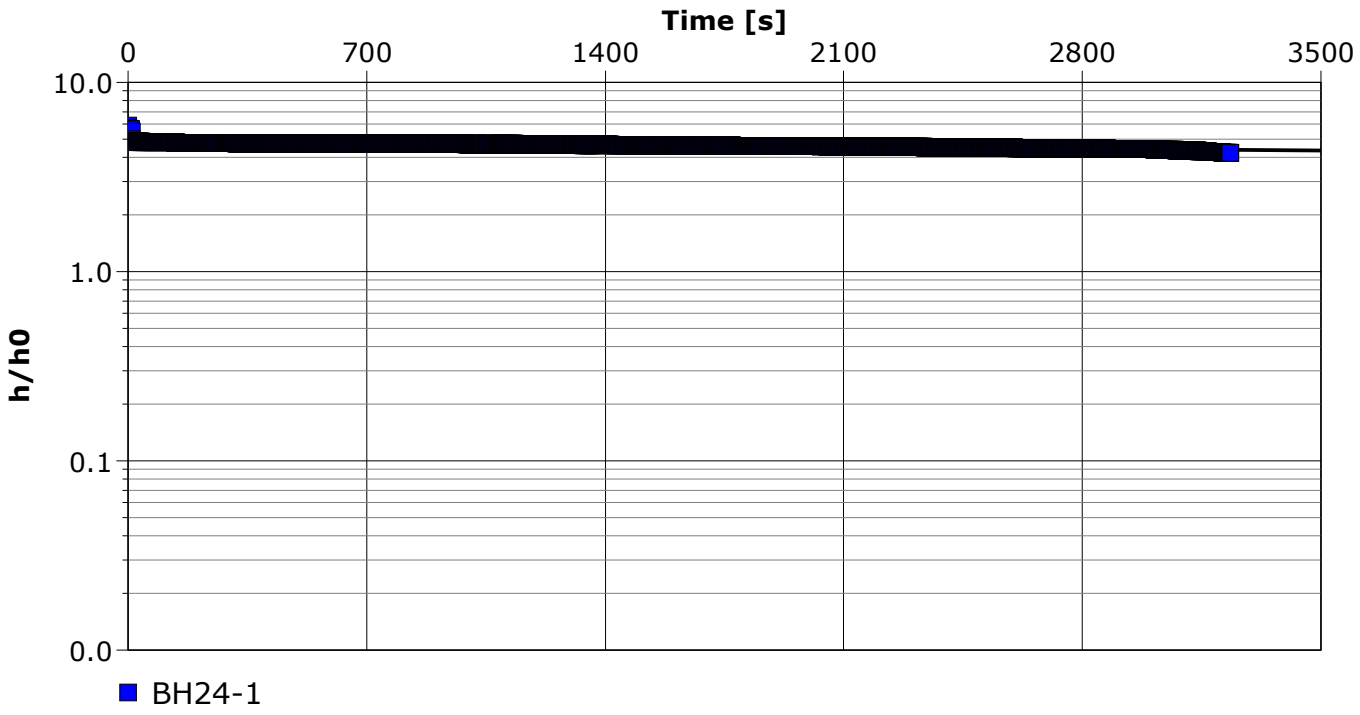


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH21-4	6.83×10^{-7}	

	Slug Test Analysis Report
	Project: 5061 Stouffville Road
	Number: 19-043-103
	Client: Times Group Corporation

Location: Whitchurch-Stouffville,ON	Slug Test: BH24-1	Test Well: BH24-1
Test Conducted by: CL		Test Date: 11/13/2024
Analysis Performed by: DS	BH24-1	Analysis Date: 11/8/2024
Aquifer Thickness: 23.00 m		

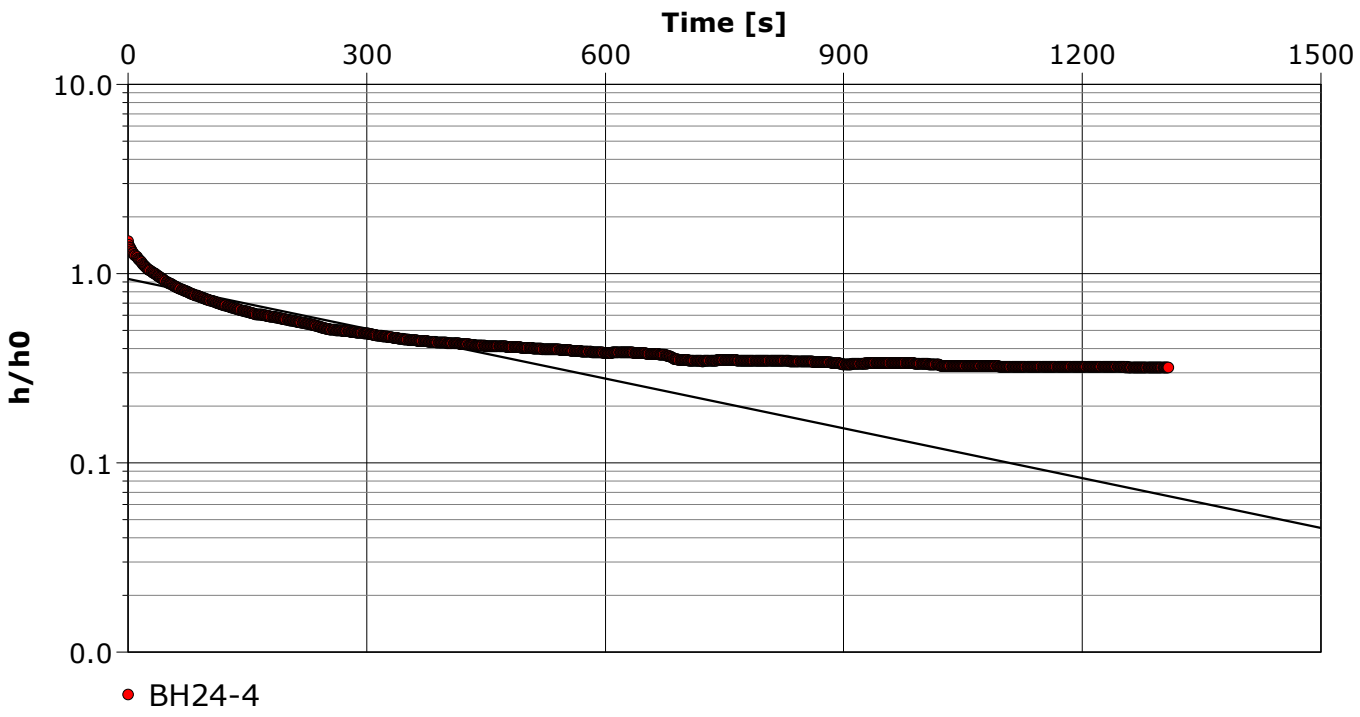


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH24-1	1.09×10^{-8}	

	Slug Test Analysis Report
	Project: 5061 Stouffville Road
	Number: 19-043-103
	Client: Times Group Corporation

Location: Whitchurch-Stouffville,ON	Slug Test: BH24-4	Test Well: BH24-4
Test Conducted by: CL		Test Date: 11/13/2024
Analysis Performed by: DS	BH24-4	Analysis Date: 11/8/2024
Aquifer Thickness: 9.00 m		

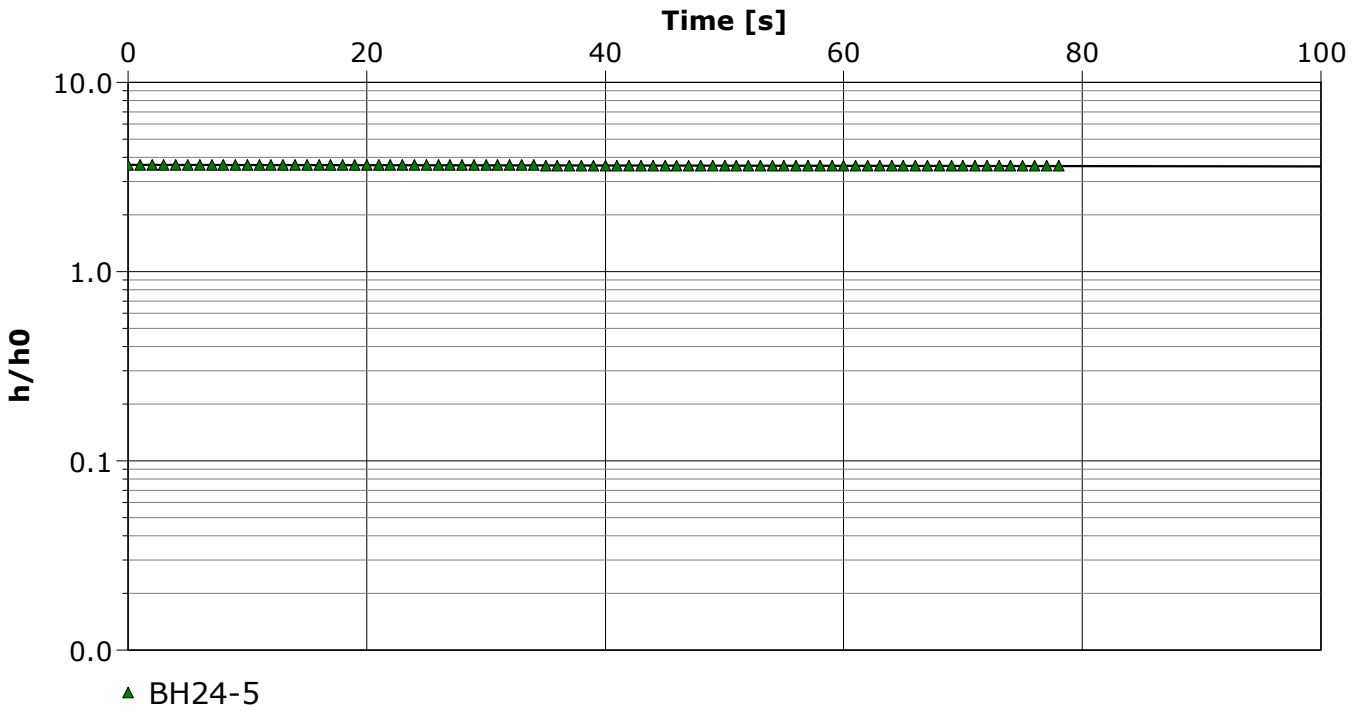


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH24-4	7.52×10^{-7}	

	Slug Test Analysis Report
	Project: 5061 Stouffville Road
	Number: 19-043-103
	Client: Times Group Corporation

Location: Whitchurch-Stouffville,ON	Slug Test: BH24-5	Test Well: BH24-5
Test Conducted by: CL		Test Date: 11/13/2024
Analysis Performed by: DS	BH24-5	Analysis Date: 11/22/2024
Aquifer Thickness: 10.50 m		

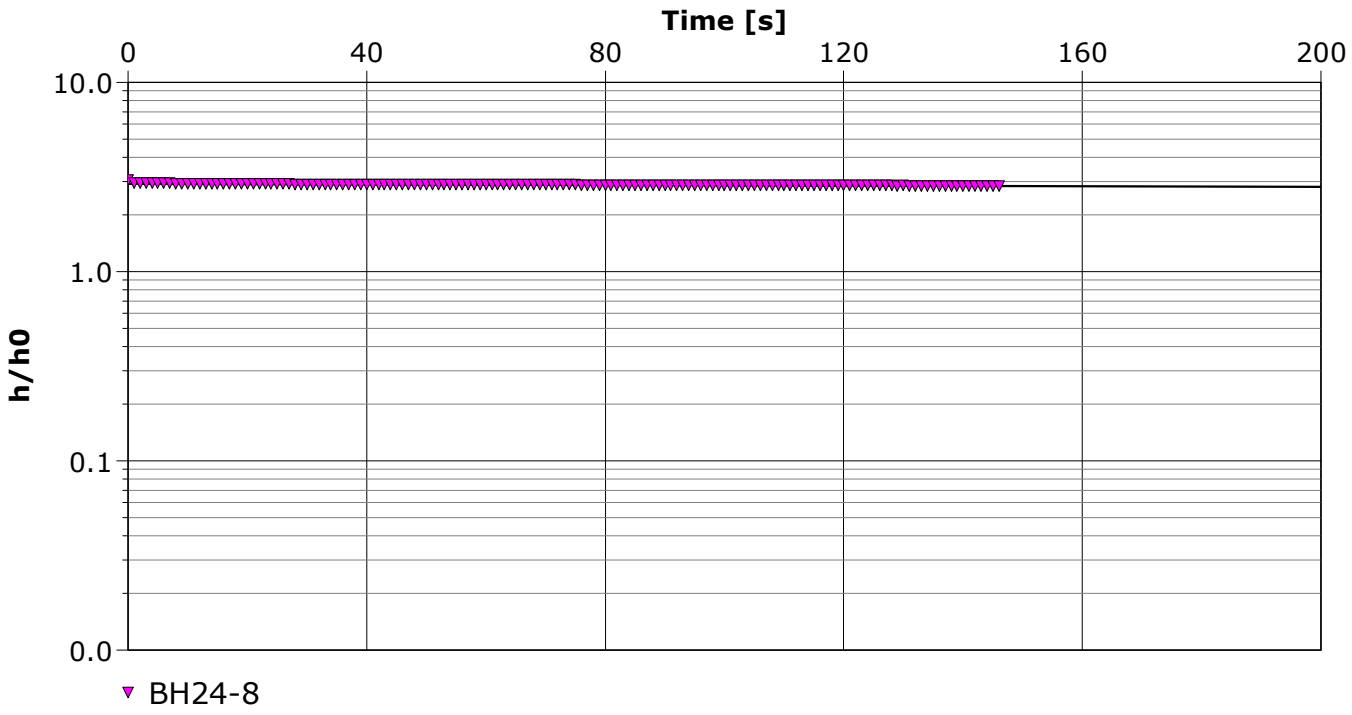


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH24-5	7.14×10^{-8}	

	Slug Test Analysis Report
	Project: 5061 Stouffville Road
	Number: 19-043-103
	Client: Times Group Corporation

Location: Whitchurch-Stouffville,ON	Slug Test: BH24-8	Test Well: BH24-8
Test Conducted by: CL		Test Date: 11/13/2024
Analysis Performed by: DS	BH24-8	Analysis Date: 11/22/2024
Aquifer Thickness: 7.50 m		

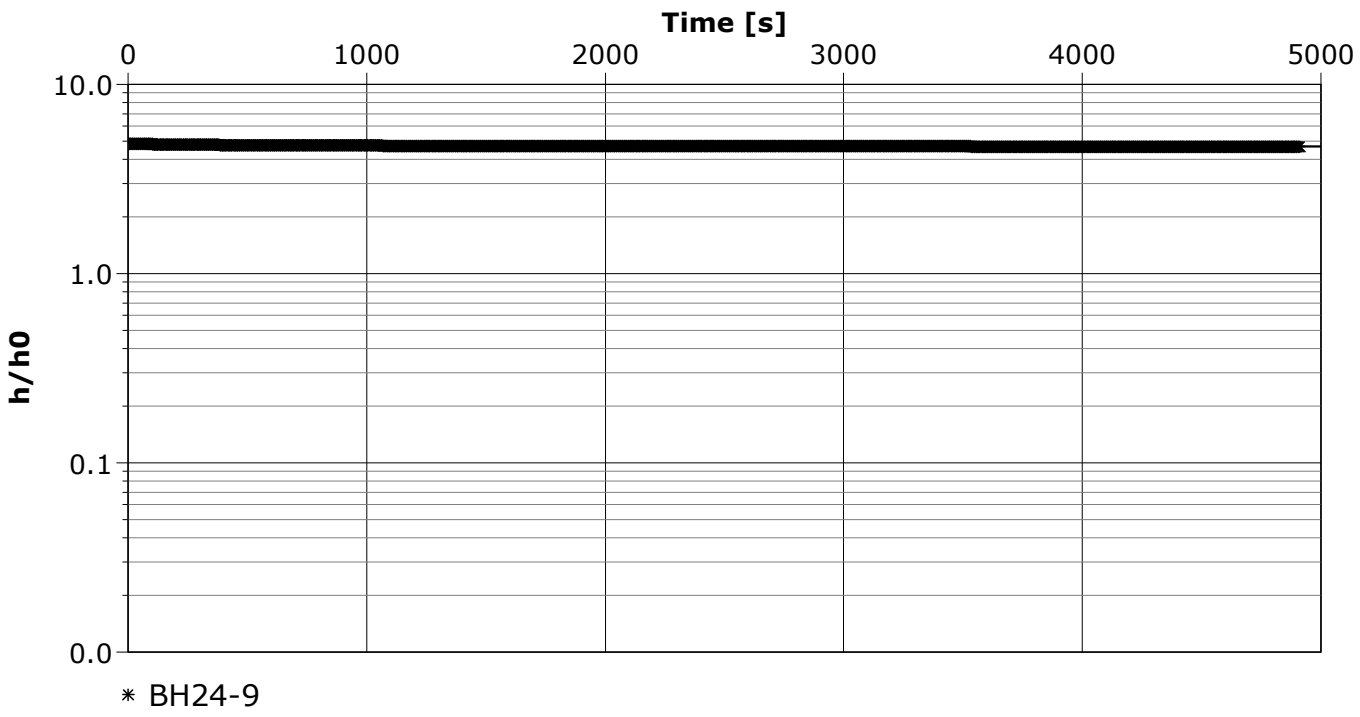


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH24-8	7.51×10^{-8}	

	Slug Test Analysis Report
	Project: 5061 Stouffville Road
	Number: 19-043-103
	Client: Times Group Corporation

Location: Whitchurch-Stouffville,ON	Slug Test: BH24-9	Test Well: BH24-9
Test Conducted by: DS		Test Date: 11/13/2024
Analysis Performed by: DS	BH24-9	Analysis Date: 11/22/2024
Aquifer Thickness: 9.00 m		

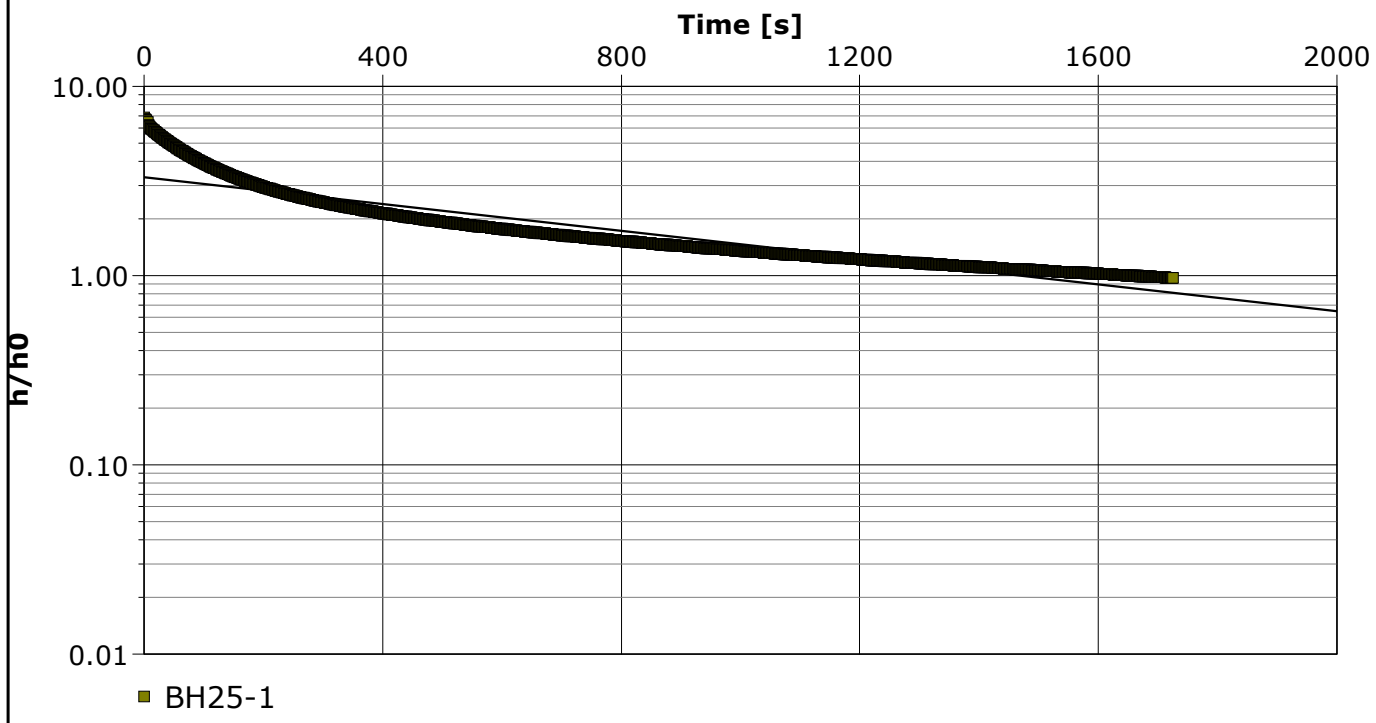


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH24-9	1.91×10^{-9}	

	Slug Test Analysis Report
	Project: 5061 Stouffville Road
	Number: 19-043-103
	Client: Times Group Corporation

Location: Whitchurch-Stouffville,ON	Slug Test: BH25-1	Test Well: BH25-1
Test Conducted by: KK		Test Date: 3/24/2025
Analysis Performed by: DS	BH25-1	Analysis Date: 3/28/2025
Aquifer Thickness: 40.00 m		



Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH25-1	3.24×10^{-7}	

Appendix C

FINAL REPORT

CA40064-OCT24 R1

19-043-101, 4721-5061 Stouffville Rd.

Prepared for

DS Consultants

FINAL REPORT

First Page

CLIENT DETAILS		LABORATORY DETAILS	
Client	DS Consultants	Project Specialist	Maarit Wolfe, Hon.B.Sc
		Laboratory	SGS Canada Inc.
Address	6221 Highway 7 Unit 6 Vaughan, Ontario L4H 0K8. Canada	Address	185 Concession St., Lakefield ON, K0L 2H0
Contact	Don Hsu	Telephone	705-652-2000
Telephone	905-264-9393	Facsimile	705-652-6365
Facsimile	905-264-2685	Email	Maarit.Wolfe@sgs.com
Email	don.hsu@dsconsultants.ca	SGS Reference	CA40064-OCT24
Project	19-043-101, 4721-5061 Stouffville Rd.	Received	10/07/2024
Order Number		Approved	10/15/2024
Samples	Ground Water (1)	Report Number	CA40064-OCT24 R1
		Date Reported	10/15/2024

COMMENTS

RL - SGS Reporting Limit

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

Temperature of Sample upon Receipt: 9 degrees C
Cooling Agent Present: yes
Custody Seal Present: yes

Chain of Custody Number: 035639

SIGNATORIES

Maarit Wolfe, Hon.B.Sc

TABLE OF CONTENTS

Client: DS Consultants
Project: 19-043-101, 4721-5061 Stouffville Rd.
Project Manager: Don Hsu
Samplers: Don Hsu

MATRIX: WATER

Sample Number	8
Sample Name	BH 19-5
Sample Matrix	Ground Water
Sample Date	07/10/2024

L1 = SANSEW / WATER / - - York Sewer Use ByLaw - Sanitary Sewer Discharge - BL_2021_102

L2 = SANSEW / WATER / - - York Sewer Use ByLaw - Storm Sewer Discharge - BL_2021_102

Parameter	Units	RL	L1	L2	Result
General Chemistry					
Biochemical Oxygen Demand (BOD5)	mg/L	2	300	15	< 4 ↑
Total Suspended Solids	mg/L	2	350	15	9
Total Kjeldahl Nitrogen	as N mg/L	0.5	100	1	< 0.5
Metals and Inorganics					
Sulphate	mg/L	2	1500		5
Cyanide (total)	mg/L	0.01	2	0.02	< 0.01
Fluoride	mg/L	0.06	10		0.16
Aluminum (total)	mg/L	0.001	50		0.048
Antimony (total)	mg/L	0.0009	5		< 0.0009
Arsenic (total)	mg/L	0.0002	1	0.02	0.0014
Cadmium (total)	mg/L	0.000003	0.7	0.008	< 0.000003
Chromium (total)	mg/L	0.00008	2	0.08	0.00022
Cobalt (total)	mg/L	0.000004	5		0.000042
Copper (total)	mg/L	0.001	3	0.05	< 0.001
Lead (total)	mg/L	0.00009	1	0.12	0.00010
Manganese (total)	mg/L	0.00001	5	0.15	0.0131
Molybdenum (total)	mg/L	0.0004	5		0.0010
Nickel (total)	mg/L	0.0001	2	0.08	< 0.0001
Phosphorus (total)	mg/L	0.003	10	0.4	0.019
Selenium (total)	mg/L	0.00004	1	0.02	< 0.00004
Silver (total)	mg/L	0.00005	5	0.12	< 0.00005
Tin (total)	mg/L	0.00006	5		0.00039

Client: DS Consultants
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L1 = SANSEW / WATER / - - York Sewer Use ByLaw - Sanitary Sewer Discharge - BL_2021_102

L2 = SANSEW / WATER / - - York Sewer Use ByLaw - Storm Sewer Discharge - BL_2021_102

Sample Number	8
Sample Name	BH 19-5
Sample Matrix	Ground Water
Sample Date	07/10/2024

Parameter	Units	RL	L1	L2	Result
Metals and Inorganics (continued)					
Titanium (total)	mg/L	0.0001	5		0.0025
Zinc (total)	mg/L	0.002	2	0.04	< 0.002
Nonylphenol and Ethoxylates					
Nonylphenol	mg/L	0.001	0.02		< 0.001
Nonylphenol Ethoxylates	mg/L	0.01	0.2		< 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
Other (ORP)					
pH	No unit	0.05	10.5	9	8.01
Mercury (total)	mg/L	0.00001	0.01	0.0004	< 0.00001

Client: DS Consultants
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MATRIX: WATER

Sample Number	8
Sample Name	BH 19-5
Sample Matrix	Ground Water
Sample Date	07/10/2024

L1 = SANSEW / WATER / - - York Sewer Use ByLaw - Sanitary Sewer Discharge - BL_2021_102

L2 = SANSEW / WATER / - - York Sewer Use ByLaw - Storm Sewer Discharge - BL_2021_102

Parameter	Units	RL	L1	L2	Result
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	< 0.002
SVOCs					
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
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	0.008	< 0.0005
Methyl ethyl ketone	mg/L	0.02	8		< 0.02
Styrene	mg/L	0.0005	0.2		< 0.0005

Client: DS Consultants
Project: 19-043-101, 4721-5061 Stouffville Rd.
Project Manager: Don Hsu
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MATRIX: WATER

Sample Number	8
Sample Name	BH 19-5
Sample Matrix	Ground Water
Sample Date	07/10/2024

L1 = SANSEW / WATER / - - York Sewer Use ByLaw - Sanitary Sewer Discharge - BL_2021_102

L2 = SANSEW / WATER / - - York Sewer Use ByLaw - Storm Sewer Discharge - BL_2021_102

VOCs - BTEX

Parameter	Units	RL	L1	L2	Result
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	0.27	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

No exceedances are present above the regulatory limit(s) indicated

QC SUMMARY

Anions by discrete analyzer

Method: US EPA 375.4 | Internal ref.: ME-CA-[ENVIEWL-LAK-AN-026

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Sulphate	DIO5005-OCT24	mg/L	2	<2	0	20	106	80	120	104	75	125

Biochemical Oxygen Demand

Method: SM 5210 | Internal ref.: ME-CA-[ENVIEWL-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)	BOD0015-OCT24	mg/L	2	< 2	2	30	97	70	130	86	70	130

Cyanide by SFA

Method: SM 4500 | Internal ref.: ME-CA-[ENVISFA-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)	SKA0078-OCT24	mg/L	0.01	<0.01	ND	10	90	90	110	118	75	125

QC SUMMARY

Fluoride by Specific Ion Electrode

Method: SM 4500 I Internal ref.: ME-CA-[ENVIEWL-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	EWL0192-OCT24	mg/L	0.06	<0.06	ND	10	96	90	110	96	75	125

Mercury by CVAAS

Method: EPA 7471A/SM 3112B I 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)	EHG0019-OCT24	mg/L	0.00001	< 0.00001	ND	20	95	80	120	118	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)	EMS0097-OCT24	mg/L	0.00005	<0.00005	ND	20	101	90	110	71	70	130
Aluminum (total)	EMS0097-OCT24	mg/L	0.001	<0.001	1	20	104	90	110	119	70	130
Arsenic (total)	EMS0097-OCT24	mg/L	0.0002	<0.0002	9	20	105	90	110	109	70	130
Cadmium (total)	EMS0097-OCT24	mg/L	0.000003	<0.000003	13	20	100	90	110	106	70	130
Cobalt (total)	EMS0097-OCT24	mg/L	0.000004	<0.000004	0	20	105	90	110	102	70	130
Chromium (total)	EMS0097-OCT24	mg/L	0.00008	<0.00008	5	20	105	90	110	98	70	130
Copper (total)	EMS0097-OCT24	mg/L	0.001	<0.001	ND	20	103	90	110	108	70	130
Manganese (total)	EMS0097-OCT24	mg/L	0.00001	<0.00001	1	20	104	90	110	104	70	130
Molybdenum (total)	EMS0097-OCT24	mg/L	0.0004	<0.0004	3	20	104	90	110	101	70	130
Nickel (total)	EMS0097-OCT24	mg/L	0.0001	<0.0001	ND	20	103	90	110	99	70	130
Lead (total)	EMS0097-OCT24	mg/L	0.00009	<0.00009	ND	20	102	90	110	101	70	130
Phosphorus (total)	EMS0097-OCT24	mg/L	0.003	<0.003	ND	20	98	90	110	NV	70	130
Antimony (total)	EMS0097-OCT24	mg/L	0.0009	<0.0009	ND	20	100	90	110	101	70	130
Selenium (total)	EMS0097-OCT24	mg/L	0.00004	<0.00004	16	20	102	90	110	106	70	130
Tin (total)	EMS0097-OCT24	mg/L	0.00006	<0.00006	6	20	109	90	110	NV	70	130
Titanium (total)	EMS0097-OCT24	mg/L	0.0001	<0.0001	ND	20	104	90	110	NV	70	130
Zinc (total)	EMS0097-OCT24	mg/L	0.002	<0.002	ND	20	104	90	110	104	70	130

QC SUMMARY

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	GCM0120-OCT24	mg/L	0.01	<0.01			81	55	120			
Nonylphenol monoethoxylate	GCM0120-OCT24	mg/L	0.01	<0.01			83	55	120			
Nonylphenol	GCM0120-OCT24	mg/L	0.001	<0.001			80	55	120			

Oil & Grease

Method: MOE E3401 | Internal ref.: ME-CA-IENVIGC-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)	GCM0165-OCT24	mg/L	2	<2	NSS	20	106	75	125			

QC SUMMARY

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)	GCM0165-OCT24	mg/L	4	< 4	NSS	20	NA	70	130			
Oil & Grease (mineral/synthetic)	GCM0165-OCT24	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	EWL0172-OCT24	No unit	0.05	NA	0		102			NA		

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	SKA0089-OCT24	mg/L	0.002	<0.002	ND	10	98	80	120	96	75	125

QC SUMMARY

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	GCM0142-OCT24	mg/L	0.0001	<0.0001	NSS	30	87	60	140	NSS	60	140

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
Bis(2-ethylhexyl)phthalate	GCM0166-OCT24	mg/L	0.002	< 0.002	NSS	30	101	50	140	NSS	50	140
di-n-Butyl Phthalate	GCM0166-OCT24	mg/L	0.002	< 0.002	NSS	30	102	50	140	NSS	50	140

QC SUMMARY

Suspended Solids

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Suspended Solids	EWL0201-OCT24	mg/L	2	< 2	2	10	101	90	110	NA		

Total Nitrogen

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Kjeldahl Nitrogen	SKA0080-OCT24	as N mg/L	0.5	<0.5	ND	10	103	90	110	105	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	GCM0119-OCT24	mg/L	0.0005	<0.0005	ND	30	98	60	130	96	50	140
1,2-Dichlorobenzene	GCM0119-OCT24	mg/L	0.0005	<0.0005	ND	30	100	60	130	88	50	140
1,4-Dichlorobenzene	GCM0119-OCT24	mg/L	0.0005	<0.0005	ND	30	102	60	130	88	50	140
Benzene	GCM0119-OCT24	mg/L	0.0005	<0.0005	ND	30	98	60	130	88	50	140
Chloroform	GCM0119-OCT24	mg/L	0.0005	<0.0005	ND	30	97	60	130	86	50	140
cis-1,2-Dichloroethylene	GCM0119-OCT24	mg/L	0.0005	<0.0005	ND	30	99	60	130	89	50	140
Ethylbenzene	GCM0119-OCT24	mg/L	0.0005	<0.0005	ND	30	100	60	130	92	50	140
m-p-xylene	GCM0119-OCT24	mg/L	0.0005	<0.0005	ND	30	99	60	130	91	50	140
Methyl ethyl ketone	GCM0119-OCT24	mg/L	0.02	<0.02	ND	30	98	50	140	82	50	140
Methylene Chloride	GCM0119-OCT24	mg/L	0.0005	<0.0005	ND	30	99	60	130	87	50	140
o-xylene	GCM0119-OCT24	mg/L	0.0005	<0.0005	ND	30	101	60	130	91	50	140
Styrene	GCM0119-OCT24	mg/L	0.0005	<0.0005	ND	30	101	60	130	90	50	140
Tetrachloroethylene (perchloroethylene)	GCM0119-OCT24	mg/L	0.0005	<0.0005	ND	30	97	60	130	87	50	140
Toluene	GCM0119-OCT24	mg/L	0.0005	<0.0005	ND	30	95	60	130	88	50	140
trans-1,3-Dichloropropene	GCM0119-OCT24	mg/L	0.0005	<0.0005	ND	30	96	60	130	86	50	140
Trichloroethylene	GCM0119-OCT24	mg/L	0.0005	<0.0005	ND	30	100	60	130	84	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: 035639

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: Ahneen
Received Date: 10,07,24 (mm/dd/yy)
Received Time: 16:20 (hr : min)
Received By (signature):
Custody Seal Present: Yes ☑ No ☐
Custody Seal Intact: Yes ☑ No ☐
Cooling Agent Present: Yes ☑ No ☐ Type: ICE
Temperature Upon Receipt (°C) 9 x 3
LAB LIMS #: 40064

REPORT INFORMATION

Company: DS CONSULTANTS LTD.
Contact: DON HSU
Address: 6221 HWY 7 - U16
VAUGHAN ON, L4H 0K8
Phone: 416 722 6247
Fax:
Email: dhsu@dsconsultants.ca

INVOICE INFORMATION

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

Quotation #:
P.O. #:
Project #: 19-043-101
Site Location/ID: 4721 - 5061 STOUFFVILLE RD.

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: YORK

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,Tl,U,V,Zn)	SVOC: PAHs only	SVOC: SVOCs (all incl PAHs, ABNs, CPs)	PCB: PCBs (Aroclor ☐ Total ☐)	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:	Other:	Other:	Other:	Other: Sewer Use: YORK / STORM SANITARY	Other: Specify pkg: 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 19-5	10/7/24	11:00	18	GW	N															X			
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

5 Day TAT

Observations/Comments/Special Instructions

Sampled By (NAME): DON HSU Signature: Date: 10, 7, 24 (mm/dd/yy)
Relinquished by (NAME): DON HSU Signature: Date: 10, 7, 24 (mm/dd/yy)

Pink Copy - Client
Yellow & White Copy - SGS

Revision #: 1.7
Date of Issue: 07 JUNE 2023

FINAL REPORT

CA40161-NOV24 R1

19-043-103, Hwy 48 & Stouffville Rd, Stouffville

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	Dorothy Santos
Telephone	905-329-2735
Facsimile	905-264-2685
Email	dsantos@dsconsultants.ca
Project	19-043-103, Hwy 48 & Stouffville Rd, Stouffville
Order Number	
Samples	Ground Water (1)

LABORATORY DETAILS

Project Specialist	Jill Campbell, B.Sc.,GISAS
Laboratory	SGS Canada Inc.
Address	185 Concession St., Lakefield ON, K0L 2H0
Telephone	2165
Facsimile	705-652-6365
Email	jill.campbell@sgs.com
SGS Reference	CA40161-NOV24
Received	11/15/2024
Approved	11/22/2024
Report Number	CA40161-NOV24 R1
Date Reported	11/22/2024

COMMENTS

RL - SGS Reporting Limit

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

Temperature of Sample upon Receipt: 9 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Chain of Custody Number: 040723

SIGNATORIES

Jill Campbell, B.Sc.,GISAS

TABLE OF CONTENTS

Client: DS Consultants
Project: 19-043-103, Hwy 48 & Stouffville Rd, Stouffville
Project Manager: Dorothy Santos
Samplers: Chaitanya

MATRIX: WATER

L1 = SANSEW / WATER / - - York Sewer Use ByLaw - Sanitary Sewer Discharge - BL_2021_102

L2 = SANSEW / WATER / - - York Sewer Use ByLaw - Storm Sewer Discharge - BL_2021_102

Sample Number	8
Sample Name	BH 24-5
Sample Matrix	Ground Water
Sample Date	15/11/2024

Parameter	Units	RL	L1	L2	Result
General Chemistry					
Biochemical Oxygen Demand (BOD5)	mg/L	2	300	15	< 4 ↑
Total Suspended Solids	mg/L	2	350	15	3
Total Kjeldahl Nitrogen	as N mg/L	0.5	100	1	0.6
Metals and Inorganics					
Sulphate	mg/L	2	1500		36
Cyanide (total)	mg/L	0.01	2	0.02	< 0.01
Fluoride	mg/L	0.06	10		0.11
Aluminum (total)	mg/L	0.001	50		0.056
Antimony (total)	mg/L	0.0009	5		< 0.0009
Arsenic (total)	mg/L	0.0002	1	0.02	0.0006
Cadmium (total)	mg/L	0.000003	0.7	0.008	0.000017
Chromium (total)	mg/L	0.00008	2	0.08	0.00045
Cobalt (total)	mg/L	0.000004	5		0.00126
Copper (total)	mg/L	0.001	3	0.05	0.001
Lead (total)	mg/L	0.00009	1	0.12	0.00069
Manganese (total)	mg/L	0.00001	5	0.15	0.323
Molybdenum (total)	mg/L	0.0004	5		0.0017
Nickel (total)	mg/L	0.0001	2	0.08	0.0047
Phosphorus (total)	mg/L	0.003	10	0.4	0.024
Selenium (total)	mg/L	0.00004	1	0.02	0.00017
Silver (total)	mg/L	0.00005	5	0.12	< 0.00005
Tin (total)	mg/L	0.00006	5		0.00173

Client: DS Consultants
Project: 19-043-103, Hwy 48 & Stouffville Rd, Stouffville
Project Manager: Dorothy Santos
Samplers: Chaitanya

MATRIX: WATER

Sample Number	8
Sample Name	BH 24-5
Sample Matrix	Ground Water
Sample Date	15/11/2024

L1 = SANSEW / WATER / - - York Sewer Use ByLaw - Sanitary Sewer Discharge - BL_2021_102

L2 = SANSEW / WATER / - - York Sewer Use ByLaw - Storm Sewer Discharge - BL_2021_102

Parameter	Units	RL	L1	L2	Result
Metals and Inorganics (continued)					
Titanium (total)	mg/L	0.0001	5		0.0023
Zinc (total)	mg/L	0.002	2	0.04	0.007
Nonylphenol and Ethoxylates					
Nonylphenol	mg/L	0.001	0.02		< 0.001
Nonylphenol Ethoxylates	mg/L	0.01	0.2		< 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
Other (ORP)					
pH	No unit	0.05	10.5	9	7.23
Mercury (total)	mg/L	0.00001	0.01	0.0004	< 0.00001

Client: DS Consultants
Project: 19-043-103, Hwy 48 & Stouffville Rd, Stouffville
Project Manager: Dorothy Santos
Samplers: Chaitanya

MATRIX: WATER

Sample Number	8
Sample Name	BH 24-5
Sample Matrix	Ground Water
Sample Date	15/11/2024

L1 = SANSEW / WATER / - - York Sewer Use ByLaw - Sanitary Sewer Discharge - BL_2021_102

L2 = SANSEW / WATER / - - York Sewer Use ByLaw - Storm Sewer Discharge - BL_2021_102

Parameter	Units	RL	L1	L2	Result
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	0.005
SVOCs					
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
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	0.008	< 0.0005
Methyl ethyl ketone	mg/L	0.02	8		< 0.02
Styrene	mg/L	0.0005	0.2		< 0.0005

Client: DS Consultants
Project: 19-043-103, Hwy 48 & Stouffville Rd, Stouffville
Project Manager: Dorothy Santos
Samplers: Chaitanya

MATRIX: WATER

L1 = SANSEW / WATER / - - York Sewer Use ByLaw - Sanitary Sewer Discharge - BL_2021_102

L2 = SANSEW / WATER / - - York Sewer Use ByLaw - Storm Sewer Discharge - BL_2021_102

Sample Number	8
Sample Name	BH 24-5
Sample Matrix	Ground Water
Sample Date	15/11/2024

Parameter	Units	RL	L1	L2	Result
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	0.27	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 / - - York Sewer Use ByLaw - Sanitary Sewer Discharge - BL_2021_102 L1	SANSEW / WATER / - - York Sewer Use ByLaw - Storm Sewer Discharge - BL_2021_102 L2
BH 24-5					
Manganese	SM 3030/EPA 200.8	mg/L	0.323		0.15

QC SUMMARY

Anions by discrete analyzer

Method: US EPA 375.4 | Internal ref.: ME-CA-[ENVIEWL-LAK-AN-026

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Sulphate	DIO8029-NOV24	mg/L	2	<2	1	20	102	80	120	104	75	125

Biochemical Oxygen Demand

Method: SM 5210 | Internal ref.: ME-CA-[ENVIEWL-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)	BOD0029-NOV24	mg/L	2	< 2	6	30	86	70	130	82	70	130

Cyanide by SFA

Method: SM 4500 | Internal ref.: ME-CA-[ENVISFA-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)	SKA0162-NOV24	mg/L	0.01	<0.01	1	10	105	90	110	88	75	125

QC SUMMARY

Fluoride by Specific Ion Electrode

Method: SM 4500 I Internal ref.: ME-CA-[ENVIEWL-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	EWL0467-NOV24	mg/L	0.06	<0.06	ND	10	101	90	110	90	75	125

Mercury by CVAAS

Method: EPA 7471A/SM 3112B I 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)	EHG0046-NOV24	mg/L	0.00001	< 0.00001	ND	20	116	80	120	111	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
Tin (total)	EMS0202-NOV24	mg/L	0.00006	<0.00006	1	20	99	90	110	NV	70	130
Titanium (total)	EMS0202-NOV24	mg/L	0.0001	<0.0001	ND	20	98	90	110	NV	70	130
Zinc (total)	EMS0202-NOV24	mg/L	0.002	<0.002	2	20	98	90	110	118	70	130
Silver (total)	EMS0202-NOV24	mg/L	0.00005	<0.00005	ND	20	95	90	110	88	70	130
Aluminum (total)	EMS0202-NOV24	mg/L	0.001	<0.001	1	20	103	90	110	109	70	130
Arsenic (total)	EMS0202-NOV24	mg/L	0.0002	<0.0002	ND	20	101	90	110	109	70	130
Cadmium (total)	EMS0202-NOV24	mg/L	0.000003	<0.000003	0	20	100	90	110	105	70	130
Cobalt (total)	EMS0202-NOV24	mg/L	0.000004	<0.000004	7	20	100	90	110	109	70	130
Chromium (total)	EMS0202-NOV24	mg/L	0.00008	<0.00008	2	20	102	90	110	107	70	130
Copper (total)	EMS0202-NOV24	mg/L	0.001	<0.001	1	20	101	90	110	115	70	130
Manganese (total)	EMS0202-NOV24	mg/L	0.00001	<0.00001	7	20	103	90	110	126	70	130
Molybdenum (total)	EMS0202-NOV24	mg/L	0.0004	<0.0004	6	20	101	90	110	109	70	130
Nickel (total)	EMS0202-NOV24	mg/L	0.0001	<0.0001	3	20	98	90	110	102	70	130
Lead (total)	EMS0202-NOV24	mg/L	0.00009	<0.00009	4	20	96	90	110	103	70	130
Phosphorus (total)	EMS0202-NOV24	mg/L	0.003	<0.003	0	20	102	90	110	NV	70	130
Antimony (total)	EMS0202-NOV24	mg/L	0.0009	<0.0009	ND	20	103	90	110	102	70	130
Selenium (total)	EMS0202-NOV24	mg/L	0.00004	<0.00004	ND	20	102	90	110	117	70	130

QC SUMMARY

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	GCM0320-NOV24	mg/L	0.01	<0.01			88	55	120			
Nonylphenol monoethoxylate	GCM0320-NOV24	mg/L	0.01	<0.01			87	55	120			
Nonylphenol	GCM0320-NOV24	mg/L	0.001	<0.001			84	55	120			

Oil & Grease

Method: MOE E3401 | Internal ref.: ME-CA-IENVIGC-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)	GCM0325-NOV24	mg/L	2	<2	NSS	20	97	75	125			

QC SUMMARY

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)	GCM0325-NOV24	mg/L	4	< 4	NSS	20	NA	70	130			
Oil & Grease (mineral/synthetic)	GCM0325-NOV24	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	EWL0360-NOV24	No unit	0.05	NA	0		100			NA		

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	SKA0191-NOV24	mg/L	0.002	<0.002	ND	10	96	80	120	NV	75	125

QC SUMMARY

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	GCM0323-NOV24	mg/L	0.0001	<0.0001	NSS	30	75	60	140	NSS	60	140

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
Bis(2-ethylhexyl)phthalate	GCM0285-NOV24	mg/L	0.002	< 0.002	NSS	30	105	50	140	NSS	50	140
di-n-Butyl Phthalate	GCM0285-NOV24	mg/L	0.002	< 0.002	NSS	30	107	50	140	NSS	50	140

QC SUMMARY

Suspended Solids

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

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Suspended Solids	EWL0355-NOV24	mg/L	2	< 2	3	10	93	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	SKA0184-NOV24	as N mg/L	0.5	<0.5	2	10	103	90	110	98	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	GCM0301-NOV24	mg/L	0.0005	<0.0005	ND	30	95	60	130	87	50	140
1,2-Dichlorobenzene	GCM0301-NOV24	mg/L	0.0005	<0.0005	ND	30	99	60	130	94	50	140
1,4-Dichlorobenzene	GCM0301-NOV24	mg/L	0.0005	<0.0005	ND	30	97	60	130	93	50	140
Benzene	GCM0301-NOV24	mg/L	0.0005	<0.0005	ND	30	99	60	130	97	50	140
Chloroform	GCM0301-NOV24	mg/L	0.0005	<0.0005	ND	30	99	60	130	94	50	140
cis-1,2-Dichloroethylene	GCM0301-NOV24	mg/L	0.0005	<0.0005	ND	30	98	60	130	96	50	140
Ethylbenzene	GCM0301-NOV24	mg/L	0.0005	<0.0005	ND	30	103	60	130	100	50	140
m-p-xylene	GCM0301-NOV24	mg/L	0.0005	<0.0005	ND	30	104	60	130	100	50	140
Methyl ethyl ketone	GCM0301-NOV24	mg/L	0.02	<0.02	ND	30	87	50	140	91	50	140
Methylene Chloride	GCM0301-NOV24	mg/L	0.0005	<0.0005	ND	30	95	60	130	89	50	140
o-xylene	GCM0301-NOV24	mg/L	0.0005	<0.0005	ND	30	103	60	130	99	50	140
Styrene	GCM0301-NOV24	mg/L	0.0005	<0.0005	ND	30	104	60	130	100	50	140
Tetrachloroethylene (perchloroethylene)	GCM0301-NOV24	mg/L	0.0005	<0.0005	ND	30	97	60	130	94	50	140
Toluene	GCM0301-NOV24	mg/L	0.0005	<0.0005	ND	30	98	60	130	94	50	140
trans-1,3-Dichloropropene	GCM0301-NOV24	mg/L	0.0005	<0.0005	ND	30	100	60	130	94	50	140
Trichloroethylene	GCM0301-NOV24	mg/L	0.0005	<0.0005	ND	30	99	60	130	93	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

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

No: 040723 Page 1 of 1

Laboratory Information Section - Lab use only

Received By: Ameer
Received Date: 11/15/24 (mm/dd/yy)
Received Time: 13 : 03 (hr : min)
Received By (signature):
Custody Seal Present: Yes ☑ No ☐
Custody Seal Intact: Yes ☑ No ☐
Cooling Agent Present: Yes ☑ No ☐ Type: ICE
Temperature Upon Receipt (°C): 9x3
LAB LIMS #: CA4016-NOV24

REPORT INFORMATION
Company: DS Consultants Ltd.
Contact: Dorothy Santos
Address: 6221 Hwy 7, Unit-16, Vaughan, ON
Phone: 905-329-2735
Fax:
Email: DSantos@dsconsultants.ca

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

Quotation #:
P.O. #:
Project #: 19-043-103
Site Location/ID: Hwy 48 & Stouffville Rd. Stouffville

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: York

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,Tl,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: York storm sewer use 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 24-5	11/15/24	PM	18	GW	N												✓							Non-filtered sample
2																									
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

Observations/Comments/Special Instructions

Sampled By (NAME): Chaitanya Signature: Date: 11/15/24 (mm/dd/yy)
Relinquished by (NAME): Chaitanya Signature: Date: 11/15/24 (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 of site

TOWNSHIP	UTM	E	N	DATE CNTR	CASING	WATER	PUMP TEST	WELL USE	SCREEN	WELL	WELL TAG	FORMATION
WHITCHURCH-STOUFFVIL CON 08 001	17 W	638015	4869363	1976/11 3109	30 24	FR 0066	25///:	DO		6913849		LOAM 0002 BRWN CLAY 0022 BLUE CLAY STNY 0047 SAND 0050 BLUE CLAY STNY 0065 GRVL 0070
WHITCHURCH-STOUFFVIL CON 08 001	17 W	637925	4869623	1970/05 5459	5	FR 0046	0/48/3/6:0	DO	0048 4	6909955		PRDG 0017 GREY CLAY GRVL 0035 GREY GRVL CLAY BLDR 0046 GREY MSND 0052
WHITCHURCH-STOUFFVIL CON 08 001	17 W	638124	4869457	1950/11 2204	2	FR 0047		ST DO		6908178		BLUE CLAY 0047
STOUFFVILLE VILLAGE	17 W	637849	4869254	2007/09 7241	1.5			TH		7051198	(Z63654) A063681	BRWN FILL SAND LOOS 0003 BRWN CLAY SILT SOFT 0008 GREN CLAY SILT DNSE 0011 GREY CLAY SILT 0016
WHITCHURCH-STOUFFVIL CON 08 001	17 W	637999	4869455	1952/07 2204	2	FR 0052	1/15/6/:	DO		6908176		PRDG 0020 BLUE CLAY STNS 0052 GRVL 0053
STOUFFVILLE VILLAGE	17 W	637852	4869248	2009/06 7241	5.19			MT	0010 10	7126408	(Z100258) A086578	BRWN FILL SAND GRVL 0004 BRWN SAND SILT DNSE 0012 GREY CLAY SILT WBRG 0020
STOUFFVILLE VILLAGE	17 W	637868	4869236	2009/06 7241	5.19			MT	0010 10	7126409	(Z100255) A086579	BRWN FILL SAND GRVL 0004 BRWN SAND SILT DNSE 0012 GREY CLAY SILT WBRG 0020
STOUFFVILLE VILLAGE	17 W	637834	4869224	2009/06 7241	2.04			MT	0010 10	7126411	(Z100256) A086581	BRWN FILL SAND GRVL 0004 BRWN SAND SILT DNSE 0012 GREY CLAY SILT WBRG 0020
STOUFFVILLE VILLAGE	17 W	637834	4869224	2009/10 7241	2.04			MT	0010 10	7133785	(Z104753) A086581 A	
STOUFFVILLE VILLAGE	17 W	637868	4869247	2009/10 7241	2.04			MT	0010 10	7133786	(Z104750) A086580 A	
STOUFFVILLE VILLAGE	17 W	637852	4869248	2009/10 7241	2.04			MT	0010 10	7133787	(Z104749) A086578 A	
STOUFFVILLE VILLAGE	17 W	637868	4869236	2009/10 7241	2.04			MT	0010 10	7133788	(Z104751) A086579 A	
STOUFFVILLE VILLAGE	17 W	637868	4869247	2009/06 7241	2.04			MT	0007 10	7126410	(Z100257) A086580	BRWN FILL SAND GRVL 0008 BRWN SAND SILT DNSE 0012 GREY CLAY SILT DNSE 0017
WHITCHURCH-STOUFFVIL CON 08 035	17 W	638062	4869328	1949/08 2204	2	FR 0050	0//4/:	DO	0051 5	6904046		MSND CLAY 0030 BLUE CLAY 0050 BRWN CSND 0056
WHITCHURCH-STOUFFVIL CON 08 035	17 W	638015	4869012	1954/10 1622	4	FR 0050	5/20/10/10:0	DO	0053 4	6904048		FILL 0005 YLLW CLAY MSND STNS 0020 BLUE CLAY STNS 0050 YLLW MSND STNS 0057
WHITCHURCH-STOUFFVIL	17 W	637886	4868759	2006/06 7082	1.97			NU	0013 5	6930598	(Z23579) A023342	GRVL SAND 0003 BRWN CLAY SILT 0008 BRWN SAND SILT GRVL 0020
WHITCHURCH-STOUFFVIL CON 08 035	17 W	638318	4869415	1954/12 2419	2	FR 0055	//3/:	DO	0050 5	6904049		CLAY 0045 MSND 0055
WHITCHURCH-STOUFFVIL	17 W	637886	4868759	2006/11 7082						7046164	(Z70724) A023342 A	
WHITCHURCH-STOUFFVIL CON 08 035	17 W	638203	4869401	1960/06 5420	34	FR 0038	18//4/:	DO		6904051		YLLW CLAY 0003 BLUE CLAY 0038 BLUE CLAY GRVL 0040
WHITCHURCH-STOUFFVIL	17 W	637862	4869240	2007/06 6490	1.97				0010 10	7047744	(Z52236) A046388	BRWN SAND GRVL FILL 0009 GREY SILT CLAY SAND 0016 BRWN SAND WBRG 0020
WHITCHURCH-STOUFFVIL CON 08 035	17 W	637974	4869174	1960/12 2204	2	FR 0048	4/10/2/18:0	DO	0047 9	6904052		CLAY STNS 0032 GRVL 0033 CLAY STNS 0046 CSND 0056
WHITCHURCH-STOUFFVIL	17 W	638090	4869523	2014/12 7247	2	UT 0008		MT	0010 10	7239494	(Z198477) A174028	BRWN GRVL SAND FILL 0008 BRWN SILT SNDY 0012 GREY TILL CLAY SAND 0020
WHITCHURCH-STOUFFVIL CON 08 035	17 W	638245	4869409	1961/01 2204	2	FR 0058	7///:	DO		6904053		PRDG 0020 BLUE CLAY STNS 0058 CSND 0059
WHITCHURCH-STOUFFVIL CON 08 035	17 W	638075	4869303	1976/12 1350	6	FR 0045	5/45/4/1:0	DO	0045 5	6913779		GREY CLAY 0021 GREY SILT 0027 GREY CLAY GRVL 0045 GREY GRVL CLAY 0050
WHITCHURCH-STOUFFVIL CON 07 001	17 W	637590	4869587	2016/02 1413	5		7///:			7261539	(Z227322) A	
WHITCHURCH-STOUFFVIL CON 07 001	17 W	637873	4869454	1993/03 1413	6 6	FR 0268	96/240/40/1:0	CO PS	0265 3	6922203		BRWN CLAY DNSE 0012 GREY CLAY STNS BLDR 0203 GREY CLAY DNSE 0212 GREY CLAY SILT SOFT 0230 GREY CLAY SAND DNSE 0263 BLCK GRVL SAND CLN 0269
WHITCHURCH-STOUFFVIL CON 07 001	17 W	637775	4869283	1972/07 1350	6	FR 0036	3/14/10/2:20	DO		6911103		BRWN CLAY GRVL FILL 0003 BRWN CLAY 0015 BRWN GRVL CLAY 0017 GREY CLAY GRVL 0031 GREY GRVL CLAY 0036 BRWN GRVL CSND 0038
WHITCHURCH-STOUFFVIL CON 07 001	17 W	637655	4869233	1971/12 2218	2	FR 0042	2///:	DO		6910791		BRWN CLAY STNS 0042 BRWN MSND CLAY 0070

WHITCHURCH-STOUFFVIL CON 07 001	17 W	637715	4869263	1976/03 5459	6	FR 0050	3/50/3/4:0	DO	0051 3	6913629		BRWN CLAY SAND 0018 BLUE CLAY STNS 0050 BLUE SAND GRVL STNS 0054
WHITCHURCH-STOUFFVIL CON 07 001	17 W	637819	4869326	1964/05 2204	2	FR 0036	4/4/4/5:30	DO	0035 5	6908031		RED CLAY STNS 0030 BLUE CLAY 0036 CSND 0040
WHITCHURCH-STOUFFVIL CON 07 001	17 W	637635	4869223	1978/08 5459	6	FR 0058	6/50/2/:	DO		6915056		LOAM 0003 BLUE CLAY 0018 BLUE CLAY HARD 0077
WHITCHURCH-STOUFFVIL CON 07 001	17 W	637728	4869249	2005/07 1350				DO		6929288	(Z31519) A029430 A	BRWN CLAY 0006 YLLW CLAY GRVL STNS 0012 GREY CLAY GRVL BLDR 0085
WHITCHURCH-STOUFFVIL CON 07 001	17 W	637762	4869295	1950/05 2419	2	FR 0060	3///:	DO		6908028		CLAY 0020 BLUE CLAY 0040 CLAY GRVL 0050 MSND GRVL 0060
WHITCHURCH-STOUFFVIL CON 07 001	17 W	637595	4869213	1969/10 5420	34	FR 0017	3///:	DO		6909699		LOAM 0001 BRWN CLAY MSND 0012 BLUE CLAY 0017 BRWN MSND 0020
WHITCHURCH-STOUFFVIL CON 07 001	17 W	637681	4869301	1957/05 2204	2	FR 0052	3/10/3/0:30	PS		6908029		MSND CLAY 0030 BLUE CLAY STNS 0052
WHITCHURCH-STOUFFVIL CON 07 001	17 W	637587	4869271	1958/09 2204	2	FR 0052	8/12/2/96:0	DO	0047 5	6908030		CLAY 0040 BLUE CLAY STNS 0049 GRVL CLAY 0052
WHITCHURCH-STOUFFVIL CON 07 034	17 W	637936	4868827	1962/11 5420	34	FR 0020	20///:	DO		6903949		LOAM 0001 YLLW CLAY 0008 CLAY MSND 0018 CSND 0020 BLUE CLAY 0030
WHITCHURCH-STOUFFVIL CON 07 035	17 W	637863	4869280	1986/05 5459	6	FR 0192	106/185/10/2:0	DO	0192 6	6918625		BRWN SAND FILL 0005 BLUE CLAY STNS 0049 BLUE SAND CLAY 0062 BLUE CLAY HARD 0091 BLUE CLAY STNS 0115 BLUE CLAY HARD 0170 BLUE CLAY SOFT 0192 BLCK CSND 0195 BLUE SAND CLAY 0198
WHITCHURCH-STOUFFVIL CON 07 035	17 W	637755	4869223	1981/08 2218	2	FR 0042	-4//2/48:30		0051 14	6915909		BRWN CLAY STNS 0042 BLUE CLAY SAND 0065
WHITCHURCH-STOUFFVIL CON 07 035	17 W	637527	4869062	2014/10 3108						7234034	(Z162204) A	
WHITCHURCH-STOUFFVIL CON 07 035	17 W	637619	4869132	1961/04 5420	34	FR 0013	13//2/:	ST DO		6903954		LOAM 0001 YLLW CLAY MSND 0010 CSND 0020
WHITCHURCH-STOUFFVIL CON 07 035	17 W	637535	4869016	1999/01 6874	3	FR 0019	13/14/25/2:0	DO		6924779		SAND 0010 BRWN SAND 0019
WHITCHURCH-STOUFFVIL CON 07 035	17 W	637730	4869234	1961/07 2204	2	FR 0020	4/34/2/12:0	DO	0035 5	6903955		PRDG 0020 CLAY STNS 0034 GRVL 0040
WHITCHURCH-STOUFFVIL CON 08 001	17 W	637996	4869374	1957/11 2204	2	FR 0041	4///:	DO		6908179		PRDG 0022 CLAY STNS 0043 GRVL 0044
WHITCHURCH-STOUFFVIL CON 08 001	17 W	637959	4869329	2009/01 5459						7130184	(Z101450) A075302 A	

Appendix E

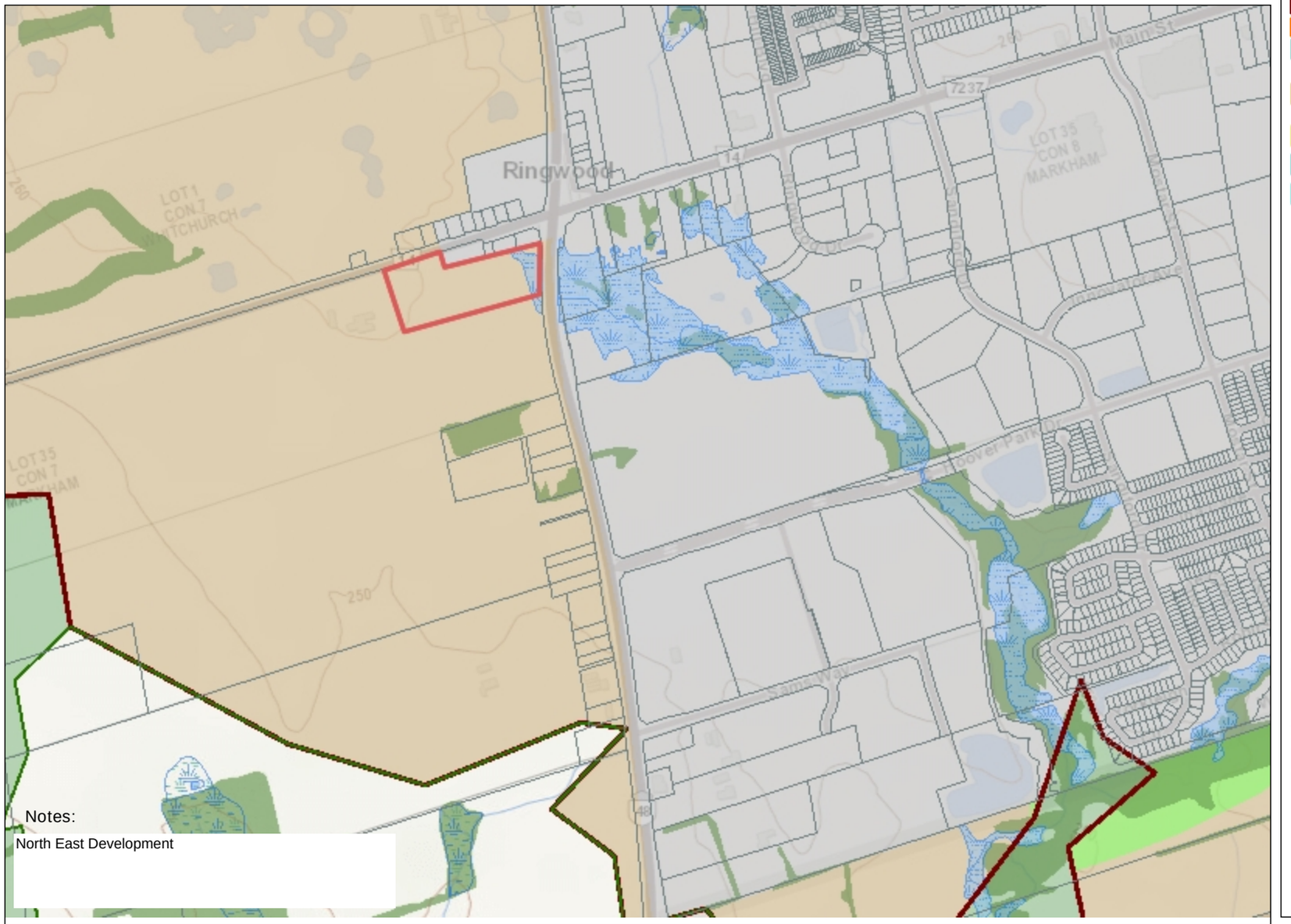
Ontario

Ministry of Natural Resources and Forestry

Make-a-Map: Natural Heritage Areas

4721 & 5061 Stouffville Road

Map created:7/1/2021



Notes:

North East Development

Legend

- Assessment Parcel
- Greenbelt Area Boundary
- ORM Boundary
- NEP Boundary
- NEP Parks and Open Space System
- ANSI
- Earth Science Provincially Significant/sciences de la terre d'importance provinciale
- Earth Science Regionally Significant/sciences de la terre d'importance régionale
- Life Science Provincially Significant/sciences de la vie d'importance provinciale
- Life Science Regionally Significant/sciences de la vie d'importance régionale
- Evaluated Wetland
- Provincially Significant/considérée d'importance provinciale
- Non-Provincially Significant/non considérée d'importance provinciale
- Unevaluated Wetland
- Woodland
- Conservation Reserve
- Provincial Park
- Greenbelt Towns and Villages
- ORM Land Use Designation
- Countryside Area/zone de campagne
- Natural Core Area/zone centrale naturelle
- Natural Linkage Area/lien naturel
- Palgrave Estates Residential Community/communauté résidentielle de Palgrave Estates
- Rural Settlement/zone de peuplement rurale
- Settlement Area/zone de peuplement
- NEP Land Use Designation
- Escarpment Natural Area/zone naturelle de l'escarpement
- Escarpment Protection Area/zone protégée l'escarpement
- Escarpment Recreation Area/zone récréative de l'escarpement
- Escarpment Rural Area/zone rurale de l'escarpement
- Mineral Resource Extraction Area/zone d'extraction de resources minérales
- Urban Area/zone urbaine
- Natural Heritage System

0.7 0 0.33 0.7 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.

Appendix F

TABLE 1

CLIMATE NORMALS 1981-2010 (Richmond Hill Climate Station)

Water Balance - 5061 Stouffvill Road, Whitchurch-Stoufville, ON

	Thornthwaite (1948)					
Month	Mean Temperature (°C)	Heat Index	Unadjusted Potential Evapotranspiration (mm)	Daylight Correction Value	Adjusted Potential Evapotranspiration (mm)	Total Precipitation (mm)
January	-6.2	0.0	0.0	0.81	0.0	62.3
February	-4.9	0.0	0.0	0.82	0.0	58.0
March	-0.3	0.0	0.0	1.02	0.0	58.8
April	6.9	1.6	29.9	1.12	33.4	70.1
May	13.3	4.4	62.2	1.26	78.3	81.6
June	18.7	7.4	91.0	1.28	116.5	80.2
July	21.4	9.0	105.8	1.29	136.5	83.5
August	20.3	8.3	99.8	1.20	119.7	89.2
September	15.9	5.8	75.9	1.04	79.0	88.4
October	9.1	2.5	40.7	0.95	38.6	69.1
November	3.1	0.5	12.2	0.81	9.9	87.2
December	-2.7	0.0	0.0	0.77	0.0	66.8
TOTALS		**39.5**	**517.4**		**612.0**	**895.2**

Notes: Daylight Correction values obtained from Instruction and Tables For Computing Potential Evapotranspiration and The Water Balance (Thornthwaite & Mather, 1957)

TABLE 2

Pre-development Water Balance

Water Balance - 5061 Stouffvill Road, Whitchurch-Stoufville, ON

Catchments and Hydrologic Components			Month											Total
			March	April	May	June	July	August	September	October	November	December	January	February	
PET - Adjusted Potential Evapotranspiration (mm)			0.00	33.44	78.34	116.49	136.51	119.71	78.95	38.64	9.88	0.00	0.00	0.00	**611.96**
P - Total Precipitation (mm)			58.80	70.10	81.60	80.20	83.50	89.20	88.40	69.10	87.20	66.80	62.30	58.00	**895.20**
P-PET (mm)			58.80	36.66	3.26	-36.29	-53.01	-30.51	9.45	30.46	77.32	66.80	62.30	58.00	-
Soil Moisture Deficit (mm)			0.00	0.00	0.00	-36.29	-89.30	-119.80	-110.36	-79.90	-2.58	0.00	0.00	0.00	-
Site	Agricultural/Moderatley Rooted Crop (Catchment 304)	Soil Moisture Storage (mm)	200.00	200.00	200.00	163.71	110.70	80.20	89.64	120.10	197.42	200.00	200.00	200.00	-
		Actual Potential Evapotranspiration (mm)	0.00	33.44	78.34	113.20	119.86	103.76	78.95	38.64	9.88	0.00	0.00	0.00	**576.08**
		P-AET (mm)	58.80	36.66	3.26	-33.00	-36.36	-14.56	9.45	30.46	77.32	66.80	62.30	58.00	-
		Actual Soil Moisture Deficit (mm)	0.00	0.00	0.00	-33.00	-69.36	-83.92	-74.47	-44.02	0.00	0.00	0.00	0.00	-
		Change in Soil Moisture Deficit (mm)	0.00	0.00	0.00	33.00	36.36	14.56	-9.45	-30.46	-44.02	0.00	0.00	0.00	-
		Precipitation Surplus (mm)	58.80	36.66	3.26	0.00	0.00	0.00	0.00	0.00	33.30	66.80	62.30	58.00	**319.12**
		MECP Infiltration Factor	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	-
		Run-Off Coefficient	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	-
		Infiltration (mm)	35.28	22.00	1.95	0.00	0.00	0.00	0.00	0.00	19.98	40.08	37.38	34.80	**191.47**
		Run-Off (mm)	23.52	14.67	1.30	0.00	0.00	0.00	0.00	0.00	13.32	26.72	24.92	23.20	**127.65**
		Catchment Area (m^2) = 14342.00	Monthly Volumes												
	Total AET (m^3)		0.00	479.53	1123.58	1623.48	1719.09	1488.12	1132.31	554.24	141.77	0.00	0.00	0.00	**8262.13**
	Total Evaporation (m^3)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
	Total Infiltration (m^3)		505.99	315.51	28.03	0.00	0.00	0.00	0.00	0.00	286.54	574.83	536.10	499.10	**2746.10**
	Total Runoff (m^3)		337.32	210.34	18.69	0.00	0.00	0.00	0.00	0.00	191.02	383.22	357.40	332.73	**1830.73**
	Agricultural/Moderatley Rooted Crop (Catchment 305)	Soil Moisture Storage (mm)	200.00	200.00	200.00	163.71	110.70	80.20	89.64	120.10	197.42	200.00	200.00	200.00	-
		Actual Potential Evapotranspiration (mm)	0.00	33.44	78.34	113.20	119.86	103.76	78.95	38.64	9.88	0.00	0.00	0.00	**576.08**
		P-AET (mm)	58.80	36.66	3.26	-33.00	-36.36	-14.56	9.45	30.46	77.32	66.80	62.30	58.00	-
		Actual Soil Moisture Deficit (mm)	0.00	0.00	0.00	-33.00	-69.36	-83.92	-74.47	-44.02	0.00	0.00	0.00	0.00	-
		Change in Soil Moisture Deficit (mm)	0.00	0.00	0.00	33.00	36.36	14.56	-9.45	-30.46	-44.02	0.00	0.00	0.00	-
		Precipitation Surplus (mm)	58.80	36.66	3.26	0.00	0.00	0.00	0.00	0.00	33.30	66.80	62.30	58.00	**319.12**
		MECP Infiltration Factor	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	-
		Run-Off Coefficient	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	-
		Infiltration (mm)	35.28	22.00	1.95	0.00	0.00	0.00	0.00	0.00	19.98	40.08	37.38	34.80	**191.47**
		Run-Off (mm)	23.52	14.67	1.30	0.00	0.00	0.00	0.00	0.00	13.32	26.72	24.92	23.20	**127.65**
		Catchment Area (m^2) = 12406.00	Monthly Volumes												
	Total AET (m^3)		0.00	414.80	971.91	1404.33	1487.04	1287.24	979.46	479.42	122.63	0.00	0.00	0.00	**7146.84**
	Total Evaporation (m^3)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
	Total Infiltration (m^3)		437.68	272.92	24.25	0.00	0.00	0.00	0.00	0.00	247.86	497.23	463.74	431.73	**2375.41**
	Total Runoff (m^3)		291.79	181.94	16.17	0.00	0.00	0.00	0.00	0.00	165.24	331.49	309.16	287.82	**1583.60**
	Site Total Monthly Volumes														
	Total AET (m^3)		0.00	894.33	2095.49	3027.81	3206.13	2775.37	2111.77	1033.66	264.40	0.00	0.00	0.00	**15409**
	Total Evaporation (m^3)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0**
	Total Infiltration (m^3)		943.67	588.42	52.29	0.00	0.00	0.00	0.00	0.00	534.39	1072.06	999.84	930.83	**5122**
	Total Runoff (m^3)		629.11	392.28	34.86	0.00	0.00	0.00	0.00	0.00	356.26	714.71	666.56	620.55	**3414**

TABLE 3

Post-development Water Balance

Water Balance - 5061 Stouffvill Road, Whitchurch-Stoufville, ON

Catchments and Hydrologic Components			Month											Total
			March	April	May	June	July	August	September	October	November	December	January	February	
PET - Adjusted Potential Evapotranspiration (mm)			0.00	33.44	78.34	116.49	136.51	119.71	78.95	38.64	9.88	0.00	0.00	0.00	**611.96**
P - Total Precipitation (mm)			58.80	70.10	81.60	80.20	83.50	89.20	88.40	69.10	87.20	66.80	62.30	58.00	**895.20**
P-PET (mm)			58.80	36.66	3.26	-36.29	-53.01	-30.51	9.45	30.46	77.32	66.80	62.30	58.00	-
Soil Moisture Deficit (mm)			0.00	0.00	0.00	-36.29	-89.30	-119.80	-110.36	-79.90	-2.58	0.00	0.00	0.00	-
Site	Catchment 304-Landscaped	Soil Moisture Storage (mm)	125.00	125.00	125.00	88.71	35.70	5.20	14.64	45.10	122.42	125.00	125.00	125.00	-
		Actual Potential Evapotranspiration (mm)	0.00	33.44	78.34	111.22	109.88	94.19	78.95	38.64	9.88	0.00	0.00	0.00	**554.55**
		P-AET (mm)	58.80	36.66	3.26	-31.02	-26.38	-4.99	9.45	30.46	77.32	66.80	62.30	58.00	-
		Actual Soil Moisture Deficit (mm)	0.00	0.00	0.00	-31.02	-57.40	-62.39	-52.94	-22.49	0.00	0.00	0.00	0.00	-
		Change in Soil Moisture Deficit (mm)	0.00	0.00	0.00	31.02	26.38	4.99	-9.45	-30.46	-22.49	0.00	0.00	0.00	-
		Precipitation Surplus (mm)	58.80	36.66	3.26	0.00	0.00	0.00	0.00	0.00	54.83	66.80	62.30	58.00	**340.65**
		MECP Infiltration Factor	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	-
		Run-Off Coefficient	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	-
		Infiltration (mm)	35.28	22.00	1.95	0.00	0.00	0.00	0.00	0.00	32.90	40.08	37.38	34.80	**204.39**
		Run-Off (mm)	23.52	14.67	1.30	0.00	0.00	0.00	0.00	0.00	21.93	26.72	24.92	23.20	**136.26**
		Catchment Area* (m^2) = **4131.00**	Monthly Volumes												
	Catchment 304(Development)	Precipitation (mm)	58.80	70.10	81.60	80.20	83.50	89.20	88.40	69.10	87.20	66.80	62.30	58.00	**895.20**
		Evaporation Factor	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	-
		Run-Off Coefficient	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	-
		Evaporation (mm)	8.82	10.52	12.24	12.03	12.53	13.38	13.26	10.37	13.08	10.02	9.35	8.70	**134.28**
		Run-Off (mm)	49.98	59.59	69.36	68.17	70.98	75.82	75.14	58.74	74.12	56.78	52.96	49.30	**760.92**
		Catchment Area (m^2) = **10211.00**	Monthly Volumes												
	Total AET (m^3)		0.00	138.12	323.63	459.46	453.91	389.10	326.14	159.64	40.83	0.00	0.00	0.00	**2290.84**
	Total Evaporation (m^3)		90.06	107.37	124.98	122.84	127.89	136.62	135.40	105.84	133.56	102.31	95.42	88.84	**1371.13**
	Total Infiltration (m^3)		145.74	90.88	8.08	0.00	0.00	0.00	0.00	0.00	135.90	165.57	154.42	143.76	**844.34**
	Total Runoff (m^3)		607.51	669.01	713.62	696.08	724.73	774.20	767.25	599.74	847.44	690.16	643.67	599.24	**8332.64**
	Catchment 305-Landscaped	Soil Moisture Storage (mm)	125.00	125.00	125.00	88.71	35.70	5.20	14.64	45.10	122.42	125.00	125.00	125.00	-
		Actual Potential Evapotranspiration (mm)	0.00	33.44	78.34	111.22	109.88	94.19	78.95	38.64	9.88	0.00	0.00	0.00	**554.55**
		P-AET (mm)	58.80	36.66	3.26	-31.02	-26.38	-4.99	9.45	30.46	77.32	66.80	62.30	58.00	-
		Actual Soil Moisture Deficit (mm)	0.00	0.00	0.00	-31.02	-57.40	-62.39	-52.94	-22.49	0.00	0.00	0.00	0.00	-
		Change in Soil Moisture Deficit (mm)	0.00	0.00	0.00	31.02	26.38	4.99	-9.45	-30.46	-22.49	0.00	0.00	0.00	-
		Precipitation Surplus (mm)	58.80	36.66	3.26	0.00	0.00	0.00	0.00	0.00	54.83	66.80	62.30	58.00	**340.65**
		MECP Infiltration Factor	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	-
		Run-Off Coefficient	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	-
		Infiltration (mm)	35.28	22.00	1.95	0.00	0.00	0.00	0.00	0.00	32.90	40.08	37.38	34.80	**204.39**
		Run-Off (mm)	23.52	14.67	1.30	0.00	0.00	0.00	0.00	0.00	21.93	26.72	24.92	23.20	**136.26**
		Catchment Area* (m^2) = **2554.00**	Monthly Volumes												
	Catchment 305(Development)	Precipitation (mm)	58.80	70.10	81.60	80.20	83.50	89.20	88.40	69.10	87.20	66.80	62.30	58.00	**895.20**
		Evaporation Factor	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	-
		Run-Off Coefficient	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	-
		Evaporation (mm)	8.82	10.52	12.24	12.03	12.53	13.38	13.26	10.37	13.08	10.02	9.35	8.70	**134.28**
		Run-Off (mm)	49.98	59.59	69.36	68.17	70.98	75.82	75.14	58.74	74.12	56.78	52.96	49.30	**760.92**
		Catchment Area (m^2) = **9852.00**	Monthly Volumes												
	Total AET (m^3)		0.00	85.39	200.09	284.06	280.63	240.56	201.64	98.70	25.25	0.00	0.00	0.00	**1416.32**
	Total Evaporation (m^3)		86.89	103.59	120.59	118.52	123.40	131.82	130.64	102.12	128.86	98.72	92.07	85.71	**1322.93**
	Total Infiltration (m^3)		90.11	56.18	4.99	0.00	0.00	0.00	0.00	0.00	84.02	102.36	95.47	88.88	**522.01**
	Total Runoff (m^3)		552.47	624.49	686.66	671.61	699.25	746.98	740.28	578.66	786.24	627.64	585.36	544.96	**7844.59**
	Site Total Monthly Volumes														
	Total AET (m^3)		0.00	223.52	523.72	743.52	734.54	629.67	527.78	258.34	66.08	0.00	0.00	0.00	**3707**
	Total Evaporation (m^3)		176.96	210.96	245.57	241.36	251.29	268.44	266.04	207.95	262.42	201.03	187.49	174.55	**2694**
	Total Infiltration (m^3)		235.85	147.06	13.07	0.00	0.00	0.00	0.00	0.00	219.91	267.93	249.89	232.64	**1366**
	Total Runoff (m^3)		1159.98	1293.50	1400.28	1367.69	1423.97	1521.18	1507.53	1178.40	1633.68	1317.80	1229.03	1144.20	**16177**