GEMTEC
www.gemtec.ca

Due Diligence
Geotechnical and Hydrogeological Assessment Report
Mayfield Golf Course Redevelopment
Caledon, Ontario

GEMTEC Project: 101987.001(2)

GEMTEC
www.gemtec.ca

Submitted to:

Mayfield Golf Course Inc.
3190 Steeles Avenue East, Suite 300
Markham, Ontario
L3R 1G9

Due Diligence Geotechnical and Hydrogeological Assessment Report Mayfield Golf Course Redevelopment

Caledon, Ontario

September 26, 2024
GEMTEC Project: 101987.001(2)

experience • knowledge • integrity

GEMTEC Consulting Engineers and Scientists Limited
850 Champlain Avenue, Unit 101
Oshawa, ON, Canada
L1J 8C3

September 26, 2024 Project: 101987.001(2) – Rev1

Mayfield Golf Course Inc.
3190 Steeles Avenue East, Suite 300
Markham, Ontario
L3R 1G9

Attention: Vimal Patel, P.Eng.

Re: Due Diligence - Geotechnical and Hydrogeological Assessment **Report**
Mayfield Golf Course Redevelopment
Caledon, Ontario

Enclosed is our Preliminary Geotechnical Site Investigation Report to support the acquisition due diligence for the proposed residential development project at 12552 and 12580 Torbram Road in the Town of Caledon, Ontario. The report presented herein is based on the scope of work summarized in our proposal dated July 5, 2022. This report was prepared by Derek M. Franceschini, P.Eng. and Andy Weatherson, M.Env.Sc., P.Geo., and reviewed by Jean-Philippe Gobeil, M.Sc., P.Geo. (Hydrogeology) and Graeme Skinner, PhD., P.Eng. (Geotechnical).

Derek M. Franceschini, P.Eng.
Geotechnical Engineer

Andy Weatherson, M.Env.Sc., P.Geo.
Intermediate Hydrogeologist

Graeme Skinner, PhD., P.Eng.
Senior Geotechnical Engineer

TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

1.0 INTRODUCTION

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) has been requested by Mayfield Golf Course Inc. (Geranium / the Client) to carry out a preliminary geotechnical site investigation to support the proposed residential development at 12580 and 12552 Torbram Road in the Town of Caledon, Ontario, herein referred to as the "site".

The purpose of the preliminary geotechnical investigation was to identify the general subsurface conditions at the site by means of a limited number of boreholes and, based on the factual data obtained, to provide high-level engineering guidance on the geotechnical and hydrogeological design aspects of developing the site, including construction considerations that could influence design decisions.

2.0 PROJECT DESCRIPTION AND SITE GEOLOGY

2.1 Background

The subject property is located adjacent to Torbram Road between approximately 1 kilometre (km) and 2.1 km north of Mayfield Road and has an approximate area of 172.8 acres (73.56 developable acres); see Figures 1 and 2. The site presently consists of an active-use golf course and country club. The site is bounded to the east by Torbram Road and to the north, west, and south by agricultural and forested lands.

Topographically, the site is of varying elevation and an undulating terrain with higher elevations (up to 258 metres [m]) observed at the northwest portion of the site and lower elevations (at or below 250 m) observed at the southeast end of the site and near the central drainage channel which crossed the site from north-east to south-west. Several small water bodies are located on the site adjacent to the central drainage channel (Figure 3).

It is understood that the Client is considering developing the site for residential use which may include residential / commercial buildings, underground servicing, stormwater management pond(s), park(s), and open spaces. Details of the proposed development (i.e., site grading, building structures, servicing depths etc.) are not known at this time.

2.2 Site Geology and Hydrogeology

Surficial geology maps indicate that the site is near a borderline Physiographic Region between the South Slope and Peel Plain which typically consists of extensive clayey silt to silty clay till plains and occasional sand to silt zones. Shallow, localized deposits of loose sand / silt and / or soft clay can overlie this uppermost till sheet, and these generally represent relatively recent deposits formed in small glacial meltwater ponds scattered throughout the Peel Plain and concentrated near river valleys. The recent sand, silt, and clay as well as the upper-most till deposits in this area overlie and are interbedded with stratified deposits of sand, silt, and clay, all

overlying the local bedrock. As indicated in Figure 2, the site itself is underlain by predominantly interlayered clay to silt-textured till with modern alluvial deposits of clay, silt, sand, and gravel.

A review of the Ministry of the Environment, Conservation, and Parks (MECP) water well records (WWRs) (MECP, 2021) indicated that there are fourteen WWRs located within 500 m of the site (Figure 3). According to the WWRs, overburden ranges from approximately 10.7 m to 14.9 m in thickness and consists of predominantly clay, silt and / or till with some sand and / or gravel. Bedrock was identified as shale, consistent with regional mapping of the Queenston Formation. Groundwater levels within the overburden ranged from about 1.8 m below ground surface (bgs) to 7.6 m bgs in the nearby WWRs.

3.0 METHODOLOGY

3.1 Geotechnical Investigation

The field work for this investigation was carried out on July 12 and 13, 2022. At that time, six boreholes, noted as Boreholes 22-1 to 22-6, were advanced at the site to depths ranging between about 7.8 m and 8.1 m bgs.

The boreholes were advanced using a track mounted drill rig operated by Landshark Drilling Ltd. of Brantford, Ontario. The field work was observed throughout by a member of our geotechnical engineering staff who directed the drilling operations and logged the samples and boreholes.

Standard Penetration Testing (SPT) and sampling were carried out at regular intervals of depth in the boreholes using conventional 38-milimeter (mm) internal diameter split spoon sampling equipment driven by an automatic hammer in accordance with the SPT procedures outlined in ASTM International Standard D1586: “Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils”. The split-spoon samplers used in the investigations limit the maximum particle size that can be sampled and tested to about 38 mm. Therefore, particles or objects that may exist within the soils that are larger than this dimension were not sampled or represented in the grain size distributions. The results of the in situ field tests (i.e., SPT “N”-values), as presented on the Record of Borehole sheets and in subsequent sections of this report, are the values measured directly in the field and are unfactored.

Following completion of the drilling, the soil samples were returned to our laboratory for examination by a geotechnical engineer. Selected samples were submitted for grain size distribution testing, Atterberg limit testing, moisture content determination and chemical testing.

The borehole locations were selected by GEMTEC and positioned on site relative to existing features, including underground and above ground utility constraints. The ground surface elevations for each borehole location were interpolated from the topographic figure created by R-PE Surveying Ltd. (Job Number 22-206). The interpolated ground surface elevations should be considered approximate and should be used for preliminary purposes only.

A subset of the boreholes advanced as part of drilling program (Boreholes 22-2, 22-5 and 22-6) were completed as 50-mm diameter monitoring wells. Well completion details are presented on the Record of Borehole sheets included in Appendix B. Otherwise, the boreholes were backfilled upon completion, in accordance with the requirements of the Revised Regulations of Ontario (R.R.O.) 1990, Ontario Regulation 903 (as amended) of the Ontario Water Resources Act. It is understood that the monitoring wells installed as part of the drilling program will be utilized up to the time of construction and abandoned as part of subsequent development activities at the Site.

Description of the subsurface conditions observed in the boreholes is provided on the Record of Borehole Sheets in Appendix B. The results of geotechnical and analytical laboratory testing are provided on the Record of Borehole Sheets (as applicable) and in Appendices C and D, respectively. The results of single well response tests are provided in Appendix E. The laboratory certificate of analysis and water quality table are provided in Appendix F.

The approximate locations and interpolated geodetic ground surface elevations of the boreholes are shown on the Borehole Location Plan, Figure 1 in Appendix A, and on the Record of Borehole Sheets (Appendix B).

3.2 Hydrogeological Investigation

3.2.1 Site Instrumentation

Monitoring wells were installed in three of the boreholes (Boreholes 22-2, 22-5, and 22-6), in accordance with Ontario Regulation (O. Reg.) 903. The monitoring wells were constructed using 50 mm inside diameter, Schedule 40 PVC pipe with a No. 10 slot screen (0.01-inch slot). The annular space between the monitoring well pipe and surrounding soils was backfilled with silica sand to a maximum of 0.3 m above the top of the screen and the remainder of the annular space was filled with bentonite. Monitoring Wells 22-2 and 22-5 were completed with an aboveground protective steel casing and Monitoring Well 22-6 was completed with a flush-mount cap, at ground surface.

Following installation, GEMTEC personnel developed the monitoring wells to remove drilling fluids, solids or other particles that may have been introduced during drilling/installation. GEMTEC personnel purged each monitoring well using dedicated 16 mm inside diameter high density polyethylene (HDPE) tubing connected to a D-25 Waterra™ foot valve. Using the dedicated tubing, GEMTEC personnel purged the standing water column within the monitoring wells. Due to the slow water level recovery in the monitoring wells, only one to three standing columns of water were purged from the monitoring wells.

3.2.2 Hydraulic Response Testing

GEMTEC performed in situ hydraulic response testing at all three monitoring wells to estimate the horizontal hydraulic conductivity of the silt, sand and silty clay materials underlying the site. The testing consisted of creating an instantaneous change in the well water level by removing a

known volume of water followed by recording the time taken for the water level to return to static conditions (i.e., rising head test). Data were analyzed using the Hvorslev (1951) solution. Testing provided an estimate of the horizontal hydraulic conductivity of the overburden material within the screened intervals for the monitoring wells.

3.2.3 Groundwater Sampling

To evaluate disposal options for dewatering effluent during potential future construction, groundwater samples were collected from Monitoring Wells 22-2 and 22-6 on July 29, 2022. In addition, a sample was collected from the watercourse running through the site (SW-1) to establish background water quality. Prior to collecting the groundwater samples, Stantec personnel purged the wells until the field parameters of pH, temperature, and conductivity stabilized (where applicable), indicating that the sample would be reflective of groundwater drawn from the overburden underlying the site. Following purging, sampled groundwater was collected using a dedicated bailer and poured directly into lab supplied sample bottles. The groundwater samples were carefully packed into coolers with ice, which was added to maintain sample temperatures below 10°C during transit to the analytical laboratory. Samples were delivered to Bureau Veritas Laboratories (BV Labs) for analysis relative to the Provincial Water Quality Objectives (PWQO). The groundwater quality table and water quality certificate of analysis are provided in Appendix F.

4.0 SUBSURFACE CONDITIONS

As previously indicated, the soil and groundwater conditions identified in the boreholes are given on the Record of Borehole Sheets in Appendix B. The Record of Boreholes indicate the subsurface conditions at the specific borehole locations only. Boundaries between zones on the Record of Boreholes are often not distinct, but rather are transitional and have been interpreted from drilling observations. The precision with which subsurface conditions are indicated depends on the method of drilling, the frequency and recovery of samples, the method of sampling, and the uniformity of the subsurface conditions. Subsurface conditions at locations other than the boreholes may vary from the conditions encountered in the boreholes, both laterally and with depth.

The groundwater conditions described in this report refer only to those observed at the place and time of observation noted in the report. These conditions may vary seasonally or as a result of construction activities in the area.

The soil descriptions in this report are based on commonly accepted methods of classification and identification employed in geotechnical practice. Classification and identification of soil involves judgement and GEMTEC does not guarantee descriptions to be exact but infers accuracy to the extent that is common in current geotechnical practice.

The subsurface soil conditions at the site generally comprise of near-surface fill and / or topsoil underlain by interbedded deposits of silty clay, (sandy) silty clay glacial till and silty sand / sandy silt glacial till, which are in-turn underlain by non-cohesive deposits of silt, sandy silt and silty sand. The following presents an overview of the subsurface conditions encountered in the boreholes advanced during this investigation:

4.1 Topsoil and Organic Material

Topsoil was encountered at the ground surface in Boreholes 22-3, 22-5 and 22-6. The topsoil extended to depths ranging from approximately 50 mm to 125 mm bgs. Materials designated as topsoil in this report were classified solely based on visual and textural evidence. Testing for organic content, pH, acidity, alkalinity and nutrients, was not carried out. Accordingly, materials classified as topsoil herein cannot necessarily be relied upon for the support and growth of landscaping vegetation without supplementary soil fertility testing.

Organic material was also encountered within the cohesive fill material in Borehole 22-3, possibly remaining from when the fill was placed (i.e., not removed and backfilled over). The organic material was encountered at a depth of about 3.4 m bgs where it was also fully penetrated. The natural water content value measured on the sample of the organic material was approximately 27 per cent using the test methods described in ASTM D2216-10 “Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass”.

4.2 Fill Material

Fill material was encountered in Boreholes 22-1, 22-2, 22-3 and 22-4. The fill material is predominantly comprised of cohesive soils ranging from silty clay to sandy silty clay, with a single sample of non-cohesive fill (i.e., existing granular pavement) was encountered at surface in Borehole 22-4. The fill material was present at surface or underlying the topsoil and was fully penetrated in all boreholes where encountered, extending to depths ranging from about 0.1 m to 4.0 m bgs.

SPT “N”-values and natural water content values could not be measured within the non-cohesive fill due to the limited areas where it was encountered.

SPT “N”-values measured within the cohesive fill ranged from 5 blows to 14 blows per 0.3 m of penetration suggesting that the fill has a firm to stiff consistency. The water content values measured on samples of the cohesive fill ranged from approximately 13 per cent to 21 per cent.

4.3 Silty Clay

Deposits of silty clay were encountered in Boreholes 22-2 and 22-4 to 22-6. The silty clay deposits were encountered at depths ranging from the underside of topsoil to about 4 m bgs and ranged in thickness from about 0.5 m to 7.0 m. The deposits were fully penetrated in all boreholes where encountered at depths ranging from about 0.6 m to 7.1 m bgs. Oxidation staining and rootlets

were encountered in these deposits near surface and the deposits were observed to become grey with increasing depth. The deposits were sandy and contained gravel particles within the soil matrix at various locations.

SPT “N”-values measured within the silty clay range from 6 blows to 18 blows per 0.3 m of penetration suggesting that the deposits have a firm to very stiff consistency. The natural water content values measured on samples of the silty clay ranged from approximately 13 per cent to 23 per cent.

A grain size distribution test was undertaken on a sample of the silty clay deposit from Borehole 22-6. The results are provided in Appendix C and are summarized in Table 4.3.

Table 4.3 – Summary of Grain Size Distribution Test (Silty Clay)

Location	Sample Number	Sample Depth (m)	Gravel (%)	Sand (%)	Silt / Clay (%)
22-6	3	1.5 – 2.0	1	10	89

The results of Atterberg Limits testing on samples of the silty clay are presented in Appendix C. The results of the Atterberg Limits testing indicate a plastic limit of 21 per cent, a liquid limit of 49 per cent and a plasticity index of 28. Accordingly, the deposit would be classified as inorganic, low-plasticity clay.

4.4 Glacial Till

Deposits of cohesive (silty clay / sandy silty clay) and non-cohesive (sandy silt) glacial till were encountered in all boreholes. The glacial till deposits were encountered at depths ranging from about 0.6 m to 7.9 m bgs and ranged in thickness from about 0.6 m to 5 m. The deposits were fully penetrated in all boreholes at depths ranging from about 2.7 m to about 7.9 m bgs; this is with the exception of Boreholes 22-4 and 22-6 which were terminated in the glacial till deposits at a depth of about 8.1 m bgs after exploring the strata for about 0.2 m to 1.0 m. Oxidation stains were encountered in these deposits near surface and the deposits were observed to become grey with increasing depth.

SPT “N”-values measured within the cohesive glacial till deposits ranged from 14 blows to 48 blows per 0.3 m of penetration, suggesting that the material has a stiff to hard consistency. The natural water content values measured on samples of the cohesive glacial till ranged from approximately 9 per cent to 15 per cent.

The SPT “N”-values measured within the non-cohesive glacial till ranged from 26 blows to 44 blows per 0.3 m of penetration, indicating these soils are in a compact to dense state of

compactness. The natural water content values measured on samples of the non-cohesive glacial till generally ranged from approximately 7 per cent to 11 per cent.

As noted in the borehole logs, the presence of cobbles and boulders should be expected in glacially derived deposits, as inferred from auger grind encountered during the site investigation.

Grain size distribution tests were undertaken on two samples of the cohesive glacial till from Boreholes 22-3 and 22-5. The results are provided in Appendix C and are summarized in Table 4.4.

Table 4.4 – Summary of Grain Size Distribution Test (Cohesive Glacial Till)

Location	Sample Number	Sample Depth (metres)	Gravel (%)	Sand (%)	Silt / Clay (%)
22-3	7	6.1 – 6.6	9	32	59
22-5	4	2.3 – 2.8	4	24	72

The results of Atterberg Limits testing on a sample of the cohesive glacial till from Borehole 22-5 are presented in Appendix C. The results of the Atterberg Limits testing indicate a plastic limit of 15 per cent, a liquid limit of 25 per cent and a plasticity index of 10. Accordingly, the cohesive glacial till would be classified as an inorganic, low plasticity clay.

4.5 Silty Sand

A deposit of silty sand was encountered in Borehole 22-2 at a depth of about 5.3 m bgs. Borehole 22-2 was terminated in the silty sand deposit at a depth of about 7.8 m bgs after exploring the strata for about 2.5 m.

The SPT “N”-values measured within the silty sand ranged from 55 blows per 0.3 m of penetration to 50 per 0.13 m of penetration, indicating this deposit is in a very dense state of compactness. The natural water content values measured on samples of the silty sand generally ranged from approximately 9 per cent to 14 per cent.

The presence of cobbles and boulders should be expected in this deposit based on the difficult conditions encountered during drilling operations.

4.6 Silt to Sandy Silt

Deposits of silt to sandy silt (silt deposits) were encountered in Boreholes 22-1 to 22-3 and 22-5. The silt deposits were encountered at depths ranging from about 2.7 m to 7.7 m bgs and were observed to have a thickness of about 2.6 m where the deposits were fully penetrated in Borehole 22-2 at a depth of about 5.3 m bgs; Boreholes 22-1, 22-3 and 22-5 were terminated in

the silt deposits at depths ranging from about 7.8 m to 8.1 m bgs after exploring the strata for about 0.1 m to 2.5 m.

The SPT "N"-values measured within the silt deposits ranged from 19 blows per 0.3 m of penetration to 50 per 0.05 m penetration, indicating these soils are in a compact to very dense state of compactness. The natural water content values measured on samples of the silt deposits generally ranged from approximately 9 per cent to 25 per cent.

A grain size distribution test was undertaken on a sample of the silt deposits from Borehole 22-2. The results are provided in Appendix C and are summarized in Table 4.6.

Table 4.6 – Summary of Grain Size Distribution Test (Silt)

Location	Sample Number	Sample Depth (metres)	Gravel (%)	Sand (%)	Silt / Clay (%)
22-2	5	3.1 – 3.6	0	2	98

4.7 Groundwater Conditions

The groundwater levels were measured in the installed monitoring wells and are summarized in Table 4.7. Groundwater was not encountered in Boreholes 22-1, 22-3 and 22-4 during drilling operations or upon completion of drilling.

Table 4.7 – Groundwater Depths in Monitoring Wells

Borehole No.	Groundwater Depth (m bgs)	Date of Reading
22-2	0.9 [255.4]	July 28, 2022
22-5	5.5 [245.7]	July 28, 2022
22-6	2.9 [250.6]	July 28, 2022

It should be noted that the groundwater levels may be higher during wet periods of the year such as the early spring or following periods of precipitation. Groundwater levels at the site are anticipated to vary between and beyond the borehole locations and to fluctuate with seasonal variations in precipitation and snowmelt.

4.8 Hydraulic Response Test Results

The results of the hydraulic response testing carried out at Monitoring Wells 22-2, 22-5, and 22-6 are provided in Appendix E. The hydraulic conductivities calculated from the rising head tests range from approximately 7 x 10^{-9} m/s for the silty clay / silty clay till to 3 x 10^{-8} m/s for the silt and 5 x 10^{-8} m/s for the silty sand. The geometric mean of the interpreted hydraulic

conductivities is 2 x 10^{-8} m/s. The calculated hydraulic conductivity for silty clay / silty clay till falls within the literature range for clay of 10^{-8} to 10^{-11} m/s. The calculated hydraulic conductivity for silt falls within the literature range for silt of 10^{-6} to 10^{-8} m/s. The calculated hydraulic conductivity for silty sand is considered to be lower than the typical literature range for silty sand of 10^{-5} to 10^{-7} m/s (Fetter, 1994); the low hydraulic conductivity is likely the result of the material's possible classification as a glacial till.

4.9 Groundwater Quality Results

Analytical results for the groundwater and background surface water (SW) samples along with the associated PWQO standards are presented in Appendix F. The Laboratory Certificate of Analysis for the groundwater samples is also provided in Appendix F.

A summary of groundwater and surface water exceedances from the monitoring wells and watercourse are summarized below:

Monitoring Well 22-2

- Phenols-4AAP; and
- Di-N-butyl phthalate.

Monitoring Well 22-6

- No exceedances of PWQO standards.

Surface Water Sample (SW-1)

- Escherichia coli (E. coli).

As noted in Table F.1, the laboratory reporting limits for some of the parameters were higher than the PWQO standards. It should be noted that the marginal exceedances noted in monitoring well 22-2 were also accompanied by an elevated concentration of total suspended solids (TSS) of 24 mg/L. Those marginal exceedances are interpreted as resulting from the sorption of these organic compounds to suspended fine-grained particles in the sample. It is GEMTEC's opinion that the implementation of TSS reduction measures such as the use of filter bags and/or settling tanks and the implementation of erosion and sedimentation control measures prior to discharging to the ground surface in a low-lying, vegetated area located more than 30 metres away from a surface water feature (i.e., watercourse, waterbody, or wetland) should reduce the concentrations of those parameters below the PWQO standards before it reaches a surface water feature in a case where not all of the discharge water infiltrates and some runoff reaches a surface water feature at the site.

5.0 DISCUSSION

The following sections of the report provide guidance on the geotechnical engineering and hydrogeological design aspects of the project based on our interpretation of the boreholes advanced and monitoring well tested as part of the site investigation. It is stressed that the information in the following sections is provided for the guidance of the designers and is intended for this project only. If the project is modified in concept, location or elevation, or if the project is not initiated within eighteen months of the date of the report, GEMTEC should be given an opportunity to confirm that the recommendations are still valid. Once the actual development plans and design details are available, the results of the preliminary investigation should be reviewed, and an additional / detailed geotechnical / hydrogeological site investigation should be carried out as required.

Contractors bidding on or undertaking the works should examine the factual results of the investigation, satisfy themselves as to the adequacy of the information for construction, and make their own interpretation of the factual data as it affects their construction techniques, schedule, safety, and equipment capabilities. GEMTEC will not assume any responsibility for construction-related decisions made by contractors on the basis of this report.

The professional services retained for this project include only the geotechnical aspects of the subsurface conditions at this site. The presence or implications of possible surface and/or subsurface contamination resulting from previous uses or activities of this site or adjacent properties, and/or resulting from the introduction onto the site from materials from offsite sources are outside the terms of reference for this report and have not been investigated or addressed herein.

5.1 Site Preparation

The following comments are provided with regard to general site preparation considerations for low-rise / individual home residential construction.

- All surficial vegetation, topsoil, existing fill should be carefully removed within the proposed development area. Any septic systems, building foundations, etc. will need to be removed as part of the site redevelopment. Material that has been reworked and disturbed by maintenance activities or site clearing must also be stripped / removed and, if appropriate, can be reused (i.e., not containing organic matter, deleterious material or moisture contents above optimum for compaction).
- Topsoil thicknesses were measured at three discreet locations ranging from 50 mm to 125 mm and the actual thicknesses across the site may vary widely from those measured. GEMTEC recommends that test pits be carried out to verify the topsoil thicknesses with sufficient coverage prior to commencing site grading activities.

- Currently, the grading plan is not available. However, based on the site topography, it is anticipated that a significant cut-and-fill operations may be required to achieve final grades due to the undulating site conditions. Based on the ground conditions, this anticipated local grade raise is not expected to have significant post construction settlements. This may be with the exception of the area in the vicinity of Borehole 22-6 where the native silty clay layer is thicker, and any significant grade raises in this area should be reviewed. Once the grading plan is available, additional recommendations may be provided.
- It should be noted that localized areas of softer / loose soil conditions may be present on site in areas with lower grades where surface water is or may have naturally collected or travelled (i.e., streams, ponds / slews), as noted across the site (see Figure 3).
- A layer / zone of organic material was encountered in Borehole 22-3 near the fill / native interface at an approximate depth of 3.4 m bgs. The extent of this material is unknown, but should be reviewed during detailed design and removed if required (i.e., structural support / settlement sensitive areas, etc.)
- The design grade raise can be achieved using a well compacted granular material consisting of Granular A or Granular B Type II placed in 300 mm loose lift thicknesses and compacted to a minimum 98% Standard Proctor Maximum Dry Density (SPMDD). Alternatively, the site borrow soils may be used to facilitate grade raise fill construction provided that the material is suitable for compaction (i.e., free from any organic, wet, contaminated or deleterious material and at an appropriate moisture content) and is compacted using appropriate equipment (i.e., padfoot or sheepsfoot roller for cohesive and / or till soils). Site borrow materials should be placed and compacted to the same specification (i.e., lift thickness and density) as granular fill materials.
- It is strongly recommended that construction should be carried out under dry and non-freezing conditions. If construction is required during freezing temperatures, the subgrade should be protected immediately from freezing using straw, propane heaters and insulated tarpaulins, or other suitable means. Backfilling during the winter is not recommended, but recommendations can be provided for winter work if required.
- Overall, the design of the final grading will impact the feasibility of trench excavations, foundation design, basement construction and storm water pond design. As such, close cooperation between GEMTEC and the subdivision designers is recommended during the detailed design stage.

5.2 Frost Susceptibility

The following comments are provided with regard to the potential frost susceptibility of the existing site soils and potential impacts on low-rise / individual home construction.

- The majority of the soils at this site are considered frost susceptible and should not be used as backfill against exterior or unheated foundation elements. To avoid problems with frost adhesion and heaving, these foundation elements should be backfilled with non-frost

susceptible granular materials conforming to the requirements of Ontario Provincial Standard Specification (OPSS).MUNI 1010 Granular 'B' Type I material.

- Given the majority of the subsurface soils encountered in the boreholes are considered to be frost susceptible, any exterior unheated structures such as exterior slabs, sidewalks and other concrete flatwork would be expected to be affected by frost action. To reduce the effects of frost heave on such structures, preventive measures should be considered in the design as appropriate. Such measures may include positive subgrade grading, provision of subdrains, removal and replacement of native soils with non-frost susceptible materials (i.e., granular with minimal fines), provision of frost tapers, and thermal insulation. Further information on frost protection can be provided during the detailed design phase of the project.

5.3 Foundations and Basements

The following comments are provided with regard to the potential foundation options / considerations for low-rise / individual home residential construction.

- In general, the native subsurface soils are generally suitable to support single family house foundations and floor slabs constructed at depths below the local frost penetration depth of 1.4 m. In some localized areas, the near-surface fill deposits will necessitate removal and replacement of these soils or lowering the foundations, as applicable (i.e., in the vicinity of Borehole 22-3 with fill / organics to approximately 4 m bgs). For planning purposes, a preliminary factored geotechnical resistance at Ultimate Limit States (ULS) of 225 kPa and a preliminary geotechnical reaction at Serviceability Limit States (SLS) of 150 kPa may be assumed for conventional shallow spread and/or strip footings bearing in the native, undisturbed soils.
- The geotechnical ULS and SLS bearing resistance / reaction should be confirmed during the detailed design stage and at the time of construction, and assumes that all loose / soft, organic soils, or otherwise deleterious materials are removed from the bearing surface.
- After sub-excavating to the founding elevations, the prepared founding excavations should be inspected by qualified geotechnical personnel to confirm that the foundation soils are uniform, consistent with those encountered in the boreholes and are free of any soft / loose or otherwise deleterious materials. Locations where less competent subgrade conditions (i.e., soft / loose soil, construction debris, organic soils, or other deleterious materials) are identified during subgrade inspection should be sub-excavated and replaced as directed by GEMTEC.
- All exterior footings and footings in unheated areas should be protected with a minimum of 1.4 m of earth cover or equivalent thermal insulation for frost protection.

- The type of foundation drainage system required (perimeter drains and/or underslab drains, damp-proofing or waterproofing) will depend upon the final site grading, founding elevations, soil types in the area and stabilized groundwater levels. The type of foundation drainage should be confirmed by the geotechnical engineer once the site grading plans are available, as part of final design process.
- Any under-slab drainage system should lead to sumps where the collected water is removed using pumps with water level controls. Given the stratigraphy at the site, only modest groundwater inflows to the under-slab drainage system are anticipated; however, the actual expected inflows should be determined during the design stage.

5.4 Temporary Excavations

The following comments are provided with regard to the temporary excavation considerations for low-rise / individual home residential construction and associated servicing.

- All excavations should be carried out in accordance with the Ontario Health and Safety Regulations for Construction Projects (OHSA). Excavation at this site will extend through the near surface fill materials and into the underlying firm to very stiff cohesive deposits or the compact to very dense non-cohesive deposits. According to OHSA, the soils at the site should generally be classified as either Type 2 (stiff to hard cohesive soils) or Type 3 (fill, soft/firm cohesive soils and sand/silt deposits); using the more conservative (i.e., Type 3) if mixed conditions are encountered. The actual soil type for excavations advanced at the site should be determined on a case-by-case basis based on the exposed soils.
- In most cases, unsupported temporary excavations may be sloped no steeper than 1 Horizontal to 1 Vertical (1H:1V) from the excavation base to surface for excavations in Type 3 soils; excavations in Type 2 soils should be sloped at the same inclination as Type 3 soils upward from 1.2 m above the excavation base. All excavations should be inspected by the geotechnical engineer for correct soil classification under OHSA. Depending upon the actual site conditions at the time of construction, some flattening and/or blanketing of the slopes may be required to enhance stability. Care should be taken to direct surface runoff away from the open excavations.
- Conventional hydraulic excavation equipment would be expected to be suitable for excavation in the overburden soils; however, the soils are very dense / hard and may be difficult to excavate with smaller pieces of equipment. The native soils are glacially derived and as such should be expected to contain cobbles and boulders, which could affect excavations for the building and site services. The contractor should be made aware of the potential presence of cobbles and / or boulders within the overburden soils.
- Stockpiles of excavated materials should be kept at least the same horizontal distance from the top edge of the excavation as the excavation depth to avoid negative impacts on excavation slope stability, subject to confirmation by a geotechnical engineer in the field during construction. Care should also be taken to avoid overloading of any underground

services / structures by stockpiles. Boulders larger than 0.3 m in diameter, if encountered, should be removed from the excavation side slopes for worker safety.

- If deep excavations are required, especially into the silty sand unit encountered in Borehole 22-2 located in the northwest portion of the site, additional considerations may be needed to address potential instability of the base of the excavation (i.e., blow-out or piping); and additional dewatering measures may be required (i.e., dedicated point-well system).
- Further, to the point above, the design and operation of any stormwater management systems (i.e., pond or deep wells / chambers), may need careful consideration to ensure long-term stability of any liner or structure (i.e., uplift / ballast, underdrain system, etc.).

5.5 Installation of Underground Services

The following comments are provided based on the assumption that the underground service excavations will extend to depths ranging from about 3 m to 4 m below ground surface following final grading.

- The bedding for the proposed services should be compatible with the size, type and class of pipe, the surrounding subsoils and anticipated loading conditions and should be designed in accordance with the Ontario Provincial Standard Specifications (OPSS) and any local municipal standards.
- Where granular bedding is deemed to be acceptable, it should consist of at least 150 mm of OPSS.MUNI 1010 Granular 'A' compacted to 95 per cent of its SPMDD from the springline to 300 mm above the obvert of the pipe, sand cover (OPSS.MUNI 1002 concrete fine aggregate) may be used.
- All bedding and cover materials should be placed in maximum 200 mm thick loose lifts and should be uniformly compacted to at least 95 per cent of SPMDD using suitable vibratory compaction equipment in accordance with OPSS.MUNI 401.
- The use of clear crushed stone or high-performance bedding materials as a bedding layer shall not be permitted anywhere on this project since fine particles from the native deposits could potentially migrate into the voids of the material and cause loss of lateral pipe support and pipe / ground settlement.
- The silty clay deposits may not be reusable as trench backfill due to the high water content and difficulty in achieving compaction. The native non-cohesive soils are generally suitable for reuse as trench backfill, provided they are not excessively wet and are free of significant amounts of topsoil, organics as well as other deleterious materials. Soils that contain significant quantities of organics or debris are also not suitable for use as trench backfill within settlement sensitive areas. In addition, any boulders or cobbles should be removed from the trench backfill materials. Backfilling operations during cold weather should avoid inclusions of frozen lumps of material, any frozen soil, snow and ice.

- Alternatively, if placement water contents at the time of construction are too high, or if there is a shortage of suitable in situ material, then an approved imported sandy material which meets the requirements for OPSS Select Subgrade Material (SSM) could be used.
- All general trench backfill should be placed in maximum 300 mm loose lifts and uniformly compacted to at least 95 per cent of the material's SPMDD. Where the backfill forms the subgrade for access roadways or parking areas, the upper 1 m of backfill below the pavement structure should be uniformly compacted to at least 98 per cent of SPMDD.
- In areas where the trench will be covered with hard surfaced materials, the type of material placed within the frost zone (between finished grade and about 1.4 m depth) should match the soil exposed on the trench walls for frost heave compatibility.

5.6 Pavements

Based on the subsurface soil conditions encountered in the boreholes, conventional asphaltic (flexible) pavement designs can be considered for the proposed municipal roads and associated driveways. Once final design grades are available, GEMTEC can provide specific recommendations for subgrade preparation and pavement design. Considering the fine-grained nature of the predominant soils and their relatively high natural water contents, additional subbase thickness may be required, determined by subgrade proof rolling at the time of road construction.

5.7 Site Classification for Seismic Site Response

The following comments are provided with regard to the seismic site class for low-rise / individual home residential construction.

- Seismic hazard is defined in the 2012 Ontario Building Code (OBC 2012) by uniform hazard spectra (UHS) at spectral coordinates of 0.2 second, 0.5 second, 1.0 second and 2.0 seconds and a probability of exceedance of 2% in 50 years. The OBC method uses a site classification system defined by the average soil/bedrock properties (e.g., shear wave velocity, Standard Penetration Test (SPT) resistance, undrained soil shear strength, etc.) in the ground 30 m below the foundation level.
- There are six site classes from A to F, decreasing in ground stiffness from A, hard rock, to E, soft soil; with site class F used to denote problematic soils (e.g. sites underlain by thick peat deposits and / or liquefiable / collapsible soils). The site class is then used to obtain acceleration and velocity-based site coefficients Fa and Fv, respectively, used to modify the UHS to account for the effects of site-specific soil conditions in design.
- Based on the results of the current geotechnical site investigation, a **Site Class D** may be used for preliminary design.
- It may be possible to upgrade the site class if critical to the design, and a geophysical investigation could be carried out at the site. The need for geophysical testing should be discussed with the structural engineer.

6.0 HYDROGEOLOGICAL ASSESSMENT

The following comments are provided for consideration in the overall site development based on the results of the current hydrogeological site investigation and analysis:

- As discussed in Section 2.1, details of the proposed residential development are unknown at this time. For preliminary dewatering calculation estimates, excavation dimensions are assumed to be about 20 m long x 20 m wide x 2 m deep.
- The groundwater levels encountered at the site ranged from about 0.9 m to 5.5 m bgs. The saturated subsurface soils at the site are expected to generate relatively low quantities of groundwater during excavation in their in situ state. It is anticipated that dewatering may be required to maintain dry excavations at the site; and,
- It should be noted that groundwater control measures that extract more than 50,000 L/day of water are subject to regulation by the MECP. An EASR application needs to be submitted in the event that the pumping volumes exceed 50,000 L/day. Under the EASR, a PTTW is not required for construction site dewatering of volumes less than 400,000 L/day. It is not anticipated that an EASR or PTTW will be required at the site at this time. However, if saturated coarser material that was not encountered in the boreholes is encountered during construction and it results in more significant groundwater inflows, daily pumping volumes will have to be maintained below 50,000 L/day by reducing excavation sizes or implementing mitigation measures to reduce the flow into the excavation, otherwise an EASR allowing volumes up to 400,000 L/day would be required.
- Shallow overburden water levels in the monitoring wells ranged from 0.9 m to 5.5 m bgs on July 28, 2022, as discussed in Section 4.7. The expected excavation depth of 2 m bgs may extend within the saturated overburden based on the shallow water level recorded at Monitoring Well 22-2 and as such, groundwater dewatering is anticipated to be required.

6.1 Water Taking Assessment

To simplify the water taking calculations, and to provide a conservative estimate of groundwater taking needs, it was assumed that the site is underlain by a continuous aquifer with an estimated effective saturated thickness of 4.1 m. A groundwater level of 0.9 m bgs was conservatively assumed based on the field investigation results. Thus, the excavation would extend into the saturated zone of the aquifer up to 1.1 m (2 m bgs).

The conservative parameters used in the preliminary dewatering estimates are summarized as follows:

- Hydraulic Conductivity* $(k) = 2 \times 10^{-6}$ cm/s
- Saturated Aquifer Thickness $(H) = 4.1$ m
- Water Head at Dewatered Excavation $(h_o) = 2.5$ m

*based on geometric mean k value in Section 4.8

7.0 CORROSIVITY AND SULPHATE ATTACK TEST RESULTS

The results of the corrosivity testing are presented in Appendix D for a combined sample taken from Borehole 22-6 using samples taken between 0.75 m to 4.5 m bgs (i.e., native silty clay material).

The corrosivity results were compared to the American Water Works Association (AWWA) C-105 (2005) Standard, “Polyethylene Encasement for Ductile-Iron Pipe Systems”. Based on the analytical results, the corrosivity potential is considered to be low to medium for this material, and buried steel elements installed in this material will therefore likely not require protection from corrosion.

The results of the corrosivity testing were also compared to the Canadian Standards Association (CSA) A23.1 Standard, “Concrete materials and methods of concrete construction”. Based on the analytical results, the potential for sulphate attack is considered to be negligible for this material, and concrete made with Type GU Portland cement should be acceptable for below grade concrete elements.

These recommendations are provided as guidance only; the structural designer should take the results of the laboratory testing, the potential for corrosion and the ultimate selection of materials into consideration. The need for additional chemical testing should also be considered by the structural engineer based on the required level of coverage for the development.

8.0 ADDITIONAL SITE INVESTIGATION

Once design plans have been further advanced (i.e. grading plans, founding elevations and service invert depths are available), a subsequent detailed field investigation should be considered to provide specific recommendations for the proposed development (water control, trenching conditions, structure-specific recommendations, etc.). GEMTEC would be pleased to provide a scope and cost for this work once the design plans are available for review.

The site plan shows the main access road crossing the creek in the central portion of the site. However, the plan does not show what type of structure will be required for this crossing. Any supplementary geotechnical investigation should consider the proposed crossing structure (earthen berm, box culverts, single span bridge, etc.) and collect sufficient geotechnical information to support the proposed design. GEMTEC can provide preliminary comments on options for the crossing upon request from the client.

9.0 CLOSURE

As previously indicated, the preliminary geotechnical recommendations provided in this report are for preliminary design purposes and are not sufficient for final design purposes. Once the final development plans are available, the information in this report should be reviewed by GEMTEC and an additional investigation (geotechnical, hydrogeological, or otherwise) carried out compatible with the proposed development plans for the site. In this regard, GEMTEC would be pleased to provide further engineering and environmental services as the site development plans proceed.

We trust that this report provides sufficient geotechnical and hydrogeological information to proceed with the next design stages of this project. If you have any questions regarding the contents of this report or require additional information, please do not hesitate to contact this office.

Regards,

GEMTEC Consulting Engineers and Scientists Limited

Derek M. Franceschini, P. Eng.
Geotechnical Engineer

Andy Weatherson, M.Env.Sc., P.Geo.
Intermediate Hydrogeologist

Graeme Skinner, PhD., P. Eng.
Senior Geotechnical Engineer

DMF/AW/JPG/GS/sv

\\Lucid\Drawings and Files\Projects\101900\101987.001\Deliverables\Reports\Preliminary_Geotech+HydroG\101987.001(2)_RPT01_Rev1_2024'09'26_Geotech+HydroG Due Dil Mayfield Golf Course.docx

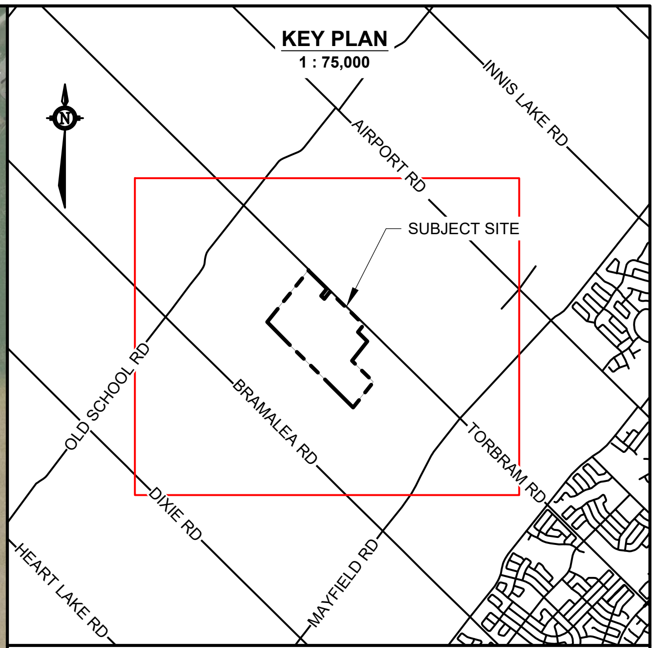
APPENDIX A

Site Figures

Borehole Location Plan

Approximate Surficial Geology

Water Well Records and Natural Features



LEGEND

BH # ← BH ID

XX.XX ← APPROXIMATE GROUND SURFACE ELEVATION, IN METRES (PROVIDED BY R-PE SURVEYING LTD.)

BOREHOLE LOCATION (current investigation by Gemtec, (2022))

MONITORING WELL LOCATION (current investigation by Gemtec, (2022))

BOREHOLE LOCATION (previous investigation by Toronto Inspection Geoenvironmental Consultants, (2022))

MONITORING WELL LOCATION (previous investigation by Toronto Inspection Geoenvironmental Consultants, (2022))

Reference:

"Concept Plan" provided by MGP, October 2, 2024

Scale 1:7500

0 150 300 450m

GEMTEC
CONSULTING ENGINEERS AND SCIENTISTS

850 Champlain Avenue, Unit 101
Oshawa, ON, L1J 8C3
www.gemtec.ca
gta@gemtec.ca

Client		Project
MAYFIELD GOLF COURSE INC.		101987.001
Location	12552 TORBRAM ROAD MAYFIELD GOLF COURSE	
Drwn by: SJ/ S.L.	Chkd by: D.M.F.	BOREHOLE LOCATION PLAN
Date: OCTOBER 2024	Rev.: 0	FIGURE 1

LEGEND

BH # ← BH ID

XX.XX ← APPROXIMATE GROUND SURFACE ELEVATION, IN METRES (PROVIDED BY R-PE SURVEYING LTD.)

APPROXIMATE BOREHOLE LOCATION
(current investigation by GEMTEC, (2022))

APPROXIMATE MONITORING WELL LOCATION
(current investigation by GEMTEC, (2022))

APPROXIMATE BOREHOLE LOCATION
(previous investigation by Toronto Inspection Geoenvironmental Consultants, (2022))

APPROXIMATE MONITORING WELL LOCATION
(previous investigation by Toronto Inspection Geoenvironmental Consultants, (2022))

SURFICIAL GEOLOGY (OGS, 2010)

- TILL
- ICE-CONTACT STRATIFIED DEPOSITS
- MODERN ALLUVIAL DEPOSITS

Scale 1:7500

0 150 300 450m

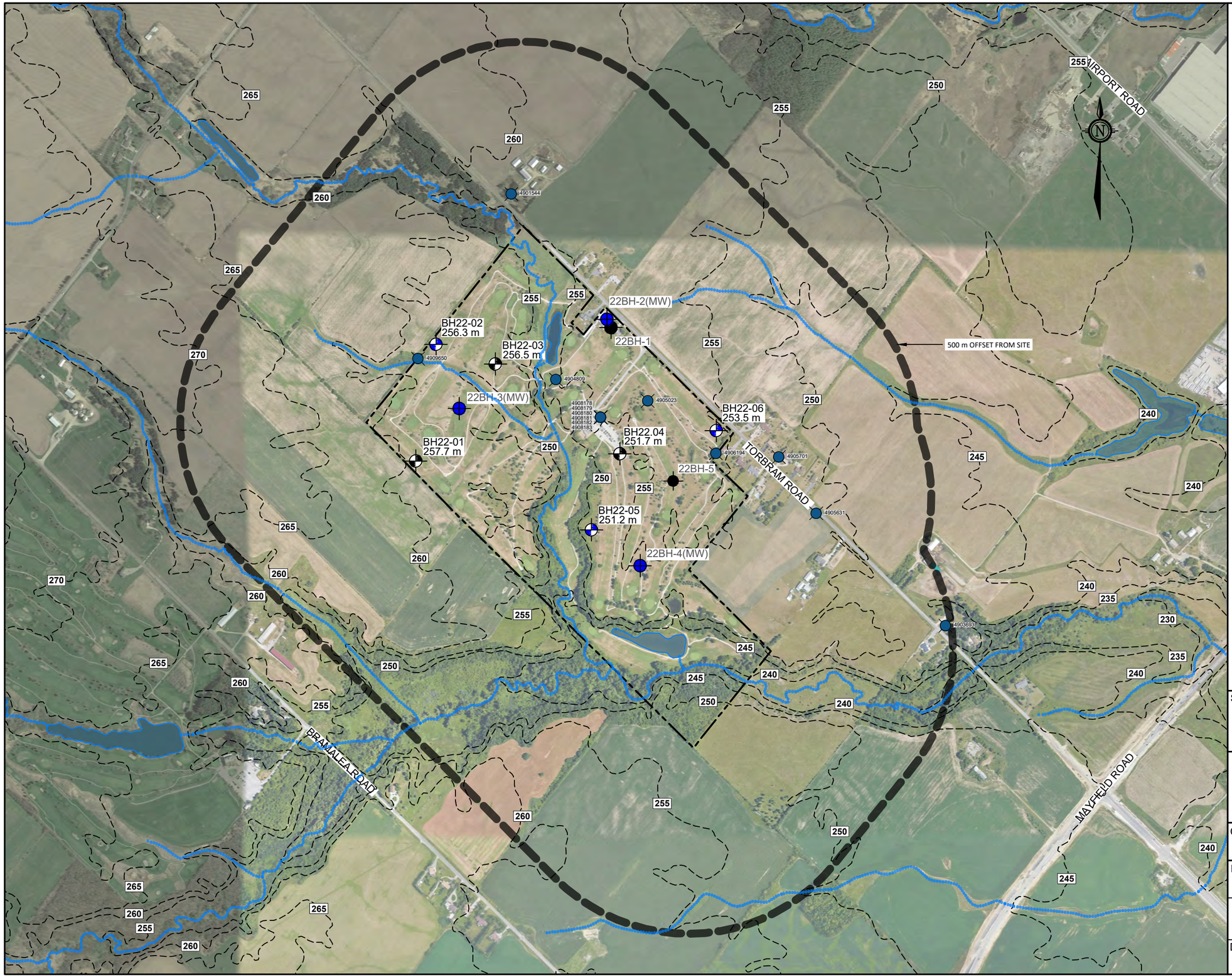
GEMTEC
Consulting Engineers and Scientists
850 Champlain Avenue, Unit 101
Oshawa, ON, L1J 8C3
www.gemtec.ca
gta@gemtec.ca

Client	Project
MAYFIELD GOLF COURSE INC.	101987.001

Location: 12552 TORBRAM ROAD
MAYFIELD GOLF COURSE

Drwn by	Chkd by	
S.L.	D.M.F.	SURFICIAL GEOLOGY

Date	Rev.	
AUGUST 2022	0	**FIGURE 2**



LEGEND

BH # ← BH ID

XX.XX ← APPROXIMATE GROUND SURFACE ELEVATION, IN METRES (PROVIDED BY R-PE SURVEYING LTD.)

APPROXIMATE BOREHOLE LOCATION
(current investigation by GEMTEC, (2022))

APPROXIMATE MONITORING WELL LOCATION
(current investigation by GEMTEC, (2022))

APPROXIMATE BOREHOLE LOCATION
(previous investigation by Toronto Inspection Geoenvironmental Consultants, (2022))

APPROXIMATE MONITORING WELL LOCATION
(previous investigation by Toronto Inspection Geoenvironmental Consultants, (2022))

WATERBODIES

SURFACE WATER

100 ONTARIO BASE MAPPING (OBM) CONTOUR, 5 METRE INTERVAL

MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS (MECP) WELL LOCATION (APPROXIMATE LOCATION)

Scale 1:10000

0 200 400 600m

GEMTEC
Consulting Engineers and Scientists
850 Champlain Avenue, Unit 101
Oshawa, ON, L1J 8C3
www.gemtec.ca
gta@gemtec.ca

Client	Project
MAYFIELD GOLF COURSE INC.	101987.001

Location: 12552 TORBRAM ROAD
MAYFIELD GOLF COURSE

Drwn by	Chkd by	
S.L.	D.M.F.	WATER WELL RECORDS AND NATURAL FEATURES

Date	Rev.	
AUGUST 2022	0	**FIGURE 3**

APPENDIX B

Borehole Drilling Records

Abbreviations and Terminology Used on Records
of Boreholes and Test Pits

Record of Borehole Sheets 22-1 to 22-6

ABBREVIATIONS AND TERMINOLOGY USED ON RECORDS OF BOREHOLES AND TEST PITS

SAMPLE TYPES	
AS	Auger sample
CA	Casing sample
CS	Chunk sample
BS	Borros piston sample
GS	Grab sample
MS	Manual sample
RC	Rock core
SS	Split spoon sampler
ST	Slotted tube
TO	Thin-walled open shelby tube
TP	Thin-walled piston shelby tube
WS	Wash sample

SOIL TESTS	
w	Water content
PL, w_p	Plastic limit
LL, w_L	Liquid limit
C	Consolidation (oedometer) test
D_R	Relative density
DS	Direct shear test
G_S	Specific gravity
M	Sieve analysis for particle size
MH	Combined sieve and hydrometer (H) analysis
MPC	Modified Proctor compaction test
SPC	Standard Proctor compaction test
OC	Organic content test
UC	Unconfined compression test
γ	Unit weight

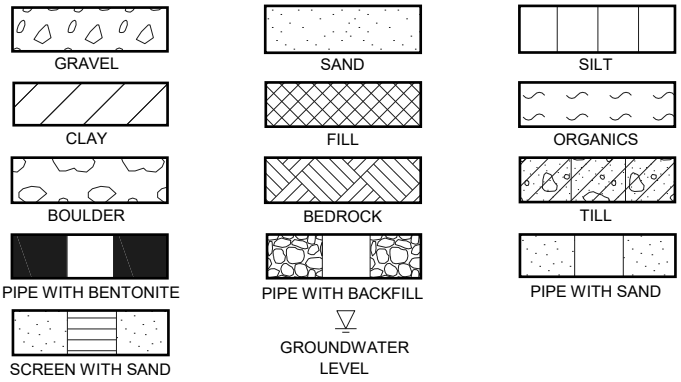
PENETRATION RESISTANCE

Standard Penetration Resistance, N
The number of blows by a 63.5 kg (140 lb) hammer dropped 760 millimetres (30 in.) required to drive a 50 mm split spoon sampler for a distance of 300 mm (12 in.). For split spoon samples where less than 300 mm of penetration was achieved, the number of blows is reported over the sampler penetration in mm.

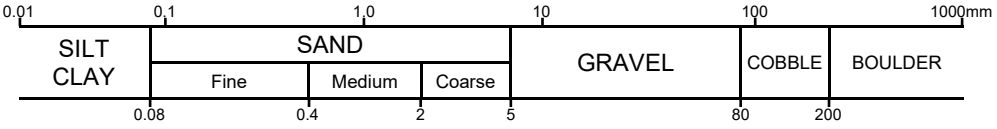
Dynamic Penetration Resistance
The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) to drive a 50 mm (2 in.) diameter 60° cone attached to 'A' size drill rods for a distance of 300 mm (12 in.).

WH	Sampler advanced by static weight of hammer and drill rods
WR	Sampler advanced by static weight of drill rods
PH	Sampler advanced by hydraulic pressure from drill rig
PM	Sampler advanced by manual pressure

COHESIONLESS SOIL Compactness		COHESIVE SOIL Consistency	
SPT N-Values	**Description**	**Cu, kPa**	**Description**
0-4	Very Loose	0-12	Very Soft
4-10	Loose	12-25	Soft
10-30	Compact	25-50	Firm
30-50	Dense	50-100	Stiff
>50	Very Dense	100-200	Very Stiff
		>200	Hard

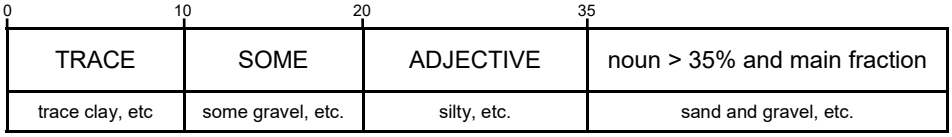


GRAIN SIZE



DESCRIPTIVE TERMINOLOGY

(Based on the CANFEM 4th Edition)



RECORD OF BOREHOLE 22-1

CLIENT: Mayfield Golf Course Inc.
PROJECT: Mayfield Golf Course Redevelopment, Caledon, Ontario
JOB#: 101987.001
LOCATION: See Borehole Location Plan

SHEET: 1 OF 1
DATUM: CGVD2013
BORING DATE: Jul 12 2022

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m
0	Power Auger / Hollow Stem Auger (152mm OD)	Ground Surface		257.70				
		FILL - (CL) SILTY CLAY, some sand; brown, rootlets, cohesive, w<PL to w~PL, firm.			1	SS	228	5
1					2A	SS	127	5
				256.63	2B			
		(CL) sandy SILTY CLAY, trace to some gravel; brown to grey, oxidation staining (TILL); cohesive, w<PL to w>PL, stiff to hard		1.07				
2					3	SS	305	25
					4	SS	457	40
3		- grey below approximately 3.0 m depth - oxidation staining to approximately 3.1 m depth			5	SS	457	30
4					6	SS	457	18
5				252.14				
		(ML) sandy SILT, trace gravel; grey (TILL), non-cohesive, moist, compact		5.56				
6					7	SS	457	27
7				250.61				
		(ML) SILT, some sand, grey; non-cohesive, moist, compact		7.09				
8					8	SS	457	25
		End of Borehole		249.62 8.08				
9		Notes: 1. Borehole was open and dry upon completion of drilling. 2. Borehole backfilled with bentonite upon completion of drilling.						
10								

SAMPLES

PENETRATION RESISTANCE (N), BLOWS/0.3m
DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m
SHEAR STRENGTH (Cu), kPA: + NATURAL ⊕ REMOULDED
WATER CONTENT, %: W_P — W — W_L
10 20 30 40 50 60 70 80 90

ADDITIONAL LAB. TESTING

PIEZOMETER OR STANDPIPE INSTALLATION

GEMTEC
Consulting Engineers and Scientists

LOGGED: TO
CHECKED: DMF

GEO - BOREHOLE LOG 101987.001.GPJ GEMTEC 2018.GDT 9/5/22

RECORD OF BOREHOLE 22-2

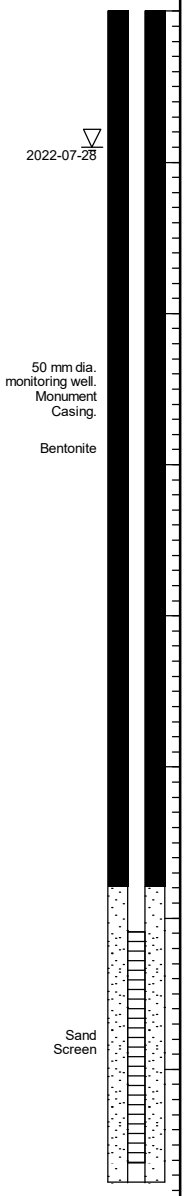
CLIENT: Mayfield Golf Course Inc.
PROJECT: Mayfield Golf Course Redevelopment, Caledon, Ontario
JOB#: 101987.001
LOCATION: See Borehole Location Plan

SHEET: 1 OF 1
DATUM: CGVD2013
BORING DATE: Jul 12 2022

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m	ADDITIONAL LAB. TESTING
		Ground Surface		256.30					
0	Power Auger / Hollow Stem Auger (203mm OD)	FILL - (CL) SILTY CLAY, some sand to sandy, trace gravel; brown, rootlets, grey, cohesive, w<PL to w~PL, firm.			1	SS	457	5	
1					2	SS	76	7	
				254.93					
		(CL) SILTY CLAY, some sand; grey, rootlets; cohesive, w~PL, stiff to very stiff		1.37	3	SS	457	18	
2				254.17					
		(CL) sandy SILTY CLAY, trace gravel, grey, (TILL); cohesive, w<PL to w>PL, stiff to very stiff		2.13	4A	SS	406	25	
		- inferred cobbles/boulders from auger grinding at approximately 2.6 m depth		253.63	4B				
		(ML) SILT, slight plasticity, trace sand, grey; non-cohesive, moist to wet, compact		2.67	5	SS	381	19	MH
3									
4					6	SS	406	21	
				251.04					
5		(SM) SILTY SAND, some gravel, grey, (possible TILL); non-cohesive, wet, very dense		5.26	7	SS	432	56	
		- inferred cobbles/boulders from auger grinding between approximately 5.5 m and 5.6 m depth			8	SS	381	55	
6									
7									
				248.55	9	SS	127	50/ 0.13	
		End of Borehole		7.75					
8		Notes:							
		1. Water level measured at approximately 3.4 m bgs upon completion of drilling.							
9		2. Groundwater level monitoring well installed upon completion of drilling.							
		3. Water level measured in installed monitoring well at approximately 0.9 m bgs on July 28, 2022.							
10									

PENETRATION RESISTANCE (N), BLOWS/0.3m
DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m
SHEAR STRENGTH (Cu), kPA: + NATURAL ⊕ REMOULDED
WATER CONTENT, %: W_P — W — W_L
10 20 30 40 50 60 70 80 90

PIEZOMETER OR STANDPIPE INSTALLATION



GROUNDWATER OBSERVATIONS

DATE	DEPTH (m)	ELEV. (m)
22/07/28	0.9 ▽	255.4

GEMTEC
Consulting Engineers and Scientists

LOGGED: TO
CHECKED: DMF

GEO - BOREHOLE LOG 101987.001.GPJ GEMTEC 2018.GDT 9/5/22

RECORD OF BOREHOLE 22-3

CLIENT: Mayfield Golf Course Inc.
PROJECT: Mayfield Golf Course Redevelopment, Caledon, Ontario
JOB#: 101987.001
LOCATION: See Borehole Location Plan

SHEET: 1 OF 1
DATUM: CGVD2013
BORING DATE: Jul 12 2022

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	Power Auger Hollow Stem Auger (152mm OD)	Ground Surface		256.50						
		TOPSOIL (75 mm)		256.42 0.08						
		FILL - (CL) SILTY CLAY, some sand to sandy; brown to grey; cohesive, w<PL to w~PL, firm to stiff			1	SS	381	10		
		-contains rootlets between approximately 0.1 m and 0.5 m depth			2	SS	406	10		
1					3	SS	406	14		
2					4	SS	457	11		
3		- grey at approximately 3.4 m depth - contains organics at approximately 3.4 m depth			5	SS	457	8		
4		(CL) sandy SILTY CLAY, trace gravel; brown, oxidation staining, (TILL); cohesive, w<PL to w>PL, very stiff to hard		252.46 4.04	6	SS	457	43		
5										
6		- inferred cobbles/boulders from auger grinding at approximately 5.8 m depth			7	SS	457	48	MH	
		- grey at approximately 6.4 m depth								
7										
		- inferred cobbles/boulders from auger grinding at approximately 7.6 m depth		248.83 7.67	8A	SS	203	50/ 0.05		
		(ML) sandy SILT, trace gravel, grey, non-cohesive, moist		248.68 7.82	8B					
8		End of Borehole								
		Notes 1. Borehole caved at approximately 7.5 m depth. 2. Borehole dry upon completion of drilling. 3. Borehole backfilled with bentonite and soil cuttings upon completion of drilling.								
9										
10										

SAMPLES

PENETRATION RESISTANCE (N), BLOWS/0.3m
DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m
SHEAR STRENGTH (Cu), kPA: + NATURAL ⊕ REMOULDED
WATER CONTENT, % — W_P W W_L
10 20 30 40 50 60 70 80 90

GEMTEC
Consulting Engineers and Scientists

LOGGED: TO
CHECKED: DMF

GEO - BOREHOLE LOG 101987.001.GPJ GEMTEC 2018.GDT 9/5/22

RECORD OF BOREHOLE 22-4

CLIENT: Mayfield Golf Course Inc.
PROJECT: Mayfield Golf Course Redevelopment, Caledon, Ontario
JOB#: 101987.001
LOCATION: See Borehole Location Plan

SHEET: 1 OF 1
DATUM: CGVD2013
BORING DATE: Jul 13 2022

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m
		Ground Surface		251.70				
0	Power Auger / Hollow Stem Auger (152mm OD)	FILL- (GP) GRAVEL; grey; non-cohesive, dry		250.66 / 1.04	1	SS	457	7
		(CL) SILTY CLAY, trace to some sand; brown, oxidation staining; cohesive, w<PL to w~PL, firm to stiff						
1		-rootlets to approximately 0.5 m depth			2	SS	457	13
		(CL) sandy SILTY CLAY, trace to some gravel; brown, oxidation staining, (TILL); cohesive, w<PL to w>PL, stiff to hard		250.33 / 1.37	3	SS	457	14
2								
					4	SS	457	33
3								
					5	SS	457	23
4		(CL) SILTY CLAY, trace sand; grey, cohesive, w~PL to w>PL, stiff		247.66 / 4.04				
					6	SS	457	11
5								
		(CL) SILTY CLAY, trace to some sand, trace gravel; grey, (TILL); cohesive, w~PL, very stiff		246.14 / 5.56				
6					7	SS	457	17
7		(ML) sandy SILT, trace to some gravel, grey, (TILL), non-cohesive, moist, dense		244.61 / 7.09				
					8	SS	457	44
8		End of Borehole		243.62 / 8.08				
		Notes:						
		1. Borehole was open and dry upon completion of drilling.						
9		2. Borehole backfilled with bentonite and soil cuttings upon completion of drilling.						
10								

SAMPLES

PENETRATION RESISTANCE (N), BLOWS/0.3m
DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m
SHEAR STRENGTH (Cu), kPA: + NATURAL ⊕ REMOULDED
WATER CONTENT, %: W_P — W — W_L
10 20 30 40 50 60 70 80 90

ADDITIONAL LAB. TESTING

PIEZOMETER OR STANDPIPE INSTALLATION

GEMTEC
Consulting Engineers and Scientists

LOGGED: TO
CHECKED: DMF

GEO - BOREHOLE LOG 101987.001.GPJ GEMTEC 2018.GDT 9/5/22

RECORD OF BOREHOLE 22-5

CLIENT: Mayfield Golf Course Inc.
PROJECT: Mayfield Golf Course Redevelopment, Caledon, Ontario
JOB#: 101987.001
LOCATION: See Borehole Location Plan

SHEET: 1 OF 1
DATUM: CGVD2013
BORING DATE: Jul 13 2022

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m	PENETRATION RESISTANCE (N), BLOWS/0.3m / DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m / SHEAR STRENGTH (Cu), kPA / WATER CONTENT, %	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	Power Auger Hollow Stem Auger (203mm OD)	Ground Surface		251.20							
		TOPSOIL (50 mm)		250.66 0.09							
		(CL) sandy SILTY CLAY; brown, rootlets, cohesive, w<PL, firm			1	SS	457	6			
				250.59 0.61							
1		(CL) sandy SILTY CLAY, trace gravel; brown, oxidation staining, (TILL); cohesive, w<PL to w>PL, stiff to very stiff			2	SS	457	27			
					3	SS	457	26			
2		- inferred cobbles/boulders from auger grinding at approximately 1.9 m depth									
					4	SS	457	26		MH	50 mm dia. monitoring well. Monument Casing.
											Bentonite
3					5	SS	457	29			
4											
					6	SS	406	24			
5											2022-07-28
		(ML) SILT, slight plasticity, trace sand, trace gravel; grey, non-cohesive, moist to wet, dense to very dense		245.64 5.56							
6					7	SS	457	54			
7											Screen Sand
					8	SS	457	43			
8		End of Borehole		243.12 8.08							
		Notes:									
		1. Borehole dry upon completion of drilling.									
9		2. Groundwater level monitoring well installed upon completion of drilling									
		3. Water level measured in installed monitoring well at 5.5 m bgs on July 28, 2022.									
10											

GROUNDWATER OBSERVATIONS

DATE	DEPTH (m)	ELEV. (m)
22/07/28	5.5 ▽	245.7

GEMTEC
Consulting Engineers and Scientists

LOGGED: TO
CHECKED: DMF

GEO - BOREHOLE LOG 101987.001.GPJ GEMTEC 2018.GDT 9/5/22

RECORD OF BOREHOLE 22-6

CLIENT: Mayfield Golf Course Inc.
PROJECT: Mayfield Golf Course Redevelopment, Caledon, Ontario
JOB#: 101987.001
LOCATION: See Borehole Location Plan

SHEET: 1 OF 2
DATUM: CGVD2013
BORING DATE: Jul 13 2022

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m	PENETRATION RESISTANCE (N), BLOWS/0.3m / DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m / SHEAR STRENGTH (Cu), kPA / WATER CONTENT, %	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	Power Auger / Hollow Stem Auger (203mm OD)	Ground Surface		253.50							
		TOPSOIL (125 mm)		253.37							
		(CL) SILTY CLAY, trace sand, trace to some gravel; brown to grey, oxidation stains; cohesive, w<PL to w>PL. firm to stiff - rootlets to approximately 0.5 m depth		0.13	1	SS	457	6			
1					2	SS	279	11			
2					3	SS	457	13		MH	50 mm dia. monitoring well. Monument Casing.
					4	SS	457	13			Bentonite
3		- grey below approximately 2.9 m depth									2022-07-28
					5	SS	457	14			
4											
					6	SS	457	9			
5											
6											
					7	SS	406	8			
7		(CL) SILTY CLAY, trace to some sand; grey, oxidation staining, (TILL); cohesive, w<PL to w~PL, stiff to very stiff		246.42 7.08							Screen Sand
					8A	SS	457	26			
8		(ML) sandy SILT, trace gravel, grey (TILL); non-cohesive, moist		245.58 7.92 245.42 8.08	8B						
		End of Borehole									
9											
10											

Notes:

1. Wet conditions encountered at approximately 6.1 m depth during drilling.

2. Borehole dry upon completion of drilling.

3. Groundwater level monitoring well installed upon drilling completion

GEMTEC
Consulting Engineers and Scientists

LOGGED: TO
CHECKED: DMF

GEO - BOREHOLE LOG 101987.001.GPJ GEMTEC 2018.GDT 9/5/22

RECORD OF BOREHOLE 22-6

CLIENT: Mayfield Golf Course Inc.
PROJECT: Mayfield Golf Course Redevelopment, Caledon, Ontario
JOB#: 101987.001
LOCATION: See Borehole Location Plan

SHEET: 2 OF 2
DATUM: CGVD2013
BORING DATE: Jul 13 2022

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY, mm	SAMPLES: BLOWS/0.3m	PENETRATION RESISTANCE (N), BLOWS/0.3m; DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m; SHEAR STRENGTH (Cu), kPA (NATURAL, REMOULDED); WATER CONTENT, % (W_P, W, W_L)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
10		4. Water level measured in installed monitoring well at 2.9 m bgs on July 28, 2022.									
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

10 20 30 40 50 60 70 80 90

GROUNDWATER OBSERVATIONS

DATE	DEPTH (m)	ELEV. (m)
22/07/28	2.9 ▽	250.6

GEMTEC
Consulting Engineers and Scientists

LOGGED: TO
CHECKED: DMF

GEO - BOREHOLE LOG 101987.001.GPJ GEMTEC 2018.GDT 9/5/22

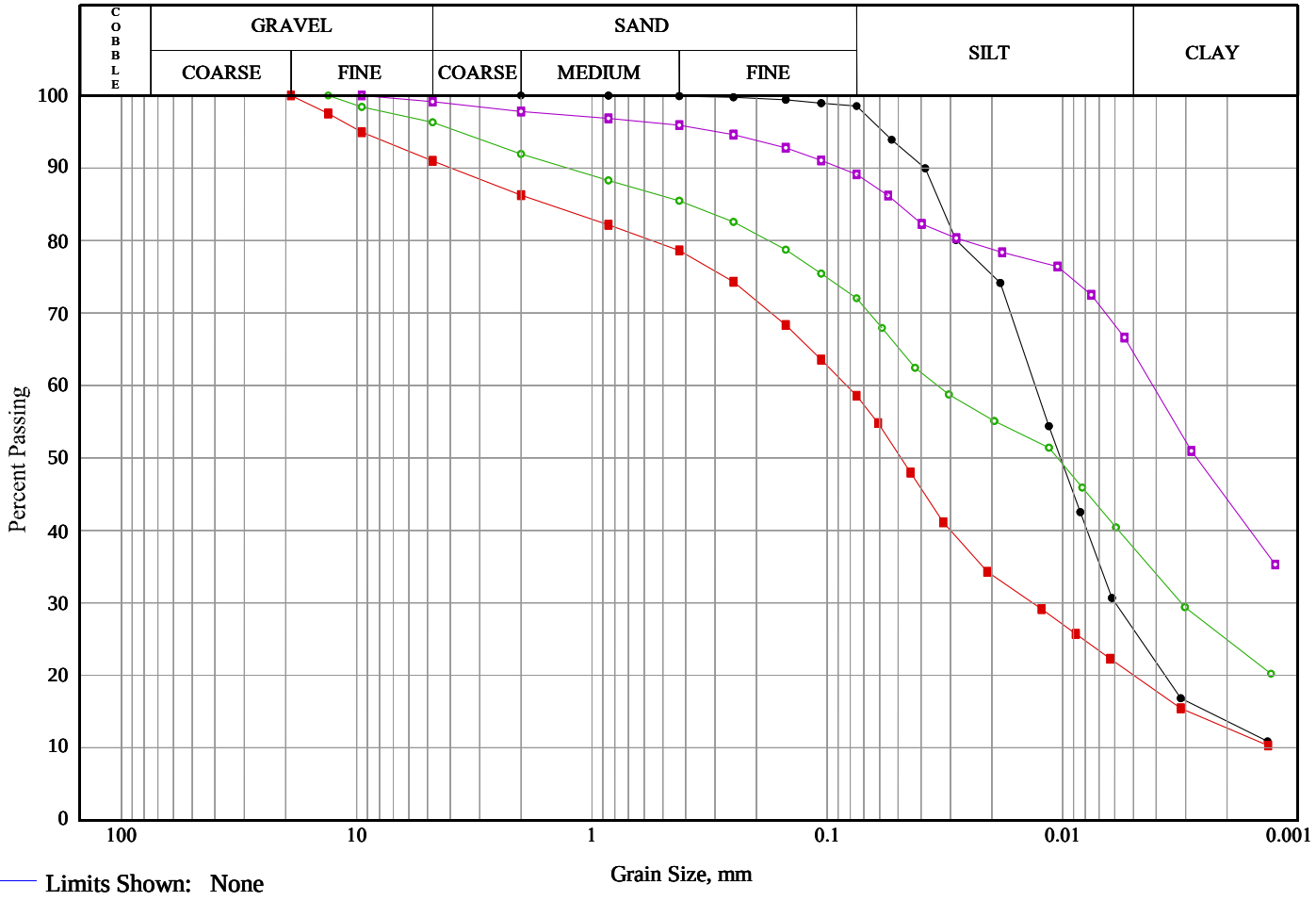
APPENDIX C

Laboratory Testing Figures

Soils Grading Chart

Plasticity Chart

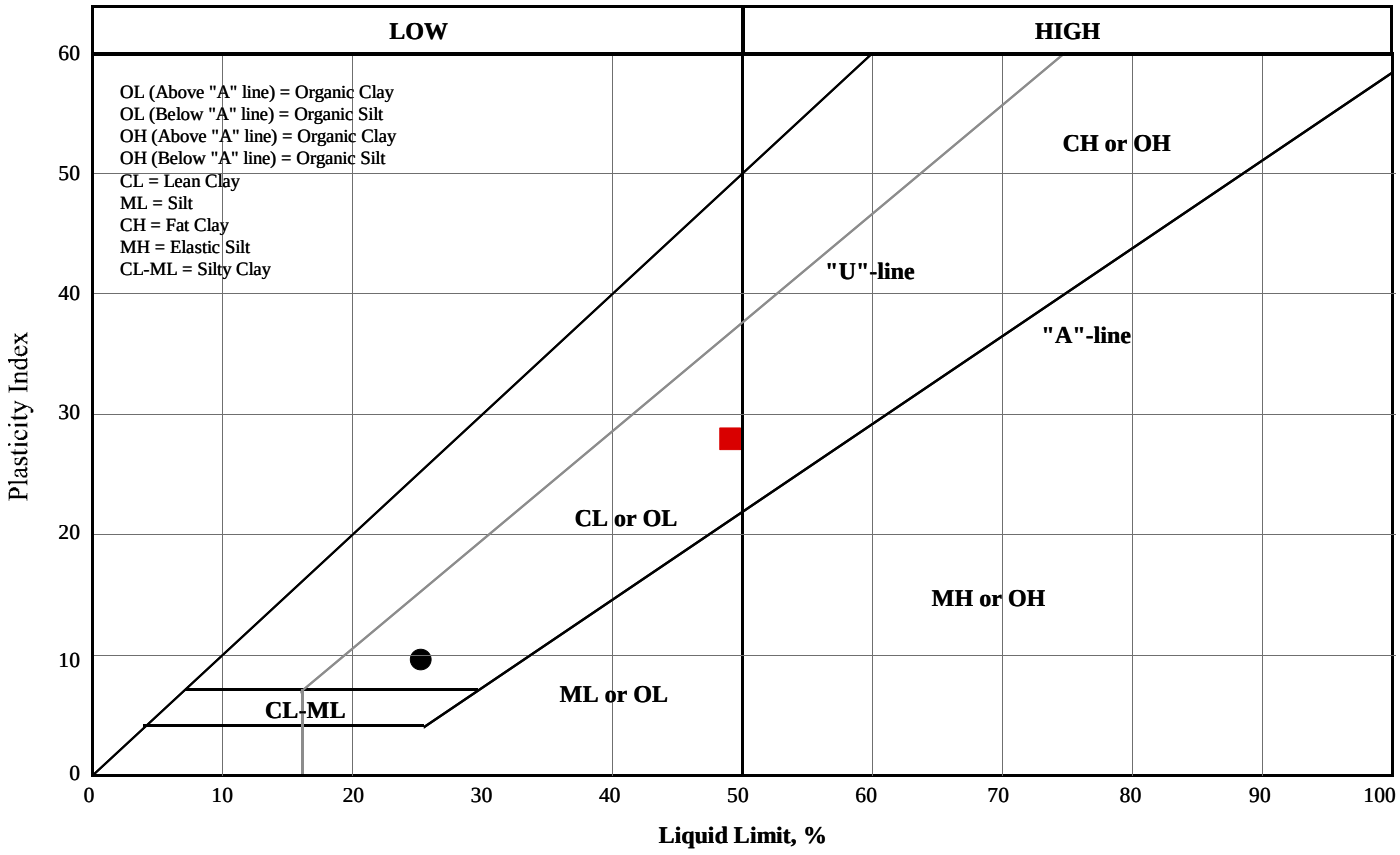
GEMTEC Consulting Engineers and Scientists	Client: Mayfield Golf Course Inc.	Soils Grading Chart (LS-702/ ASTM D-422)
	Project: Mayfield Golf Course Redevelopment, Caledon, Ontario	
	Project #: 101987.001 (1)	



Line Symbol	Sample	Borehole/ Test Pit	Sample Number	Depth	% Cob.+ Gravel	% Sand	% Silt	% Clay
●	SILT, Slight Plasticity	22-2	SA 5	3.1-3.5	0.0	1.5	72.2	26.3
■	Sandy SILTY CLAY TILL	22-3	SA 7	6.1-6.6	9.0	32.4	38.5	20.0
○	Sandy SILTY CLAY TILL	22-5	SA 4	2.3-2.7	3.7	24.3	34.4	37.6
□	SILTY CLAY TILL	22-6	SA 3	1.5-2.0	0.9	10.0	24.6	64.5

Line Symbol	CanFEM Classification	USCS Symbol	D_{10}	D_{15}	D_{30}	D_{50}	D_{60}	D_{85}	% 5-75µm
●	SILT, Slight Plasticity	ML	---	0.00	0.01	0.01	0.01	0.03	72.2
■	SILTY CLAY	CL	---	0.00	0.01	0.05	0.08	1.54	38.5
○	SILTY CLAY	CL	---	---	0.00	0.01	0.03	0.39	34.4
□	SILTY CLAY	CL	---	---	---	0.00	0.00	0.05	22.5

GEMTEC Consulting Engineers and Scientists	Client: Mayfield Golf Course Inc. Project: Mayfield Golf Course Redevelopment, Caledon, Ontario Project #: 101987.001 (1)	Plasticity Chart (D4318)



Symbol	Borehole /Test Pit	Sample Number	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Non-Plastic	Moisture Content, %
●	22-5	SA 4	2.3-2.7	25.2	15.6	9.6	N/A	--
■	22-6	SA 3	1.5-2.0	49.1	21.1	28.0	N/A	--

Note: More information available upon request

APPENDIX D

Analytical Testing Results

Corrosivity and Sulphate Attack Testing Results

AGAT Laboratories

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

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS
850 CHAMPLAIN AVENUE
OSHAWA, ON L1H 8C8
905-429-7521

ATTENTION TO: Derek Franceschini

PROJECT: Mayfield Golf Course

AGAT WORK ORDER: 22T934932

SOIL ANALYSIS REVIEWED BY: Jacky Zhu, Spectroscopy Technician

DATE REPORTED: Aug 26, 2022

PAGES (INCLUDING COVER): 5

VERSION*: 1

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

*Notes

Disclaimer:

- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.
- AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.
- This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
- The test results reported herewith relate only to the samples as received by the laboratory.
- Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.
- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.

AGAT Laboratories

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

Certificate of Analysis

AGAT WORK ORDER: 22T934932

PROJECT: Mayfield Golf Course

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Derek Franceschini

SAMPLING SITE:Caledon, Ontario

SAMPLED BY:Ife Ogundalu

Corrosivity Package

DATE RECEIVED: 2022-08-19

DATE REPORTED: 2022-08-26

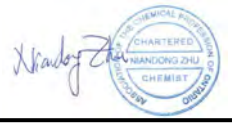
		SAMPLE DESCRIPTION:		22-6
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		2022-07-26
Parameter	Unit	G / S	RDL	4223628
Chloride (2:1)	µg/g		2	6
Sulphate (2:1)	µg/g		2	79
pH (2:1)	pH Units		NA	8.24
Electrical Conductivity (2:1)	mS/cm		0.005	0.308
Resistivity (2:1) (Calculated)	ohm.cm		1	3250
Redox Potential 1	mV		NA	301
Redox Potential 2	mV		NA	303
Redox Potential 3	mV		NA	302

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

4223628 EC, pH, Chloride and Sulphate were determined on the extract obtained from the 2:1 leaching procedure (2 parts DI water: 1 part soil). Resistivity is a calculated parameter.
Redox potential measured on as received sample. Due to the potential for rapid change in sample equilibrium chemistry with exposure to oxidative/reduction conditions laboratory results may differ from field measured results.
Redox potential measurement in soil is quite variable and non reproducible due in part, to the general heterogeneity of a given soil. It is also related to the introduction of increased oxygen into the sample after extraction. The interpretation of soil redox potential should be considered in terms of its general range rather than as an absolute measurement.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



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

Quality Assurance

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS
AGAT WORK ORDER: 22T934932
PROJECT: Mayfield Golf Course
ATTENTION TO: Derek Franceschini
SAMPLING SITE:Caledon, Ontario
SAMPLED BY:Ife Ogundalu

Soil Analysis

RPT Date: Aug 26, 2022			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Corrosivity Package															
Chloride (2:1)	4223628	4223628	6	6	NA	< 2	94%	70%	130%	98%	80%	120%	98%	70%	130%
Sulphate (2:1)	4223628	4223628	79	77	2.6%	< 2	98%	70%	130%	99%	80%	120%	103%	70%	130%
pH (2:1)	4223628	4223628	8.24	8.22	0.2%	NA	99%	80%	120%						
Electrical Conductivity (2:1)	4223628	4223628	0.308	0.313	1.6%	< 0.005	110%	80%	120%						
Redox Potential 1							100%	90%	110%						

Comments: NA signifies Not Applicable.
pH duplicates QA acceptance criteria was met relative as stated in Table 5-15 of Analytical Protocol document.

Duplicate NA: results are under 5X the RDL and will not be calculated.

Certified By:

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

Method Summary

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

AGAT WORK ORDER: 22T934932

PROJECT: Mayfield Golf Course

ATTENTION TO: Derek Franceschini

SAMPLING SITE:Caledon, Ontario

SAMPLED BY:Ife Ogundalu

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Chloride (2:1)	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphate (2:1)	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
pH (2:1)	INOR 93-6031	modified from EPA 9045D and MCKEAGUE 3.11	PH METER
Electrical Conductivity (2:1)	INOR-93-6075	modified from MSA PART 3, CH 14 and SM 2510 B	PC TITRATE
Resistivity (2:1) (Calculated)	INOR-93-6036	McKeague 4.12, SM 2510 B,SSA #5 Part 3	CALCULATION
Redox Potential 1	INOR-93-6066	G200-20, SM 2580 B	REDOX POTENTIAL ELECTRODE
Redox Potential 2	INOR-93-6066	G200-20, SM 2580 B	REDOX POTENTIAL ELECTRODE
Redox Potential 3	INOR-93-6066	G200-20, SM 2580 B	REDOX POTENTIAL ELECTRODE

AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712 5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

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

Laboratory Use Only

Work Order #: 22T934932

Cooler Quantity: 1 bag

Arrival Temperatures: 21.9

Custody Seal Intact: ☐Yes ☐No ☐N/A

Notes: No Ice

Report Information:

Company: GEMTEC CONSULTING ENGINEERS & SCIENTISTS

Contact: DEREK FRANCESCHINI

Address: 850 CHAMPLAIN AVE, UNIT 101 OSHAWA
ONTARIO CANADA L1J 8C3

Phone: 6477830480 Fax:

Reports to be sent to:

1. Email: ife.ogundaly@gemtec.ca
2. Email: derek.franceschini@gemtec.ca

Regulatory Requirements:

(Please check all applicable boxes)

☐ Regulation 153/04

Table ____ *Indicate One*

☐Ind/Com
☐Res/Park
☐Agriculture

Soil Texture *(Check One)*

☐Coarse
☐Fine

☐ Excess Soils R406

Table ____ *Indicate One*

☐ Regulation 558

☐ CCME

☐ Sewer Use

☐Sanitary ☐Storm

____ *Region*

☐ Prov. Water Quality Objectives (PWQO)

☐ Other

____ *Indicate One*

Is this submission for a Record of Site Condition?

☐ Yes ☑ No

Report Guideline on *Certificate of Analysis*

☐ Yes ☑ No

Turnaround Time (TAT) Required:

Regular TAT ☑ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

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

OR Date Required (Rush Surcharges May Apply):

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

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

Project Information:

Project: Mayfield Golf course

Site Location: Caledon, Ontario

Sampled By: Ife Ogundaly

AGAT Quote #: PO: 101987001

Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☑ No ☐

Company: GEMTEC CONSULTING ENGINEERS & SCIENTISTS

Contact:

Address: 141 DOAK ROAD, FREDERICTON, NEW BRUNSWICK

Email:

Sample Matrix Legend

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

							O. Reg 153							O. Reg 558	O. Reg 406									
Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI, DOC Y / N	Metals & Inorganics	Metals - ☐ CrVI, ☐ Hg, ☐ HWSB	BTEX, F1-F4 PHCs	PAHs	PCBs	VOC	Aroclors	Landfill Disposal Characterization TCLP: TCLP: ☐M&I ☐VOCs ☐ABNs ☐B(a)P☐PCBs	Excess Soils SPLP Rainwater Leach SPLP: ☐Metals ☐VOCs ☐SVOCs	Excess Soils Characterization Package pH, ICPMS Metals, BTEX, F1-F4	Corrosivity: Include Moisture ☐ Sulphide ☑							Potentially Hazardous or High Concentration (Y/N)
22-6	26/07/2022	AM PM	1	S													X							
		AM PM																						
		AM PM																						
		AM PM																						
		AM PM																						
		AM PM																						
		AM PM																						
		AM PM																						
		AM PM																						
		AM PM																						
		AM PM																						

Samples Relinquished By (Print Name and Sign): IFE OGUNDALY	Date 16/08/2022	Time	Samples Received By (Print Name and Sign): Anthony Dasilva	Date	Time	22AUG19 8:51
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time	Page 1 of 1
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time	Nº: T - 134613

Document ID: DIV-78-1511.022

Pink Copy - Client I Yellow Copy - AGAT I White Copy- AGAT

AGAT Laboratories

2910 12TH STREET NE
CALGARY, ALBERTA
CANADA T2E 7P7
TEL (403)735-2005
FAX (403)735-2771
http://www.agatlabs.com

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS
850 CHAMPLAIN AVENUE
OSHAWA, ON L1H 8C8
905-429-7521

ATTENTION TO: Derek Franceschini

PROJECT: Mayfield Golf Course

AGAT WORK ORDER: 22T934932

ROCK ANALYSIS REVIEWED BY: Heather Offord, Client Service Representative

SOIL ANALYSIS REVIEWED BY: Jacky Zhu, Spectroscopy Technician

DATE REPORTED: Sep 06, 2022

PAGES (INCLUDING COVER): 7

VERSION*: 2

Should you require any information regarding this analysis please contact your client services representative at (403) 735-2005

*Notes

VERSION 2:V2 issued 2022-09-06. Complete report. Supersedes previous version.

AGAT Laboratories

2910 12TH STREET NE
CALGARY, ALBERTA
CANADA T2E 7P7
TEL (403)735-2005
FAX (403)735-2771
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 22T934932

PROJECT: Mayfield Golf Course

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Derek Franceschini

SAMPLING SITE:Caledon, Ontario

SAMPLED BY:Ife Ogundalu

(283-042) Sulfide (CGY)

DATE RECEIVED: 2022-08-19

DATE REPORTED: 2022-09-06

			SAMPLE DESCRIPTION:	22-6
			SAMPLE TYPE:	Soil
			DATE SAMPLED:	2022-07-26
Parameter	Unit	G / S	RDL	4223628
Sulfide	mg/L		0.01	0.03

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Analysis performed at AGAT Calgary (unless marked by *)

Certified By:

AGAT Laboratories

2910 12TH STREET NE
CALGARY, ALBERTA
CANADA T2E 7P7
TEL (403)735-2005
FAX (403)735-2771
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 22T934932

PROJECT: Mayfield Golf Course

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Derek Franceschini

SAMPLING SITE:Caledon, Ontario

SAMPLED BY:Ife Ogundalu

Corrosivity Package

DATE RECEIVED: 2022-08-19

DATE REPORTED: 2022-09-06

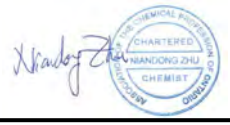
		SAMPLE DESCRIPTION:		22-6
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		2022-07-26
Parameter	**Unit**	**G / S**	**RDL**	**4223628**
Chloride (2:1)	µg/g		2	6
Sulphate (2:1)	µg/g		2	79
pH (2:1)	pH Units		NA	8.24
Electrical Conductivity (2:1)	mS/cm		0.005	0.308
Resistivity (2:1) (Calculated)	ohm.cm		1	3250
Redox Potential 1	mV		NA	301
Redox Potential 2	mV		NA	303
Redox Potential 3	mV		NA	302

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

4223628 EC, pH, Chloride and Sulphate were determined on the extract obtained from the 2:1 leaching procedure (2 parts DI water: 1 part soil). Resistivity is a calculated parameter.
Redox potential measured on as received sample. Due to the potential for rapid change in sample equilibrium chemistry with exposure to oxidative/reduction conditions laboratory results may differ from field measured results.
Redox potential measurement in soil is quite variable and non reproducible due in part, to the general heterogeneity of a given soil. It is also related to the introduction of increased oxygen into the sample after extraction. The interpretation of soil redox potential should be considered in terms of its general range rather than as an absolute measurement.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



AGAT Laboratories

2910 12TH STREET NE
CALGARY, ALBERTA
CANADA T2E 7P7
TEL (403)735-2005
FAX (403)735-2771
http://www.agatlabs.com

Quality Assurance

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

AGAT WORK ORDER: 22T934932

PROJECT: Mayfield Golf Course

ATTENTION TO: Derek Franceschini

SAMPLING SITE:Caledon, Ontario

SAMPLED BY:Ife Ogundalu

Rock Analysis

RPT Date: Sep 06, 2022			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
(283-042) Sulfide (CGY)															
Total Sulfur	1	4213912	0.03	0.03	15.2%	< 0.01	105%	90%	110%						
Sulfate	4258753	4258753	3.66	3.69	0.8%	< 0.01	96%	80%	120%						

Certified By:

AGAT Laboratories

2910 12TH STREET NE
CALGARY, ALBERTA
CANADA T2E 7P7
TEL (403)735-2005
FAX (403)735-2771
http://www.agatlabs.com

Quality Assurance

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

AGAT WORK ORDER: 22T934932

PROJECT: Mayfield Golf Course

ATTENTION TO: Derek Franceschini

SAMPLING SITE:Caledon, Ontario

SAMPLED BY:Ife Ogundalu

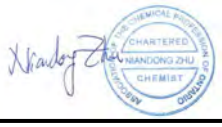
Soil Analysis

RPT Date: Sep 06, 2022			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Corrosivity Package															
Chloride (2:1)	4223628	4223628	6	6	NA	< 2	94%	70%	130%	98%	80%	120%	98%	70%	130%
Sulphate (2:1)	4223628	4223628	79	77	2.6%	< 2	98%	70%	130%	99%	80%	120%	103%	70%	130%
pH (2:1)	4223628	4223628	8.24	8.22	0.2%	NA	99%	80%	120%						
Electrical Conductivity (2:1)	4223628	4223628	0.308	0.313	1.6%	< 0.005	110%	80%	120%						
Redox Potential 1							100%	90%	110%						

Comments: NA signifies Not Applicable.
pH duplicates QA acceptance criteria was met relative as stated in Table 5-15 of Analytical Protocol document.

Duplicate NA: results are under 5X the RDL and will not be calculated.

Certified By:



2910 12TH STREET NE
CALGARY, ALBERTA
CANADA T2E 7P7
TEL (403)735-2005
FAX (403)735-2771
http://www.agatlabs.com

Method Summary

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

AGAT WORK ORDER: 22T934932

PROJECT: Mayfield Golf Course

ATTENTION TO: Derek Franceschini

SAMPLING SITE:Caledon, Ontario

SAMPLED BY:Ife Ogundalu

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Chloride (2:1)	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphate (2:1)	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
pH (2:1)	INOR 93-6031	modified from EPA 9045D and MCKEAGUE 3.11	PH METER
Electrical Conductivity (2:1)	INOR-93-6075	modified from MSA PART 3, CH 14 and SM 2510 B	PC TITRATE
Resistivity (2:1) (Calculated)	INOR-93-6036	McKeague 4.12, SM 2510 B,SSA #5 Part 3	CALCULATION
Redox Potential 1	INOR-93-6066	G200-20, SM 2580 B	REDOX POTENTIAL ELECTRODE
Redox Potential 2	INOR-93-6066	G200-20, SM 2580 B	REDOX POTENTIAL ELECTRODE
Redox Potential 3	INOR-93-6066	G200-20, SM 2580 B	REDOX POTENTIAL ELECTRODE

AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712 5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

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

Laboratory Use Only

Work Order #: 22T934932

Cooler Quantity: 1 bag

Arrival Temperatures: 21.9

Custody Seal Intact: ☐Yes ☐No ☐N/A

Notes: No Ice

Report Information:

Company: GEMTEC CONSULTING ENGINEERS & SCIENTISTS
Contact: DEREK FRANCESCHINI
Address: 850 CHAMPLAIN AVE, UNIT 101 OSHAWA ONTARIO CANADA L1J 8C3
Phone: 6477830480 Fax:
Reports to be sent to:
1. Email: ife.ogundaly@gemtec.ca
2. Email: derek.franceschini@gemtec.ca

Regulatory Requirements:

(Please check all applicable boxes)

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

☐ Excess Soils R406
Table ____ Indicate One
☐ Regulation 558
☐ CCME

☐ Sewer Use
☐Sanitary ☐Storm
____ Region
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
____ Indicate One

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

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

Turnaround Time (TAT) Required:

Regular TAT ☑ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

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

OR Date Required (Rush Surcharges May Apply):

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

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

Project Information:

Project: Mayfield Golf course
Site Location: Caledon, Ontario
Sampled By: Ife Ogundaly
AGAT Quote #: PO: 10198700 01
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☑ No ☐
Company: GEMTEC CONSULTING ENGINEERS & SCIENTISTS
Contact:
Address: 191 DOAK ROAD, FREDERICTON, NEW BRUNSWICK
Email:

Sample Matrix Legend

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

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI, DOC Y / N	O. Reg 153 Metals & Inorganics	O. Reg 153 Metals - ☐ CrVI, ☐ Hg, ☐ HWSB	O. Reg 153 BTEX, F1-F4 PHCs	PAHs	PCBs	VOC	Aroclors	O. Reg 558 Landfill Disposal Characterization TCLP: TCLP: ☐M&I ☐VOCs ☐ABNs ☐B(a)P☐PCBs	O. Reg 406 Excess Soils SPLP Rainwater Leach SPLP: ☐Metals ☐VOCs ☐SVOCs	O. Reg 406 Excess Soils Characterization Package pH, ICPMS Metals, BTEX, F1-F4	Corrosivity: Include Moisture ☐ Sulphide ☑							Potentially Hazardous or High Concentration (Y/N)
22-6	26/07/2022	AM PM	1	S													X							
		AM PM																						
		AM PM																						
		AM PM																						
		AM PM																						
		AM PM																						
		AM PM																						
		AM PM																						
		AM PM																						
		AM PM																						
		AM PM																						

Samples Relinquished By (Print Name and Sign): IFE OGUNDALY	Date 16/08/2022	Time	Samples Received By (Print Name and Sign): Anthony Dasilva	Date	Time	'22AUG19 8:51
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time	Page 1 of 1
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time	Nº: T - 134613

Pink Copy - Client I Yellow Copy - AGAT I White Copy- AGAT

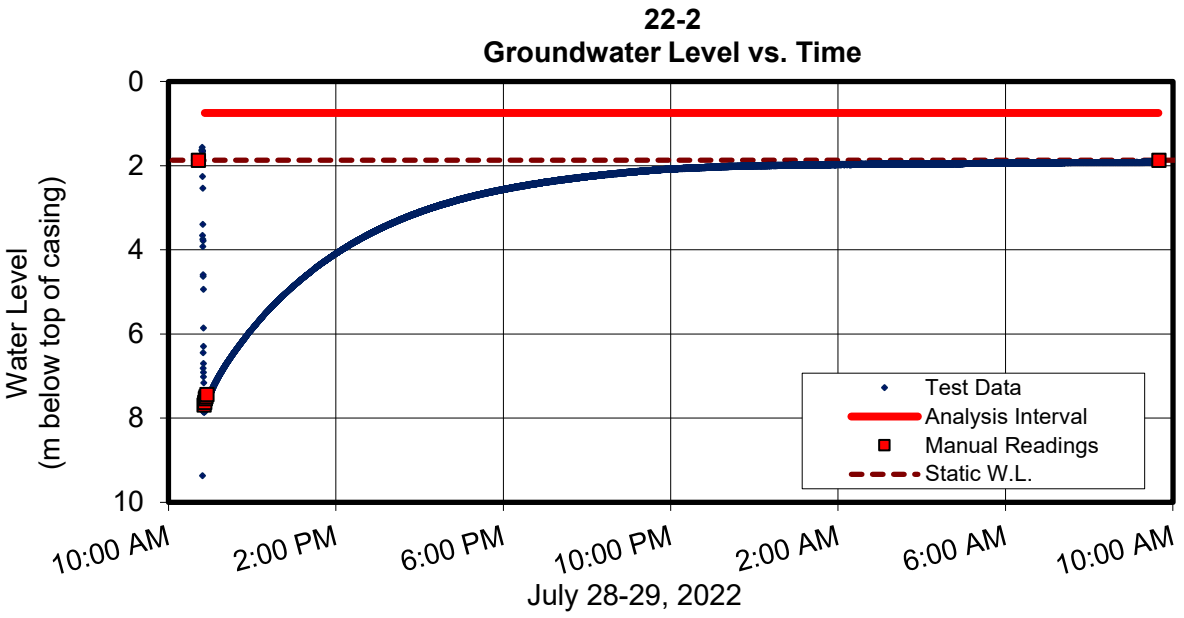
APPENDIX E

Hydraulic Conductivity Testing Results
Slug Test Figures E-1 to E-3

In-Situ Hydraulic Conductivity Test Report

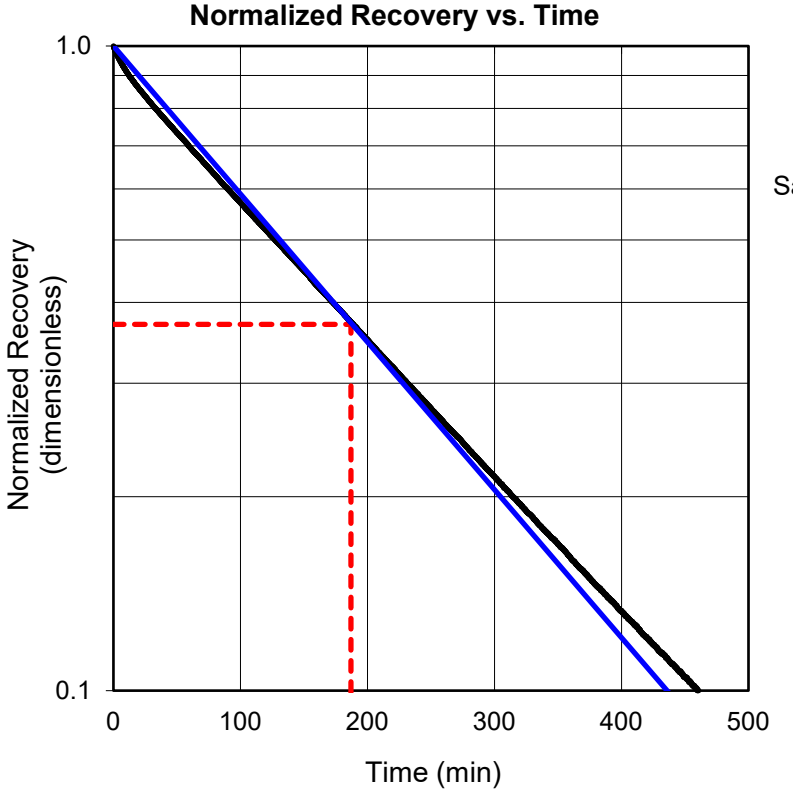
Monitoring Well 22-2

FIGURE E-1



Sand Pack Interval (below ground surface)

5.8 m - 7.6 m



Time Lag (T_0) = 187 min

Sand Pack Length (L) = 1.8 m

Well Radius (r) = 0.0254 m

Hole Radius (R) = 0.105 m

Hvorslev Analysis

$$K = \frac{(r^2)\ln(L/R)}{2T_0L} =$$ 5E-08 m/s

Soil Type

Silty Sand

DATE: Aug. 5, 2022

PROJECT: 101987.001

GEMTEC
Consulting Engineers and Scientists

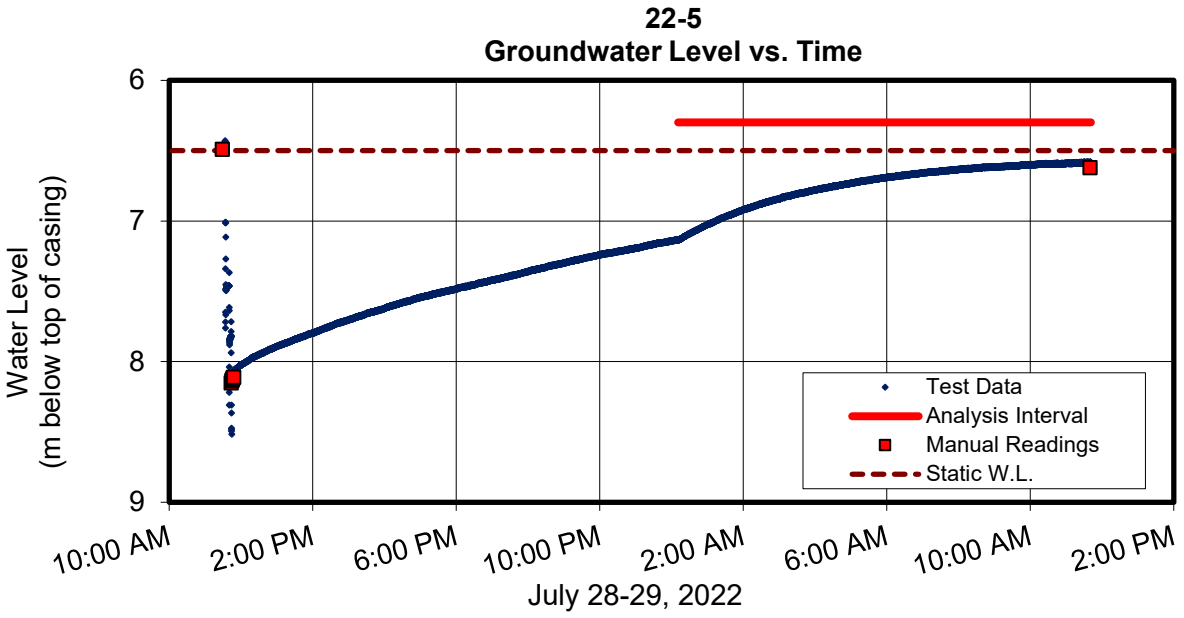
prepared by: AW

reviewed by: JPG

In-Situ Hydraulic Conductivity Test Report

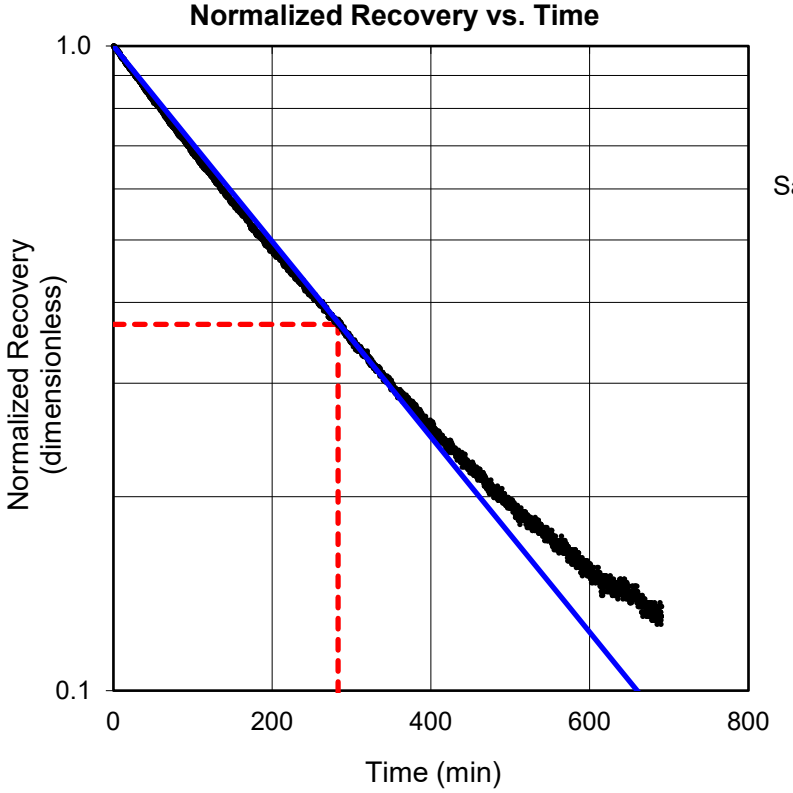
Monitoring Well 22-5

FIGURE E-2



Sand Pack Interval (below ground surface)

5.8 m - 7.6 m



Time Lag (T_0) = 283 min

Sand Pack Length (L) = 1.8 m

Well Radius (r) = 0.0254 m

Hole Radius (R) = 0.105 m

Hvorslev Analysis

$$K = \frac{(r^2)\ln(L/R)}{2T_0L} =$$ 3E-08 m/s

Soil Type

Silt

DATE: Aug. 5, 2022

PROJECT: 101987.001

GEMTEC
Consulting Engineers and Scientists

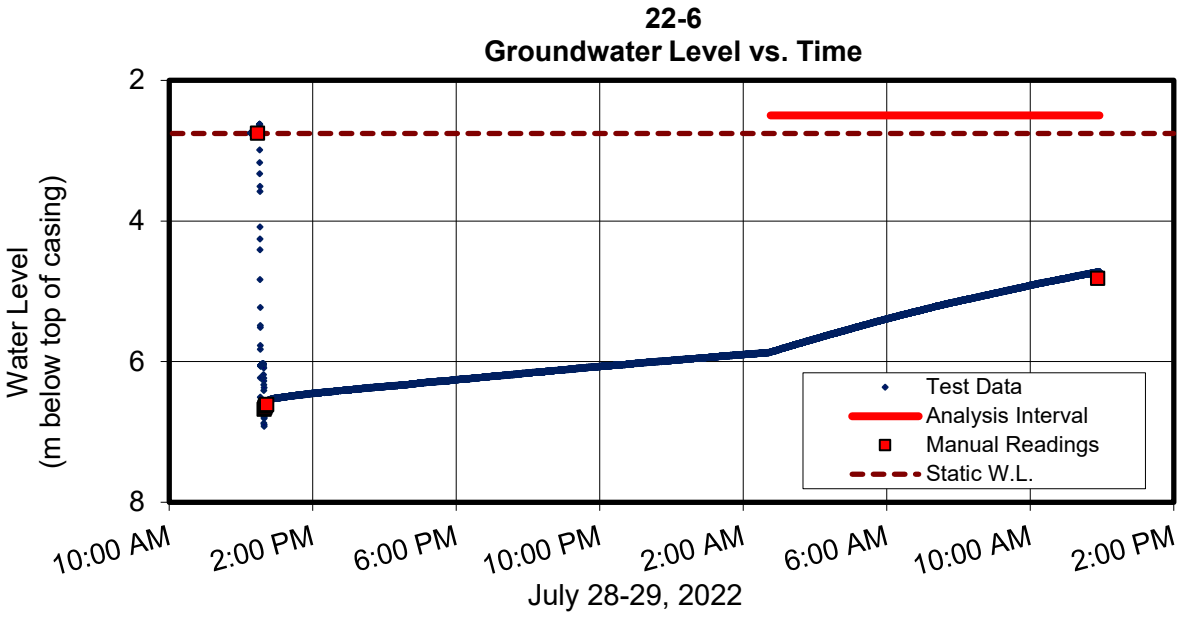
prepared by: AW

reviewed by: JPG

In-Situ Hydraulic Conductivity Test Report

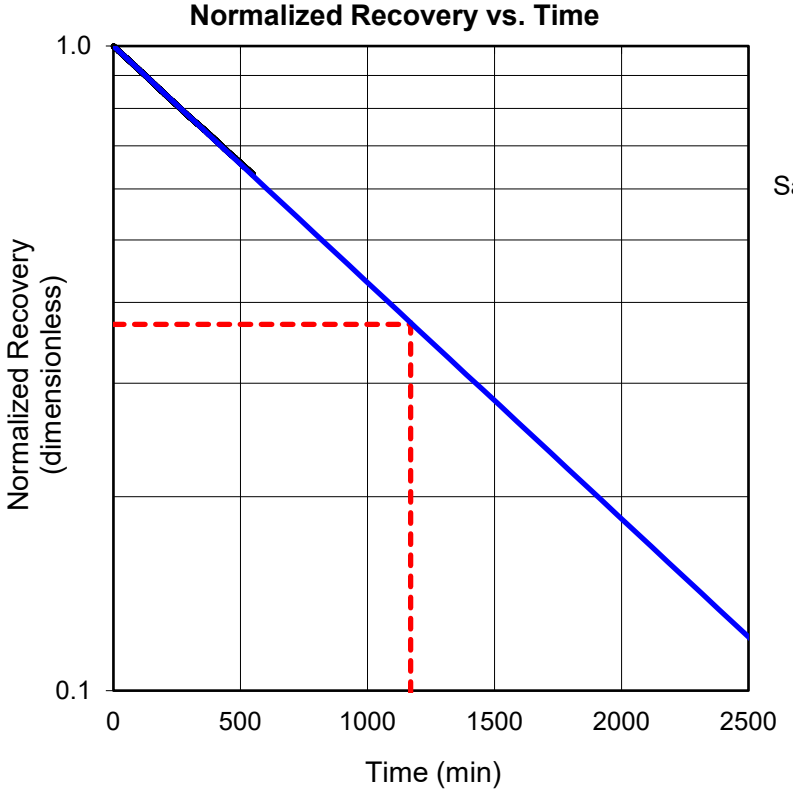
Monitoring Well 22-6

FIGURE E-3



Sand Pack Interval (below ground surface)

5.8 m - 7.6 m



Time Lag (T_0) = 1170 min

Sand Pack Length (L) = 1.8 m

Well Radius (r) = 0.0254 m

Hole Radius (R) = 0.105 m

Hvorslev Analysis

$$K = \frac{(r^2)\ln(L/R)}{2T_0L} =$$ 7E-09 m/s

Soil Type

Silty Clay Till

DATE: Aug. 8, 2022

PROJECT: 101987.001

GEMTEC
Consulting Engineers and Scientists

prepared by: AW

reviewed by: JPG

APPENDIX F

Water Quality Testing Results

Your Project #: 101987001
Your C.O.C. #: 889655-01-01

Attention: Andy Weatherson

GEMTEC LIMITED
850 Champlain Ave
Unit 101
Oshawa, ON
Canada L1J8C3

Report Date: 2022/08/09
Report #: R7245756
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2L4004
Received: 2022/07/29, 13:52

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
ABN Compounds in Water by GC/MS	3	2022/08/03	2022/08/04	CAM SOP-00301	EPA 8270 m
Carbonaceous BOD	3	2022/08/02	2022/08/07	CAM SOP-00427	SM 23 5210B m
Chloride by Automated Colourimetry	2	N/A	2022/08/02	CAM SOP-00463	SM 23 4500-Cl E m
Chloride by Automated Colourimetry	1	N/A	2022/08/03	CAM SOP-00463	SM 23 4500-Cl E m
Total Cyanide	3	2022/08/02	2022/08/02	CAM SOP-00457	OMOE E3015 5 m
Mercury in Water by CVAA	3	2022/08/02	2022/08/03	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS	1	N/A	2022/08/05	CAM SOP-00447	EPA 6020B m
Dissolved Metals by ICPMS	1	N/A	2022/08/09	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICPMS	3	N/A	2022/08/03	CAM SOP-00447	EPA 6020B m
E.coli, (CFU/100mL)	3	N/A	2022/07/29	CAM SOP-00552	MECP E3433
Polychlorinated Biphenyl in Water	3	2022/08/03	2022/08/04	CAM SOP-00309	EPA 8082A m
pH	2	2022/07/30	2022/08/03	CAM SOP-00413	SM 4500H+ B m
pH	1	2022/08/02	2022/08/03	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	3	N/A	2022/08/03	CAM SOP-00444	OMOE E3179 m
Total Kjeldahl Nitrogen in Water	3	2022/08/02	2022/08/03	CAM SOP-00938	OMOE E3516 m
Total Suspended Solids	3	2022/08/03	2022/08/04	CAM SOP-00428	SM 23 2540D m
Turbidity	3	N/A	2022/08/01	CAM SOP-00417	SM 23 2130 B m
Volatile Organic Compounds in Water	3	N/A	2022/08/04	CAM SOP-00228	EPA 8260C m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report.

Your Project #: 101987001
Your C.O.C. #: 889655-01-01

Attention: Andy Weatherson

GEMTEC LIMITED
850 Champlain Ave
Unit 101
Oshawa, ON
Canada L1J8C3

Report Date: 2022/08/09
Report #: R7245756
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2L4004

Received: 2022/07/29, 13:52

Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Katherine Szozda, Project Manager
Email: Katherine.Szozda@bureauveritas.com
Phone# (613)274-0573 Ext:7063633
==========
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Job #: C2L4004
Report Date: 2022/08/09

GEMTEC LIMITED
Client Project #: 101987001
Sampler Initials: A.W

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			THU826		THU827		THU828			
Sampling Date			2022/07/29 10:00		2022/07/29 12:30		2022/07/29 11:00			
COC Number			889655-01-01		889655-01-01		889655-01-01			
	UNITS	**Criteria**	**22-2**	**QC Batch**	**22-6**	**QC Batch**	**SW-1**	**RDL**	**MDL**	**QC Batch**
Inorganics										
Total Carbonaceous BOD	mg/L	-	6	8143003	<2	8143003	<2	2	0.2	8143003
Total Kjeldahl Nitrogen (TKN)	mg/L	-	0.83	8142497	0.41	8142497	0.41	0.10	0.060	8142497
pH	pH	**6.5:8.5**	8.20	8141993	8.08	8141993	8.33			8141993
Phenols-4AAP	mg/L	**0.001**	**0.0014**	8144491	<0.0010	8144491	<0.0010	0.0010	0.00030	8144491
Total Suspended Solids	mg/L	-	24	8144266	<10	8140590	<10	10	2.0	8144266
Total Cyanide (CN)	mg/L	-	<0.0050	8141719	<0.0050	8141719	<0.0050	0.0050	0.00010	8141719
Turbidity	NTU	-	15	8140336	3.6	8140336	3.7	0.1	0.1	8140336
Dissolved Chloride (Cl-)	mg/L	-	27	8140400	2.8	8140012	59	1.0	0.30	8140400

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID			THU826		THU827			
Sampling Date			2022/07/29 10:00		2022/07/29 12:30			
COC Number			889655-01-01		889655-01-01			
	UNITS	Criteria	22-2	QC Batch	22-6	RDL	MDL	QC Batch
Metals								
Mercury (Hg)	mg/L	**0.0002**	<0.00010	8142251	<0.00010	0.00010	0.000050	8142251
Dissolved Antimony (Sb)	ug/L	**20**	<0.50	8143931	<0.50	0.50	0.50	8143945
Dissolved Arsenic (As)	ug/L	**100**	1.9	8143931	4.0	1.0	1.0	8143945
Total Arsenic (As)	ug/L	**100**	3.3	8144205	5.7	1.0	0.50	8144205
Dissolved Barium (Ba)	ug/L	-	150	8143931	58	2.0	2.0	8143945
Dissolved Beryllium (Be)	ug/L	**11**	<0.40	8143931	<0.40	0.40	0.40	8143945
Dissolved Boron (B)	ug/L	**200**	96	8143931	190	10	10	8143945
Dissolved Cadmium (Cd)	ug/L	**0.2**	<0.090	8143931	<0.090	0.090	0.090	8143945
Total Cadmium (Cd)	ug/L	**0.2**	<0.090	8144205	<0.090	0.090	0.090	8144205
Dissolved Chromium (Cr)	ug/L	-	<5.0	8143931	<5.0	5.0	5.0	8143945
Total Chromium (Cr)	ug/L	-	<5.0	8144205	<5.0	5.0	5.0	8144205
Dissolved Cobalt (Co)	ug/L	**0.9**	<0.50	8143931	0.67	0.50	0.50	8143945
Dissolved Copper (Cu)	ug/L	**5**	<0.90	8143931	3.7	0.90	0.90	8143945
Total Copper (Cu)	ug/L	**5**	0.93	8144205	1.0	0.90	0.50	8144205
Dissolved Lead (Pb)	ug/L	**5**	<0.50	8143931	<0.50	0.50	0.50	8143945
Total Lead (Pb)	ug/L	**5**	<0.50	8144205	<0.50	0.50	0.10	8144205
Total Manganese (Mn)	ug/L	-	46	8144205	130	2.0	0.50	8144205
Dissolved Molybdenum (Mo)	ug/L	**40**	10	8143931	4.8	0.50	0.50	8143945
Dissolved Nickel (Ni)	ug/L	**25**	<1.0	8143931	1.2	1.0	1.0	8143945
Total Nickel (Ni)	ug/L	**25**	1.3	8144205	1.1	1.0	0.50	8144205
Total Phosphorus (P)	ug/L	**10**	**<100 (1)**	8144205	**<100 (1)**	100	30	8144205
Dissolved Selenium (Se)	ug/L	**100**	<2.0	8143931	<2.0	2.0	2.0	8143945
Total Selenium (Se)	ug/L	**100**	<2.0	8144205	<2.0	2.0	0.50	8144205
Dissolved Silver (Ag)	ug/L	**0.1**	<0.090	8143931	<0.090	0.090	0.090	8143945
Total Silver (Ag)	ug/L	**0.1**	<0.090	8144205	<0.090	0.090	0.070	8144205
Dissolved Sodium (Na)	ug/L	-	28000	8143931	78000	100	100	8143945
Dissolved Thallium (Tl)	ug/L	**0.3**	<0.050	8143931	<0.050	0.050	0.050	8143945
Dissolved Uranium (U)	ug/L	**5**	0.33	8143931	4.0	0.10	0.10	8143945
Dissolved Vanadium (V)	ug/L	**6**	<0.50	8143931	1.4	0.50	0.50	8143945
Dissolved Zinc (Zn)	ug/L	**30**	<5.0	8143931	<5.0	5.0	5.0	8143945
Total Zinc (Zn)	ug/L	**30**	<5.0	8144205	<5.0	5.0	3.0	8144205

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
(1) RDL exceeds criteria

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID			THU828			
Sampling Date			2022/07/29 11:00			
COC Number			889655-01-01			
	UNITS	Criteria	SW-1	RDL	MDL	QC Batch
Metals						
Mercury (Hg)	mg/L	**0.0002**	<0.00010	0.00010	0.000050	8142251
Total Arsenic (As)	ug/L	**100**	4.6	1.0	0.50	8144205
Total Cadmium (Cd)	ug/L	**0.2**	<0.090	0.090	0.090	8144205
Total Chromium (Cr)	ug/L	**-**	<5.0	5.0	5.0	8144205
Total Copper (Cu)	ug/L	**5**	1.5	0.90	0.50	8144205
Total Lead (Pb)	ug/L	**5**	<0.50	0.50	0.10	8144205
Total Manganese (Mn)	ug/L	**-**	160	2.0	0.50	8144205
Total Nickel (Ni)	ug/L	**25**	1.3	1.0	0.50	8144205
Total Phosphorus (P)	ug/L	**10**	**<100 (1)**	100	30	8144205
Total Selenium (Se)	ug/L	**100**	<2.0	2.0	0.50	8144205
Total Silver (Ag)	ug/L	**0.1**	<0.090	0.090	0.070	8144205
Total Zinc (Zn)	ug/L	**30**	<5.0	5.0	3.0	8144205

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
(1) RDL exceeds criteria

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Bureau Veritas ID			THU826	THU827	THU828			
Sampling Date			2022/07/29 10:00	2022/07/29 12:30	2022/07/29 11:00			
COC Number			889655-01-01	889655-01-01	889655-01-01			
	UNITS	Criteria	22-2	22-6	SW-1	RDL	MDL	QC Batch
Semivolatile Organics								
Bis(2-ethylhexyl)phthalate	ug/L	**0.6**	**<2.0 (1)**	**<2.0 (1)**	**<2.0 (1)**	2.0	0.10	8143960
Di-N-butyl phthalate	ug/L	**4**	**6.7**	<2.0	<2.0	2.0	0.10	8143960
Surrogate Recovery (%)								
2,4,6-Tribromophenol	%	-	113	126	127			8143960
2-Fluorobiphenyl	%	-	107	115	111			8143960
2-Fluorophenol	%	-	67	63	52			8143960
D14-Terphenyl	%	-	135 (2)	136 (2)	142 (2)			8143960
D5-Nitrobenzene	%	-	104	107	83			8143960
D5-Phenol	%	-	61	62	64			8143960

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
(1) RDL exceeds criteria
(2) Surrogate recovery was above the upper control limit. This may represent a high bias in some results.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

VOLATILE ORGANICS BY GC/MS (WATER)

Bureau Veritas ID			THU826	THU827	THU828			
Sampling Date			2022/07/29 10:00	2022/07/29 12:30	2022/07/29 11:00			
COC Number			889655-01-01	889655-01-01	889655-01-01			
	UNITS	Criteria	22-2	22-6	SW-1	RDL	MDL	QC Batch
Volatile Organics								
Benzene	ug/L	**100**	<0.20	<0.20	<0.20	0.20	0.020	8142389
Chloroform	ug/L	-	<0.20	<0.20	<0.20	0.20	0.050	8142389
1,2-Dichlorobenzene	ug/L	**2.5**	<0.40	<0.40	<0.40	0.40	0.050	8142389
1,4-Dichlorobenzene	ug/L	**4**	<0.40	<0.40	<0.40	0.40	0.050	8142389
cis-1,2-Dichloroethylene	ug/L	**200**	<0.50	<0.50	<0.50	0.50	0.050	8142389
trans-1,3-Dichloropropene	ug/L	**7**	<0.40	<0.40	<0.40	0.40	0.050	8142389
Ethylbenzene	ug/L	**8**	<0.20	<0.20	<0.20	0.20	0.010	8142389
Methylene Chloride(Dichloromethane)	ug/L	**100**	<2.0	<2.0	<2.0	2.0	0.10	8142389
1,1,2,2-Tetrachloroethane	ug/L	**70**	<0.40	<0.40	<0.40	0.40	0.050	8142389
Tetrachloroethylene	ug/L	**50**	<0.20	<0.20	<0.20	0.20	0.050	8142389
Toluene	ug/L	**0.8**	<0.20	<0.20	<0.20	0.20	0.010	8142389
Trichloroethylene	ug/L	**20**	<0.20	<0.20	<0.20	0.20	0.050	8142389
p+m-Xylene	ug/L	**2**	<0.20	<0.20	<0.20	0.20	0.010	8142389
o-Xylene	ug/L	**40**	<0.20	<0.20	<0.20	0.20	0.010	8142389
Total Xylenes	ug/L	-	<0.20	<0.20	<0.20	0.20	0.010	8142389
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	-	97	93	92			8142389
D4-1,2-Dichloroethane	%	-	105	107	111			8142389
D8-Toluene	%	-	96	93	93			8142389

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Bureau Veritas ID			THU826	THU827	THU828			
Sampling Date			2022/07/29 10:00	2022/07/29 12:30	2022/07/29 11:00			
COC Number			889655-01-01	889655-01-01	889655-01-01			
	UNITS	Criteria	22-2	22-6	SW-1	RDL	MDL	QC Batch
PCBs								
Aroclor 1016	ug/L	**0.001**	**<0.05 (1)**	**<0.05 (1)**	**<0.05 (1)**	0.05	0.01	8144642
Aroclor 1221	ug/L	**0.001**	**<0.05 (1)**	**<0.05 (1)**	**<0.05 (1)**	0.05	0.01	8144642
Aroclor 1232	ug/L	**0.001**	**<0.05 (1)**	**<0.05 (1)**	**<0.05 (1)**	0.05	0.01	8144642
Aroclor 1242	ug/L	**0.001**	**<0.05 (1)**	**<0.05 (1)**	**<0.05 (1)**	0.05	0.01	8144642
Aroclor 1248	ug/L	**0.001**	**<0.05 (1)**	**<0.05 (1)**	**<0.05 (1)**	0.05	0.01	8144642
Aroclor 1254	ug/L	**0.001**	**<0.05 (1)**	**<0.05 (1)**	**<0.05 (1)**	0.05	0.01	8144642
Aroclor 1260	ug/L	**0.001**	**<0.05 (1)**	**<0.05 (1)**	**<0.05 (1)**	0.05	0.01	8144642
Aroclor 1262	ug/L	-	<0.05	<0.05	<0.05	0.05	0.01	8144642
Aroclor 1268	ug/L	-	<0.05	<0.05	<0.05	0.05	0.01	8144642
Total PCB	ug/L	**0.001**	**<0.05 (1)**	**<0.05 (1)**	**<0.05 (1)**	0.05	0.01	8144642
Surrogate Recovery (%)								
Decachlorobiphenyl	%	-	88	77	82			8144642

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
(1) RDL exceeds criteria

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

MICROBIOLOGY (WATER)

Bureau Veritas ID			THU826	THU827	THU828			
Sampling Date			2022/07/29 10:00	2022/07/29 12:30	2022/07/29 11:00			
COC Number			889655-01-01	889655-01-01	889655-01-01			
	UNITS	**Criteria**	**22-2**	**22-6**	**SW-1**	**RDL**	**MDL**	**QC Batch**
Microbiological								
Escherichia coli	CFU/100mL	**100**	<10	<10	**470**	10	N/A	8139890

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
N/A = Not Applicable

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	16.3°C
Package 2	15.7°C

Results relate only to the items tested.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8140012	ADB	Matrix Spike	Dissolved Chloride (Cl-)	2022/08/03		NC	%	80 - 120
8140012	ADB	Spiked Blank	Dissolved Chloride (Cl-)	2022/08/03		103	%	80 - 120
8140012	ADB	Method Blank	Dissolved Chloride (Cl-)	2022/08/03	<1.0		mg/L	
8140012	ADB	RPD	Dissolved Chloride (Cl-)	2022/08/03	2.1		%	20
8140336	NYS	Spiked Blank	Turbidity	2022/08/01		114	%	85 - 115
8140336	NYS	Method Blank	Turbidity	2022/08/01	<0.1		NTU	
8140336	NYS	RPD	Turbidity	2022/08/01	1.9		%	20
8140400	ADB	Matrix Spike	Dissolved Chloride (Cl-)	2022/08/02		NC	%	80 - 120
8140400	ADB	Spiked Blank	Dissolved Chloride (Cl-)	2022/08/02		104	%	80 - 120
8140400	ADB	Method Blank	Dissolved Chloride (Cl-)	2022/08/02	<1.0		mg/L	
8140400	ADB	RPD	Dissolved Chloride (Cl-)	2022/08/02	0.57		%	20
8140590	MSQ	QC Standard	Total Suspended Solids	2022/08/04		97	%	85 - 115
8140590	MSQ	Method Blank	Total Suspended Solids	2022/08/04	<10		mg/L	
8140590	MSQ	RPD	Total Suspended Solids	2022/08/04	NC		%	25
8141719	GYA	Matrix Spike	Total Cyanide (CN)	2022/08/02		93	%	80 - 120
8141719	GYA	Spiked Blank	Total Cyanide (CN)	2022/08/02		97	%	80 - 120
8141719	GYA	Method Blank	Total Cyanide (CN)	2022/08/02	<0.0050		mg/L	
8141719	GYA	RPD	Total Cyanide (CN)	2022/08/02	NC		%	20
8141993	SAU	Spiked Blank	pH	2022/08/03		103	%	98 - 103
8141993	SAU	RPD [THU826-04]	pH	2022/08/03	1.6		%	N/A
8142251	TLG	Matrix Spike [THU827-10]	Mercury (Hg)	2022/08/03		98	%	75 - 125
8142251	TLG	Spiked Blank	Mercury (Hg)	2022/08/03		102	%	80 - 120
8142251	TLG	Method Blank	Mercury (Hg)	2022/08/03	<0.00010		mg/L	
8142251	TLG	RPD [THU827-10]	Mercury (Hg)	2022/08/03	NC		%	20
8142251	TLG	RPD	Mercury (Hg)	2022/08/03	NC		%	20
			Mercury (Hg)	2022/08/03	NC		%	20
8142389	GGU	Matrix Spike [THU826-12]	4-Bromofluorobenzene	2022/08/04		100	%	70 - 130
			D4-1,2-Dichloroethane	2022/08/04		102	%	70 - 130
			D8-Toluene	2022/08/04		101	%	70 - 130
			Benzene	2022/08/04		90	%	70 - 130
			Chloroform	2022/08/04		96	%	70 - 130
			1,2-Dichlorobenzene	2022/08/04		93	%	70 - 130
			1,4-Dichlorobenzene	2022/08/04		108	%	70 - 130
			cis-1,2-Dichloroethylene	2022/08/04		99	%	70 - 130
			trans-1,3-Dichloropropene	2022/08/04		81	%	70 - 130
			Ethylbenzene	2022/08/04		88	%	70 - 130
			Methylene Chloride(Dichloromethane)	2022/08/04		98	%	70 - 130
			1,1,2,2-Tetrachloroethane	2022/08/04		92	%	70 - 130
			Tetrachloroethylene	2022/08/04		85	%	70 - 130
			Toluene	2022/08/04		91	%	70 - 130
			Trichloroethylene	2022/08/04		96	%	70 - 130
			p+m-Xylene	2022/08/04		95	%	70 - 130
			o-Xylene	2022/08/04		87	%	70 - 130
8142389	GGU	Spiked Blank	4-Bromofluorobenzene	2022/08/04		101	%	70 - 130
			D4-1,2-Dichloroethane	2022/08/04		101	%	70 - 130
			D8-Toluene	2022/08/04		104	%	70 - 130
			Benzene	2022/08/04		92	%	70 - 130
			Chloroform	2022/08/04		98	%	70 - 130
			1,2-Dichlorobenzene	2022/08/04		96	%	70 - 130
			1,4-Dichlorobenzene	2022/08/04		114	%	70 - 130
			cis-1,2-Dichloroethylene	2022/08/04		101	%	70 - 130
			trans-1,3-Dichloropropene	2022/08/04		100	%	70 - 130

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Ethylbenzene	2022/08/04		95	%	70 - 130
			Methylene Chloride(Dichloromethane)	2022/08/04		101	%	70 - 130
			1,1,2,2-Tetrachloroethane	2022/08/04		93	%	70 - 130
			Tetrachloroethylene	2022/08/04		92	%	70 - 130
			Toluene	2022/08/04		98	%	70 - 130
			Trichloroethylene	2022/08/04		101	%	70 - 130
			p+m-Xylene	2022/08/04		101	%	70 - 130
			o-Xylene	2022/08/04		95	%	70 - 130
8142389	GGU	Method Blank	4-Bromofluorobenzene	2022/08/04		99	%	70 - 130
			D4-1,2-Dichloroethane	2022/08/04		106	%	70 - 130
			D8-Toluene	2022/08/04		92	%	70 - 130
			Benzene	2022/08/04	<0.20		ug/L	
			Chloroform	2022/08/04	<0.20		ug/L	
			1,2-Dichlorobenzene	2022/08/04	<0.40		ug/L	
			1,4-Dichlorobenzene	2022/08/04	<0.40		ug/L	
			cis-1,2-Dichloroethylene	2022/08/04	<0.50		ug/L	
			trans-1,3-Dichloropropene	2022/08/04	<0.40		ug/L	
			Ethylbenzene	2022/08/04	<0.20		ug/L	
			Methylene Chloride(Dichloromethane)	2022/08/04	<2.0		ug/L	
			1,1,2,2-Tetrachloroethane	2022/08/04	<0.40		ug/L	
			Tetrachloroethylene	2022/08/04	<0.20		ug/L	
			Toluene	2022/08/04	<0.20		ug/L	
			Trichloroethylene	2022/08/04	<0.20		ug/L	
			p+m-Xylene	2022/08/04	<0.20		ug/L	
			o-Xylene	2022/08/04	<0.20		ug/L	
			Total Xylenes	2022/08/04	<0.20		ug/L	
8142389	GGU	RPD [THU826-12]	Benzene	2022/08/04	NC		%	30
			Chloroform	2022/08/04	NC		%	30
			1,2-Dichlorobenzene	2022/08/04	NC		%	30
			1,4-Dichlorobenzene	2022/08/04	NC		%	30
			cis-1,2-Dichloroethylene	2022/08/04	NC		%	30
			trans-1,3-Dichloropropene	2022/08/04	NC		%	30
			Ethylbenzene	2022/08/04	NC		%	30
			Methylene Chloride(Dichloromethane)	2022/08/04	NC		%	30
			1,1,2,2-Tetrachloroethane	2022/08/04	NC		%	30
			Tetrachloroethylene	2022/08/04	NC		%	30
			Toluene	2022/08/04	NC		%	30
			Trichloroethylene	2022/08/04	NC		%	30
			p+m-Xylene	2022/08/04	NC		%	30
			o-Xylene	2022/08/04	NC		%	30
			Total Xylenes	2022/08/04	NC		%	30
8142497	RTY	Matrix Spike	Total Kjeldahl Nitrogen (TKN)	2022/08/03		NC	%	80 - 120
8142497	RTY	QC Standard	Total Kjeldahl Nitrogen (TKN)	2022/08/03		106	%	80 - 120
8142497	RTY	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2022/08/03		104	%	80 - 120
8142497	RTY	Method Blank	Total Kjeldahl Nitrogen (TKN)	2022/08/03	<0.10		mg/L	
8142497	RTY	RPD	Total Kjeldahl Nitrogen (TKN)	2022/08/03	0.35		%	20
8143003	GUJ	QC Standard	Total Carbonaceous BOD	2022/08/07		90	%	85 - 115
8143003	GUJ	Method Blank	Total Carbonaceous BOD	2022/08/07	<2		mg/L	
8143003	GUJ	RPD [THU828-05]	Total Carbonaceous BOD	2022/08/07	NC		%	30
8143931	RG4	Matrix Spike	Dissolved Antimony (Sb)	2022/08/05		107	%	80 - 120
			Dissolved Arsenic (As)	2022/08/05		104	%	80 - 120
			Dissolved Barium (Ba)	2022/08/05		101	%	80 - 120

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Beryllium (Be)	2022/08/05		101	%	80 - 120
			Dissolved Boron (B)	2022/08/05		94	%	80 - 120
			Dissolved Cadmium (Cd)	2022/08/05		103	%	80 - 120
			Dissolved Chromium (Cr)	2022/08/05		100	%	80 - 120
			Dissolved Cobalt (Co)	2022/08/05		100	%	80 - 120
			Dissolved Copper (Cu)	2022/08/05		104	%	80 - 120
			Dissolved Lead (Pb)	2022/08/05		102	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/08/05		107	%	80 - 120
			Dissolved Nickel (Ni)	2022/08/05		97	%	80 - 120
			Dissolved Selenium (Se)	2022/08/05		103	%	80 - 120
			Dissolved Silver (Ag)	2022/08/05		77 (1)	%	80 - 120
			Dissolved Sodium (Na)	2022/08/05		101	%	80 - 120
			Dissolved Thallium (Tl)	2022/08/05		99	%	80 - 120
			Dissolved Uranium (U)	2022/08/05		104	%	80 - 120
			Dissolved Vanadium (V)	2022/08/05		98	%	80 - 120
			Dissolved Zinc (Zn)	2022/08/05		99	%	80 - 120
8143931	RG4	Spiked Blank	Dissolved Antimony (Sb)	2022/08/05		103	%	80 - 120
			Dissolved Arsenic (As)	2022/08/05		100	%	80 - 120
			Dissolved Barium (Ba)	2022/08/05		102	%	80 - 120
			Dissolved Beryllium (Be)	2022/08/05		101	%	80 - 120
			Dissolved Boron (B)	2022/08/05		97	%	80 - 120
			Dissolved Cadmium (Cd)	2022/08/05		99	%	80 - 120
			Dissolved Chromium (Cr)	2022/08/05		94	%	80 - 120
			Dissolved Cobalt (Co)	2022/08/05		97	%	80 - 120
			Dissolved Copper (Cu)	2022/08/05		97	%	80 - 120
			Dissolved Lead (Pb)	2022/08/05		100	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/08/05		99	%	80 - 120
			Dissolved Nickel (Ni)	2022/08/05		96	%	80 - 120
			Dissolved Selenium (Se)	2022/08/05		102	%	80 - 120
			Dissolved Silver (Ag)	2022/08/05		99	%	80 - 120
			Dissolved Sodium (Na)	2022/08/05		98	%	80 - 120
			Dissolved Thallium (Tl)	2022/08/05		97	%	80 - 120
			Dissolved Uranium (U)	2022/08/05		104	%	80 - 120
			Dissolved Vanadium (V)	2022/08/05		95	%	80 - 120
			Dissolved Zinc (Zn)	2022/08/05		96	%	80 - 120
8143931	RG4	Method Blank	Dissolved Antimony (Sb)	2022/08/05	<0.50		ug/L	
			Dissolved Arsenic (As)	2022/08/05	<1.0		ug/L	
			Dissolved Barium (Ba)	2022/08/05	<2.0		ug/L	
			Dissolved Beryllium (Be)	2022/08/05	<0.40		ug/L	
			Dissolved Boron (B)	2022/08/05	<10		ug/L	
			Dissolved Cadmium (Cd)	2022/08/05	<0.090		ug/L	
			Dissolved Chromium (Cr)	2022/08/05	<5.0		ug/L	
			Dissolved Cobalt (Co)	2022/08/05	<0.50		ug/L	
			Dissolved Copper (Cu)	2022/08/05	<0.90		ug/L	
			Dissolved Lead (Pb)	2022/08/05	<0.50		ug/L	
			Dissolved Molybdenum (Mo)	2022/08/05	<0.50		ug/L	
			Dissolved Nickel (Ni)	2022/08/05	<1.0		ug/L	
			Dissolved Selenium (Se)	2022/08/05	<2.0		ug/L	
			Dissolved Silver (Ag)	2022/08/05	<0.090		ug/L	
			Dissolved Sodium (Na)	2022/08/05	<100		ug/L	
			Dissolved Thallium (Tl)	2022/08/05	<0.050		ug/L	
			Dissolved Uranium (U)	2022/08/05	<0.10		ug/L	

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Vanadium (V)	2022/08/05	<0.50		ug/L	
			Dissolved Zinc (Zn)	2022/08/05	<5.0		ug/L	
8143931	RG4	RPD	Dissolved Lead (Pb)	2022/08/05	NC		%	20
8143945	N_R	Matrix Spike	Dissolved Antimony (Sb)	2022/08/09		106	%	80 - 120
			Dissolved Arsenic (As)	2022/08/09		99	%	80 - 120
			Dissolved Barium (Ba)	2022/08/09		100	%	80 - 120
			Dissolved Beryllium (Be)	2022/08/09		98	%	80 - 120
			Dissolved Boron (B)	2022/08/09		92	%	80 - 120
			Dissolved Cadmium (Cd)	2022/08/09		99	%	80 - 120
			Dissolved Chromium (Cr)	2022/08/09		97	%	80 - 120
			Dissolved Cobalt (Co)	2022/08/09		94	%	80 - 120
			Dissolved Copper (Cu)	2022/08/09		100	%	80 - 120
			Dissolved Lead (Pb)	2022/08/09		94	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/08/09		108	%	80 - 120
			Dissolved Nickel (Ni)	2022/08/09		92	%	80 - 120
			Dissolved Selenium (Se)	2022/08/09		101	%	80 - 120
			Dissolved Silver (Ag)	2022/08/09		94	%	80 - 120
			Dissolved Sodium (Na)	2022/08/09		NC	%	80 - 120
			Dissolved Thallium (Tl)	2022/08/09		95	%	80 - 120
			Dissolved Uranium (U)	2022/08/09		94	%	80 - 120
			Dissolved Vanadium (V)	2022/08/09		97	%	80 - 120
			Dissolved Zinc (Zn)	2022/08/09		95	%	80 - 120
8143945	N_R	Spiked Blank	Dissolved Antimony (Sb)	2022/08/09		101	%	80 - 120
			Dissolved Arsenic (As)	2022/08/09		100	%	80 - 120
			Dissolved Barium (Ba)	2022/08/09		104	%	80 - 120
			Dissolved Beryllium (Be)	2022/08/09		98	%	80 - 120
			Dissolved Boron (B)	2022/08/09		93	%	80 - 120
			Dissolved Cadmium (Cd)	2022/08/09		98	%	80 - 120
			Dissolved Chromium (Cr)	2022/08/09		98	%	80 - 120
			Dissolved Cobalt (Co)	2022/08/09		97	%	80 - 120
			Dissolved Copper (Cu)	2022/08/09		98	%	80 - 120
			Dissolved Lead (Pb)	2022/08/09		99	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/08/09		103	%	80 - 120
			Dissolved Nickel (Ni)	2022/08/09		95	%	80 - 120
			Dissolved Selenium (Se)	2022/08/09		100	%	80 - 120
			Dissolved Silver (Ag)	2022/08/09		100	%	80 - 120
			Dissolved Sodium (Na)	2022/08/09		97	%	80 - 120
			Dissolved Thallium (Tl)	2022/08/09		99	%	80 - 120
			Dissolved Uranium (U)	2022/08/09		95	%	80 - 120
			Dissolved Vanadium (V)	2022/08/09		96	%	80 - 120
			Dissolved Zinc (Zn)	2022/08/09		98	%	80 - 120
8143945	N_R	Method Blank	Dissolved Antimony (Sb)	2022/08/09	<0.50		ug/L	
			Dissolved Arsenic (As)	2022/08/09	<1.0		ug/L	
			Dissolved Barium (Ba)	2022/08/09	<2.0		ug/L	
			Dissolved Beryllium (Be)	2022/08/09	<0.40		ug/L	
			Dissolved Boron (B)	2022/08/09	<10		ug/L	
			Dissolved Cadmium (Cd)	2022/08/09	<0.090		ug/L	
			Dissolved Chromium (Cr)	2022/08/09	<5.0		ug/L	
			Dissolved Cobalt (Co)	2022/08/09	<0.50		ug/L	
			Dissolved Copper (Cu)	2022/08/09	<0.90		ug/L	
			Dissolved Lead (Pb)	2022/08/09	<0.50		ug/L	
			Dissolved Molybdenum (Mo)	2022/08/09	<0.50		ug/L	

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Nickel (Ni)	2022/08/09	<1.0		ug/L	
			Dissolved Selenium (Se)	2022/08/09	<2.0		ug/L	
			Dissolved Silver (Ag)	2022/08/09	<0.090		ug/L	
			Dissolved Sodium (Na)	2022/08/09	<100		ug/L	
			Dissolved Thallium (Tl)	2022/08/09	<0.050		ug/L	
			Dissolved Uranium (U)	2022/08/09	<0.10		ug/L	
			Dissolved Vanadium (V)	2022/08/09	<0.50		ug/L	
			Dissolved Zinc (Zn)	2022/08/09	<5.0		ug/L	
8143945	N_R	RPD	Dissolved Antimony (Sb)	2022/08/09	NC		%	20
			Dissolved Arsenic (As)	2022/08/09	NC		%	20
			Dissolved Barium (Ba)	2022/08/09	2.9		%	20
			Dissolved Beryllium (Be)	2022/08/09	NC		%	20
			Dissolved Boron (B)	2022/08/09	2.2		%	20
			Dissolved Cadmium (Cd)	2022/08/09	0.65		%	20
			Dissolved Chromium (Cr)	2022/08/09	NC		%	20
			Dissolved Cobalt (Co)	2022/08/09	1.7		%	20
			Dissolved Copper (Cu)	2022/08/09	2.7		%	20
			Dissolved Lead (Pb)	2022/08/09	NC		%	20
			Dissolved Molybdenum (Mo)	2022/08/09	NC		%	20
			Dissolved Nickel (Ni)	2022/08/09	2.3		%	20
			Dissolved Selenium (Se)	2022/08/09	NC		%	20
			Dissolved Silver (Ag)	2022/08/09	NC		%	20
			Dissolved Sodium (Na)	2022/08/09	1.7		%	20
			Dissolved Thallium (Tl)	2022/08/09	NC		%	20
			Dissolved Uranium (U)	2022/08/09	4.1		%	20
			Dissolved Vanadium (V)	2022/08/09	1.3		%	20
			Dissolved Zinc (Zn)	2022/08/09	NC		%	20
8143960	ANL	Matrix Spike	2,4,6-Tribromophenol	2022/08/03		93	%	10 - 130
			2-Fluorobiphenyl	2022/08/03		80	%	30 - 130
			2-Fluorophenol	2022/08/03		46	%	10 - 130
			D14-Terphenyl	2022/08/03		99	%	30 - 130
			D5-Nitrobenzene	2022/08/03		84	%	30 - 130
			D5-Phenol	2022/08/03		30	%	10 - 130
			Bis(2-ethylhexyl)phthalate	2022/08/03		98	%	30 - 130
			Di-N-butyl phthalate	2022/08/03		102	%	30 - 130
8143960	ANL	Spiked Blank	2,4,6-Tribromophenol	2022/08/03		94	%	10 - 130
			2-Fluorobiphenyl	2022/08/03		74	%	30 - 130
			2-Fluorophenol	2022/08/03		47	%	10 - 130
			D14-Terphenyl	2022/08/03		98	%	30 - 130
			D5-Nitrobenzene	2022/08/03		88	%	30 - 130
			D5-Phenol	2022/08/03		31	%	10 - 130
			Bis(2-ethylhexyl)phthalate	2022/08/03		97	%	30 - 130
			Di-N-butyl phthalate	2022/08/03		101	%	30 - 130
8143960	ANL	Method Blank	2,4,6-Tribromophenol	2022/08/03		78	%	10 - 130
			2-Fluorobiphenyl	2022/08/03		72	%	30 - 130
			2-Fluorophenol	2022/08/03		42	%	10 - 130
			D14-Terphenyl	2022/08/03		91	%	30 - 130
			D5-Nitrobenzene	2022/08/03		82	%	30 - 130
			D5-Phenol	2022/08/03		28	%	10 - 130
			Bis(2-ethylhexyl)phthalate	2022/08/03	<2.0		ug/L	
			Di-N-butyl phthalate	2022/08/03	<2.0		ug/L	
8144205	RG4	Matrix Spike	Total Arsenic (As)	2022/08/03		101	%	80 - 120

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Cadmium (Cd)	2022/08/03		102	%	80 - 120
			Total Chromium (Cr)	2022/08/03		95	%	80 - 120
			Total Copper (Cu)	2022/08/03		98	%	80 - 120
			Total Lead (Pb)	2022/08/03		93	%	80 - 120
			Total Manganese (Mn)	2022/08/03		100	%	80 - 120
			Total Nickel (Ni)	2022/08/03		99	%	80 - 120
			Total Phosphorus (P)	2022/08/03		99	%	80 - 120
			Total Selenium (Se)	2022/08/03		102	%	80 - 120
			Total Silver (Ag)	2022/08/03		98	%	80 - 120
			Total Zinc (Zn)	2022/08/03		101	%	80 - 120
8144205	RG4	Spiked Blank	Total Arsenic (As)	2022/08/03		102	%	80 - 120
			Total Cadmium (Cd)	2022/08/03		102	%	80 - 120
			Total Chromium (Cr)	2022/08/03		95	%	80 - 120
			Total Copper (Cu)	2022/08/03		102	%	80 - 120
			Total Lead (Pb)	2022/08/03		99	%	80 - 120
			Total Manganese (Mn)	2022/08/03		99	%	80 - 120
			Total Nickel (Ni)	2022/08/03		101	%	80 - 120
			Total Phosphorus (P)	2022/08/03		99	%	80 - 120
			Total Selenium (Se)	2022/08/03		105	%	80 - 120
			Total Silver (Ag)	2022/08/03		97	%	80 - 120
			Total Zinc (Zn)	2022/08/03		104	%	80 - 120
8144205	RG4	Method Blank	Total Arsenic (As)	2022/08/03	<1.0		ug/L	
			Total Cadmium (Cd)	2022/08/03	<0.090		ug/L	
			Total Chromium (Cr)	2022/08/03	<5.0		ug/L	
			Total Copper (Cu)	2022/08/03	<0.90		ug/L	
			Total Lead (Pb)	2022/08/03	<0.50		ug/L	
			Total Manganese (Mn)	2022/08/03	<2.0		ug/L	
			Total Nickel (Ni)	2022/08/03	<1.0		ug/L	
			Total Phosphorus (P)	2022/08/03	<100		ug/L	
			Total Selenium (Se)	2022/08/03	<2.0		ug/L	
			Total Silver (Ag)	2022/08/03	<0.090		ug/L	
			Total Zinc (Zn)	2022/08/03	<5.0		ug/L	
8144205	RG4	RPD	Total Arsenic (As)	2022/08/03	6.8		%	20
			Total Cadmium (Cd)	2022/08/03	NC		%	20
			Total Chromium (Cr)	2022/08/03	NC		%	20
			Total Copper (Cu)	2022/08/03	NC		%	20
			Total Lead (Pb)	2022/08/03	2.2		%	20
			Total Manganese (Mn)	2022/08/03	2.1		%	20
			Total Nickel (Ni)	2022/08/03	NC		%	20
			Total Phosphorus (P)	2022/08/03	NC		%	20
			Total Selenium (Se)	2022/08/03	NC		%	20
			Total Silver (Ag)	2022/08/03	NC		%	20
			Total Zinc (Zn)	2022/08/03	NC		%	20
8144266	MSQ	QC Standard	Total Suspended Solids	2022/08/04		97	%	85 - 115
8144266	MSQ	Method Blank	Total Suspended Solids	2022/08/04	<10		mg/L	
8144266	MSQ	RPD	Total Suspended Solids	2022/08/04	9.5		%	25
8144491	MKX	Matrix Spike	Phenols-4AAP	2022/08/03		102	%	80 - 120
8144491	MKX	Spiked Blank	Phenols-4AAP	2022/08/03		98	%	80 - 120
8144491	MKX	Method Blank	Phenols-4AAP	2022/08/03	<0.0010		mg/L	
8144491	MKX	RPD	Phenols-4AAP	2022/08/03	NC		%	20
8144642	SVS	Matrix Spike	Decachlorobiphenyl	2022/08/04		80	%	60 - 130
			Aroclor 1260	2022/08/04		87	%	60 - 130

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total PCB	2022/08/04		87	%	60 - 130
8144642	SVS	Spiked Blank	Decachlorobiphenyl	2022/08/04		82	%	60 - 130
			Aroclor 1260	2022/08/04		84	%	60 - 130
			Total PCB	2022/08/04		84	%	60 - 130
8144642	SVS	Method Blank	Decachlorobiphenyl	2022/08/04		89	%	60 - 130
			Aroclor 1016	2022/08/04	<0.05		ug/L	
			Aroclor 1221	2022/08/04	<0.05		ug/L	
			Aroclor 1232	2022/08/04	<0.05		ug/L	
			Aroclor 1242	2022/08/04	<0.05		ug/L	
			Aroclor 1248	2022/08/04	<0.05		ug/L	
			Aroclor 1254	2022/08/04	<0.05		ug/L	
			Aroclor 1260	2022/08/04	<0.05		ug/L	
			Aroclor 1262	2022/08/04	<0.05		ug/L	
			Aroclor 1268	2022/08/04	<0.05		ug/L	
			Total PCB	2022/08/04	<0.05		ug/L	
8144642	SVS	RPD	Aroclor 1242	2022/08/04	NC		%	30
			Aroclor 1248	2022/08/04	NC		%	30
			Aroclor 1254	2022/08/04	NC		%	30
			Aroclor 1260	2022/08/04	NC		%	30
			Total PCB	2022/08/04	NC		%	40

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

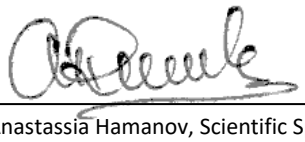
NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Anastassia Hamanov, Scientific Specialist

Sonja Elavinamannil, Master of Biochemistry, Team Lead

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Table F.1
Summary of Groundwater Quality Analytical Results
Mayfield Golf Course, Mayfield, Ontario
Geranium

Sample Location			Mayfield Golf Course	Mayfield Golf Course	Mayfield Golf Course
Sample Date			29-Jul-22	29-Jul-22	29-Jul-22
Sample ID			22-2	22-6	SW-1
Sampling Company			GEMTEC	GEMTEC	GEMTEC
Laboratory			BV	BV	BV
Laboratory Work Order			C2L4004	C2L4004	C2L4004
Laboratory Sample ID			THU826	THU827	THU828
Sample Type	Units	PWQO			
General Chemistry					
Biochemical Oxygen Demand	mg/L	n/v	6	<2	<2
Cyanide	mg/L	n/v	<0.0050	<0.0050	<0.0050
Dissolved Chloride	mg/L	n/v	27	2.8	59
pH, lab	S.U.	6.5-8.5	8.20	8.08	8.33
Phenols-4AAP	mg/L	0.001	**0.0014**	<0.0010	<0.0010
Total Kjeldahl Nitrogen	mg/L	n/v	0.83	0.41	0.41
Total Suspended Solids	mg/L	n/v	24	<10	<10
Turbidity	NTU	n/v	15	3.6	3.7
Total Metals					
Arsenic	µg/L	100	3.3	5.7	4.6
Cadmium	µg/L	0.2	<0.090	<0.090	<0.090
Chromium	µg/L	n/v	<5.0	<5.0	<5.0
Copper	µg/L	5	0.93	1.0	1.5
Lead	µg/L	5	<0.50	<0.50	<0.50
Manganese	µg/L	n/v	46	130	160
Mercury	mg/L	0.0002	<0.00010	<0.00010	-
Nickel	µg/L	25	1.3	1.1	1.3
Phosphorus	µg/L	30	**<100**	**<100**	**<100**
Selenium	µg/L	100	<2.0	<2.0	<2.0
Silver	µg/L	0.1	<0.090	<0.090	<0.090
Zinc	µg/L	30	<5.0	<5.0	<5.0
Dissolved Metals					
Antimony	µg/L	20	<0.50	<0.50	-
Arsenic	µg/L	100	1.9	4.0	-
Barium	µg/L	n/v	150	58	-
Beryllium	µg/L	11	<0.40	<0.40	-
Boron	µg/L	200	96	190	-
Cadmium	µg/L	0.2	<0.090	<0.090	-
Chromium	µg/L	n/v	<5.0	<5.0	-
Cobalt	µg/L	0.9	<0.50	0.67	-
Copper	µg/L	5	<0.90	3.7	-
Lead	µg/L	5	<0.50	<0.50	-
Mercury	mg/L	0.0002	-	-	<0.00010
Molybdenum	µg/L	40	10	4.8	-
Nickel	µg/L	25	<1.0	1.2	-
Phosphorus	µg/L	30	**<100**	**<100**	**-**
Selenium	µg/L	100	<2.0	<2.0	-
Silver	µg/L	0.1	<0.090	<0.090	-
Sodium	µg/L	n/v	28,000	78,000	-
Thallium	µg/L	0.3	<0.050	<0.050	-
Uranium	µg/L	5	0.33	4.0	-
Vanadium	µg/L	6	<0.50	1.4	-
Zinc	µg/L	30	<5.0	<5.0	-
Microbiological Analysis					
Escherichia coli (E.Coli)	cfu/100mL	100	<10	<10	**470**
Polychlorinated Biphenyls					
Polychlorinated Biphenyls (PCBs)	µg/L	0.001	**<0.05**	**<0.05**	**<0.05**
Semi-Volatile Organic Compounds					
Bis(2-Ethylhexyl)phthalate (DEHP)	µg/L	0.6	**<2.0**	**<2.0**	**<2.0**
Di-N-butyl Phthalate (DBP)	µg/L	4	**6.7**	<2.0	<2.0

Table F.1
Summary of Groundwater Quality Analytical Results
Mayfield Golf Course, Mayfield, Ontario
Geranium

Sample Location			Mayfield Golf Course	Mayfield Golf Course	Mayfield Golf Course
Sample Date			29-Jul-22	29-Jul-22	29-Jul-22
Sample ID			22-2	22-6	SW-1
Sampling Company			GEMTEC	GEMTEC	GEMTEC
Laboratory			BV	BV	BV
Laboratory Work Order			C2L4004	C2L4004	C2L4004
Laboratory Sample ID			THU826	THU827	THU828
Sample Type	Units	PWQO			
Volatile Organic Compounds					
Benzene	µg/L	100	<0.20	<0.20	<0.20
Chloroform (Trichloromethane)	µg/L	n/v	<0.20	<0.20	<0.20
Dichlorobenzene, 1,2-	µg/L	2.5	<0.40	<0.40	<0.40
Dichlorobenzene, 1,4-	µg/L	4	<0.40	<0.40	<0.40
Dichloroethylene, cis-1,2-	µg/L	200	<0.50	<0.50	<0.50
Dichloropropene, trans-1,3-	µg/L	7	<0.40	<0.40	<0.40
Ethylbenzene	µg/L	8	<0.20	<0.20	<0.20
Methylene Chloride (Dichloromethane)	µg/L	100	<2.0	<2.0	<2.0
Tetrachloroethane, 1,1,2,2-	µg/L	70	<0.40	<0.40	<0.40
Tetrachloroethylene (PCE)	µg/L	50	<0.20	<0.20	<0.20
Toluene	µg/L	0.8	<0.20	<0.20	<0.20
Trichloroethylene (TCE)	µg/L	20	<0.20	<0.20	<0.20
Xylene, p+m-	µg/L	2	<0.20	<0.20	<0.20
Xylene, o-	µg/L	40	<0.20	<0.20	<0.20
Xylenes, Total	µg/L	n/v	<0.20	<0.20	<0.20

Notes:

PWQO	Ontario Provincial Water Quality Objectives
6.5	Concentration exceeds the indicated standard.
15.2	Measured concentration did not exceed the indicated standard.
<0.50	Laboratory reporting limit was greater than the applicable standard.
<0.03	Analyte was not detected at a concentration greater than the laboratory reporting limit.
n/v	No standard/guideline value.
-	Parameter not analyzed / not available.
MI	Detection limit was raised due to matrix interferences.

experience • knowledge • integrity

civil	civil
geotechnical	géotechnique
environmental	environnement
structural	structures
field services	surveillance de chantier
materials testing	service de laboratoire des matériaux

expérience • connaissance • intégrité