GEMS®

Groundwater Environmental Management Services

Geotechnical Investigation Report

107 Ridge Road

Aurora, Ontario

Project No. 25-0102

March 24, 2025

Prepared For:
2693642 Ontario Inc.
693642 Ontario Inc.
204-1206 Centre Street
Vaughan, ON, L4J 3M9

Prepared By:
Groundwater Environmental Management Services Inc.
150 Rivermede Road, Unit 9
Concord, ON, L4K 3M8

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1.0 Introduction and Background

Groundwater Environmental Management Services Inc. (GEMS) has been retained by 2693642 Ontario Inc. to carry out a geotechnical investigation for the proposed residential development located at 107 Ridge Road, Aurora, Ontario. Authorization to proceed with this study was given by Andrew Unger of 2693642 Ontario Inc.

The architectural site and concept drawings and site grading plans provided for our review (attached as Appendix D) reveal that it is proposed to develop the north and east sections of the site with five detached, two storey, with basement residential buildings. The site will be upfilled to match the grade on Glensteeple Trail to the east.

The purpose of this investigation was to characterize the underlying soil and groundwater conditions, to determine the relevant geotechnical properties of encountered soils and to provide recommendations for the proposed development.

This report presents the results of the investigation carried out in accordance with the general terms of reference outlined above and is intended for the guidance of the owner and design architects and engineers only. It is assumed that the design will be in accordance with the applicable building codes and standards.

2.0 Fieldwork

The fieldwork for this study was carried out on February 6, 2025. It consisted of four (4) boreholes advanced by a drilling contractor commissioned by GEMS utilizing conventional drilling techniques. The boreholes are designated as MW1, MW2, BH3, and MW4 and were advanced to depths ranging from 4.5 to 10.6 m below ground surface (mbg).

The locations of the boreholes are shown on Figure 1 ‘Borehole Location Plan’ in Appendix A.

Standard penetration tests were carried out in the course of advancing the boreholes to take representative soil samples and to measure penetration index values (N-values) to characterize the condition of the various soil materials. The number of blows of the striking hammer required to drive the split spoon sampler through 300 mm depth increments was recorded and these are presented on the logs in Appendix B as penetration index values.

The ground surface elevations at the locations of the boreholes were established utilizing a TopCon HiPer V GNSS Receiver.

The fieldwork for this project was carried out under the supervision of an experienced technician from this office who laid out the positions of the boreholes in the field; arranged locates of buried services; effected the drilling, sampling and in situ testing; observed groundwater conditions; and prepared field borehole log sheets.

3.0 Laboratory Tests

The soil samples recovered from the split spoon sampler were properly sealed, labelled and brought to our laboratory for detailed examination. They were visually classified and water content tests were conducted on all samples retained from Boreholes MW1, MW2 and BH3. The results of the classification and water content tests are presented on the borehole log sheets in Appendix B.

Grain-size analyses were carried out on three (3) soil samples. The results of these tests are enclosed in Appendix C of this report.

Two (2) native soil samples were submitted to AGAT Laboratories for determination of pH and sulphate content to determine potential for sulphate attack on buried concrete. The results of these tests are enclosed in Appendix E; discussed in Section 5.12 of this report.

4.0 Site and Subsurface Conditions

Full details of the subsurface soil and groundwater conditions at the site are given on the Borehole Log Sheets attached in Appendix B of this report.

The following paragraphs present a description of the site and a commentary on the engineering properties of the various soil materials contacted in the boreholes.

It should be noted that the boundaries of soil types indicated on the borehole logs are inferred from non-continuous soil sampling and observations made during drilling. These boundaries are intended to reflect transition zones for the purpose of geotechnical design, and therefore, should not be construed as exact planes of geological change.

4.1 Site Description

The site is situated on the southwest side of the intersection of Ridge Road and Glensteaple Trail and has an approximate area of 3,750 m^2. It is currently occupied by a single storey with basement and garage residential home. The property is services with an on-site septic sewer system.

The ground surface at the site is uneven with a general downward inclination from the southeast to the northwest corner of the site. Further discussion of the conditions of the slope is provided in Section 6.0 of the report.

The property is bounded by Ridge Road to the north, Glensteeple Trail to the east, and residential homes to the south and west.

The ground surface elevations at the locations of the boreholes range between 279.35 and 280.1 m.

4.2 Surface Cover

The ground cover at Borehole MW 2 consists of asphaltic concrete. The thickness of the asphaltic concrete at the borehole location is 50 mm.

4.3 Fill Material

Fill material is present below the asphaltic concrete in Borehole MW 2 and at the surface in all remaining boreholes. It consists of predominately sandy silt with some organics and traces of clay and extends to depths ranging from 0.5 to 2.4 mbg. In Borehole MW4 clayey silt, with some sand and trace gravel fill, underlain by a layer of topsoil is present below the sandy silt fill.

The fill is dark brown and black in colour and moist in appearance. The water content of the samples of fill obtained from Boreholes MW1, MW2, and BH3 range from 7 to 27 % by weight. SPT in the fill provided N-values ranging from 3 to 24. The non-cohesive fill materials possess a loose to compact compactness condition and the cohesive fill materials possess a stiff consistency.

4.4 Native Soil

The native soil below the fill consists of silty fine sand with a trace of clay. All boreholes were terminated in the silty fine sand at a maximum depth of 11.2 mbg in Borehole BH3.

The silty fine sand is brown in colour and moist in appearance, becoming wet in borehole BH3 below a depth of 8.0 mbg. The water content of samples of silty fine sand obtained from Boreholes MW1, MW2, and BH3 range from 3% to 21% by weight.

SPT carried out in the silty fine sand provided N-values ranging from 3 to 71, indicating a very loose to very dense compactness condition: more typically being compact to dense.

Grain size analysis was carried out on three (3) samples of silty fine sand obtained from Boreholes MW1; Sample 4 at 2.5 m depth, BH3; Sample 2 at 0.6 m depth and BH3; Sample 7 at 4.7 m depth. The test results are enclosed in Appendix C as Figure 1 and are summarized in the table below

Borehole No.	Sample Depth (mbgs) and No.	Sample Description	Gravel %	Sand %	Silt %	Clay %
MW1	2.5 (sample 4)	Silty fine sand, trace clay	0	87.4	11.0	1.6
BH3	0.6 (sample 2)	Silty fine sand, trace clay	2.3	65.7	27.5	4.5
BH3	4.7 (sample 7)	Silty fine sand, trace clay	0	70.2	27.6	2.2

Based on the results of the grain size analysis, the Coefficient of Permeability (k) of the silty fine sand is estimated to be approximately 10^{-4} cm/sec, corresponding to a medium relative permeability.

4.5 Groundwater

Groundwater observations were made in the open boreholes during their advancement and on completion of drilling. All boreholes were dry and open upon completion of drilling except Borehole BH3 which was wet at 10.0 mbg immediately following termination of the borehole.

The native soil below a depth of about 8.5 mbg at Borehole BH3 was wet. Based on the laboratory water content test results, the stabilized groundwater table is anticipated to be situated below elevation 288 m. It should be noted that groundwater levels are subject to seasonal fluctuations.

5.0 Discussion and Recommendations

The following discussions and recommendations are based on the factual data obtained from the boreholes advanced at the site by GEMS and are intended for use by the client and design architects and engineers only.

The architectural and grading plans dated March 2025 provided for our review reveal that it is proposed to develop the north and east sections of the site with five residential dwellings with walk-out basements. It is proposed to raise the grade in front of the homes ranging from 1.5 to 4.0 meters while the backyards will see minor regrading.

Contractors bidding on this project or conducting work associated with this project should make their own interpretation of the factual data and/or carry out their own investigations.

5.1 Excavation

Based on the field results, excavations for the foundations are not expected to pose any unusual difficulty. Excavation of the soils at this site can be carried out with hydraulic excavators.

All excavations must be carried out in accordance with the Occupational Health and Safety Act (OHSA). With respect to the OHSA, the fill materials and underlying native soils situated above the groundwater table are expected to conform to Type 3 soils. Soils situated below the groundwater table are considered Type 4 soil.

Temporary excavation sidewalls in Type 3 soils should not exceed 1.0 horizontal to 1.0 vertical. Side slopes of excavations extended into Type 4 soil should not be any steeper than 3.0 horizontal to 1.0 vertical.

In the event very loose and/or soft soils are encountered at shallow depths or within zones of persistent seepage, it will be necessary to flatten the side slopes to achieve stable conditions.

For excavations through multiple soil types, the side slope geometry is governed by the soil with the highest number designation. Excavation side-slopes should not be unduly left exposed to inclement weather.

Where workers must enter excavations extending deeper than 1.2 m below grade, the excavation sidewalls must be suitably sloped and/or braced in accordance with the Occupational Health and Safety Act and Regulations for Construction Projects.

5.2 Groundwater Control

Based on observations made during drilling of the boreholes, and close examination of the soil samples extracted from the boreholes, significant groundwater seepage is not expected within the proposed excavation for foundations and basements.

Any groundwater that may seep into excavations is expected to be minimal and it will be possible to maintain the excavations functionally free of water by means of sump pumps situated at the base of excavations. Surface water should be directed away from open excavations.

5.3 Reuse of On-Site Excavated Soil

On-site excavated inorganic soils, and soils free of construction debris and other deleterious materials are considered suitable for reuse as backfill provided their water content is within 2% of their optimum water contents (OWC) as determined by Standard Proctor test, and the materials are effectively compacted with a heavy compactor.

While the quality of the on-site soils is considered suitable for backfilling; the moisture content of the soils and the lift thickness for compaction must be properly controlled during backfilling. Measured water content of the fill and native soils within the proposed excavation depth range from approximately 3 to 21%. Most of these water contents are at or slightly below the OWC of the material.

On-site soils that are wetter than their OWC should be dried sufficiently prior to use as fill to achieve the specified degree of compaction. Soils that are below their OWC should have water introduced.

5.4 Foundation Design

The architectural site and concept drawings provided for our review reveal that it is proposed to develop the north and east sections of the site with five residential houses with basements.

Conventional spread and wall footings may be used to support the proposed buildings.

The boreholes advanced at the site reveal that fill material extending to depths ranging from 0.7 to 2.4 m is present at the site.

Spread and strip footings founded on the native soil situated at or below the elevations specified at the locations of the boreholes in the following table may be used to support the proposed building, designed based on a bearing resistance of 200 kPa at Serviceability Limit States (SLS), and factored geotechnical bearing resistance at Ultimate Limit States (ULS) of 300 kPa.

Borehole Number	Minimum Underside of Footing Depth (MASL)
MW1	293.2
MW2	292.0
BH3	294.5

Borehole Number	Minimum Underside of Footing Depth (MASL)
MW4	295.0

Alternatively, all the existing fill materials and loose native soils can be removed and replaced with engineered fill, and the footings founded on the engineered fill. Spread and strip footings founded on engineered fill may be designed based on a bearing resistance of 150 kPa at SLS and 225 kPa at ULS.

The total and differential settlements of spread footing foundations designed in accordance with the recommendations provided in this report should not exceed the conventional limits of 25 mm and 19 mm respectively. Typical footing dimensions for these applications include a minimum strip footing width of 500 mm and an isolated column footing dimension of not less than 900 mm.

Due to variations in the consistency of the founding soils and/or loosening caused by excavating disturbance and/or seasonal frost effects, all footing subgrade must be evaluated by the Geotechnical Engineer prior to placing formwork and foundation concrete to ensure that the soil exposed at the excavation base is consistent with the design geotechnical bearing resistance.

In the event necessary, stepping of the footings at different elevations should be carried out at an angle no steeper than 2 horizontal (clear horizontal distance between footings) to 1 vertical (difference in elevation) and no individual footing step should be greater than 0.45 m.

Rainwater or groundwater seepage entering the foundation excavations must be pumped away (not allowed to pond). The foundation subgrade soils should be protected from freezing, inundation, and equipment traffic always. If unstable subgrade conditions develop, GEMS should be contacted to assess the conditions and make appropriate recommendations.

All exterior footings and footings in unheated areas should be provided by at least 1.2 m of soil cover or equivalent artificial thermal insulation for frost protection purposes. If construction proceeds during freezing weather conditions, adequate temporary frost protection for the footing bases and concrete must be provided.

5.5 Basement Floors

It is anticipated that the subgrade below the basement floors will consist of undisturbed silty fine sand or engineered fill. These soils are suitable for slab-on-grade construction.

Subgrade preparation should include the removal of any organic materials, construction debris, and loose or weak soils. After removal of all unsuitable materials, the subgrade should then be inspected by the Geotechnical Engineer. Any soft/loose or unsuitable subgrade areas identified during the inspection should be sub-excavated and replaced with suitable engineered fill material compacted to at least 98% of Standard Proctor Maximum Dry Density (SPMDD).

It is recommended that a combined moisture barrier and a levelling course, having a minimum thickness of 100 mm and comprised of free draining clear stone be provided as a base for the floor slab.

The basements of the proposed buildings must be provided with perimeter drainage. The basement wall backfill for a minimum lateral distance of 0.6 m out from the wall should consist of freely draining material

such as Granular 'B' Type I or provided with suitable alternative drainage cellular media, such as Terradrain 600 or equivalent, placed continuously against the exterior side of the exterior walls of the basement.

The perimeter drains must be connected to a positive frost-free outlet from which the water can be removed or connected to a sump located in the basement. The water from the sump must be pumped out to a suitable discharge point.

The installation of the perimeter drains as well as the outlet must conform to the applicable plumbing code requirements.

The soils at this site are susceptible to frost effects which would have the potential to deform hard landscaping adjacent to the buildings. At locations where proposed buildings are expected to have flush entrances, care must be taken in detailing the exterior slabs / sidewalks, providing insulation / drainage / non-frost susceptible backfill to maintain the flush threshold during freezing weather conditions.

5.6 Settlement, Site Grading, and Slopes

The findings from the boreholes reveal that areas of very loose to loose fill and native soils exist at the site extending to a depth of 3.8 mbg. Accordingly, consideration must be given to potential settlement of the loose soils which may occur due to grade raise (filling).

The site grading plans provided reveal that it is proposed to raise the grade along the north and east property lines to match Glensteeple Trail, resulting in a grade raise ranging from 1 to 4 meters. The grade change in the backyards of the lots will be minor.

Any slopes created on site should not exceed an inclination of 3 horizontal to 1 vertical.

5.7 Engineered Fill

The following recommendations regarding construction of engineered fill should be adhered to during the construction stage:

- All in-situ fill, loose soils, surface softened, and disturbed native soils must be removed, and the exposed subgrade soils proof-rolled with an inspection by the Geotechnical Engineer prior to any fill placement.
- Engineered fill operations should be monitored and compaction tests should be performed on a full-time basis by a qualified engineering technician supervised by the project engineer.
- Soils used as engineered fill should be free of organics and/or other unsuitable material. The engineered fill must be placed in lifts not exceeding 200 mm in thickness and compacted to at least 98% SPMDD.
- The engineered fill operation should take place in favorable climatic conditions. If the work is carried out in months where freezing temperatures may occur, all frost affected material must be removed prior to the placement of frost-free fill.
- If fill is required adjacent to a slope (>3:1 horizontal to vertical), it is imperative that the fill Is placed in stepped planes in order to avoid a plane weakness
- The engineered fill should be placed at least 0.6m above the elevation of the proposed underside of footing.
- The boundaries of the engineered fill must be clearly and accurately laid out in the field by qualified surveyors prior to the commencement of engineered fill construction. The top of the engineered fill should extend a minimum of 2.5 m beyond the building envelope. Where the

depth of engineered fill exceeds 1.5 m, this horizontal distance of 2.5 m beyond the perimeter of the building should be increased by at least 1.0 m for each 1.0 m depth of fill. The edges of the engineered fill should be sloped at a maximum of 3H:1V in order to avoid weakening of the engineered fill edges due to slope movement.

- When engineered fill is left over the winter, a minimum of 1.2 m of earth cover must be provided as frost protection.

The footing and underground services subgrade must be inspected by the Geotechnical Engineer that supervised the engineered fill construction. This is to ensure that the foundations are placed within the engineered fill envelope, and the integrity of the fill has not been compromised by interim construction, environmental degradation and/or disturbance by the footing excavation. Extended footings and/or steel reinforcement may be required based on the footing inspection.

5.8 Service Trenches

Based on the site grades, sewer pipes and water mains will probably be supported on engineered fill, or undisturbed native soil which are considered suitable for supporting water mains, sewer pipes, manholes, catch basins and other related structures.

The type of bedding depends mainly on the strength of the subgrade immediately below the invert levels.

Normal Class 'B' bedding is recommended for underground utilities. Granular 'A' or 19 mm crusher-run limestone can be used as bedding material; all granular materials should meet OPS 1010 specifications. The bedding material should be compacted to a minimum of 95% SPMDD. Trenches dug for these purposes should not be unduly left exposed to inclement weather.

Pipe bedding and backfill for flexible pipes should be undertaken in accordance with OPSD 802.010. Pipe embedment and cover for rigid pipes should be undertaken in accordance with OPSD 802.030.

If unsuitable bedding conditions occur, careful preparation and strengthening of the trench bases prior to sewer installation will be required. The subgrade may be strengthened by placing a thick mat consisting of 50 mm crusher-run limestone. Field conditions will determine the depth of stone required. Geotextiles and/or geogrids may be helpful and these options should be reviewed by GEMS on a case by case basis.

Sand cover material should be placed as backfill to at least 300 mm above the top of pipes. Placement of additional granular material (thickness dictated by the type of compaction equipment) as required or use of smaller compaction equipment for the first few lifts of native material above the pipe will probably be necessary to prevent damage to the pipe during the trench backfill compaction.

It is recommended that service trenches be backfilled with on-site native soils compacted to 98% SPMDD. Lift thicknesses should not exceed 200 mm in a loose state and the excavated site material should be compacted using heavy, vibratory rollers.

In areas of narrow trenches or confined spaces such as around manholes, catch basins, etc., imported sand or OPSS Granular 'B' should be used and compacted to the specified SPMDD.

5.9 Lateral Earth Pressure

Parameters used in the determination of earth pressure acting on structures subject to unbalanced pressures are defined below.

Table 1. Soil Parameters

Parameter	Definition	Units
Φ'	Angle of internal friction	Degrees
γ	Bulk unit weight of soil	kN/m^3
Ka	Active earth pressure coefficient (Rankine)	Dimensionless
Ko	At-rest earth pressure coefficient (Rankine)	Dimensionless
Kp	Passive earth pressure coefficient (Rankine)	Dimensionless

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

Table 2. Soil Parameter Values

Soil Description	**Φ'**	**γ**	Ka	Kp	Ko
Fill Material	28°	19.0	0.36	2.77	0.53
Compact Silty fine Sand	31°	20.0	0.32	3.12	0.48

Notes:

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

$P = K (\gamma h + q)$

where P = lateral pressure in kPa acting at a depth h (m) below ground surface

K = applicable lateral earth pressure coefficient (Use Ko for basement wall design)

γ = bulk unit weight of backfill (kN/m^3)

h = height at any point along the interface (m)

q = the complete surcharge loading (kPa)

This equation assumes that free-draining backfill and positive drainage are provided behind the basement walls.

Resistance to sliding of earth retaining structures is developed by friction between the base of the footing and the soil. This friction (R) depends on the normal load on the soil contact (N) and the frictional resistance of the soil (tan Φ') expressed as: R = N tan Φ'. This is an ultimate resistance value and does not contain a factor of safety.

5.10 Pavement Design

Based on the existing topography of the site and the data collected during the field investigation, it is anticipated that the sub-grade material for the pavement will generally consist of engineered fill or native materials.

The subgrade should be thoroughly proof-rolled and re-compacted to ensure uniformity in subgrade strength and support. Lift thicknesses should not exceed 200 mm in a loose state and the excavated site material should be compacted using heavy vibratory rollers. As an alternative, if suitable on-site native material is not available, the upper part of the subgrade could be improved by placing imported granular material.

If construction is carried out in inclement weather, there is a likelihood that some amount of road sub-base supplement will be required (i.e. some sub-excavation followed by granular replacement).

Given the frost susceptibility and drainage characteristics of the subgrade soils, the pavement design presented below is recommended.

Table 3. Minimum Asphaltic Concrete Pavement Structure Design

Pavement Layer	Compaction Requirements	Light Duty Asphalt
Surface Course Asphaltic Concrete	Per OPSS 310	50 mm Hot Laid HL3 (OPSS 1150)
Binder Course Asphaltic Concrete	Per OPSS 310	50 mm Hot Laid HL8 (OPSS 1150)
Granular Base	100% SPMDD	200 mm Granular 'A' (OPSS 1010) Pit Run or 19 mm Crusher Run Limestone

The subgrade must be compacted to at least 98% of SPMDD for at least the upper 600 mm and 95% below this level. The granular base and sub-base materials should be compacted to a minimum of 100% SPMDD.

The long-term performance of the proposed pavement structure is highly dependent upon the subgrade support conditions. Stringent construction control procedures should be maintained to ensure that uniform subgrade moisture and density conditions are achieved as much as practically possible when fill is placed and that the subgrade is not disturbed and weakened after it is exposed.

Additional comments on the construction of pavement areas are as follows:

- As part of the subgrade preparation, the proposed pavement areas should be stripped of vegetation, unsuitable earth fill and other obvious objectionable material. The subgrade should be properly shaped and sloped as required, and then proof-rolled. Loose/soft or spongy subgrade areas should be sub-excavated and replaced with suitable approved material compacted to at least 98% of SPMDD.

- Where new fill is needed to increase the grade or replace disturbed portions of the subgrade, excavated inorganic soils or similar clean imported fill materials may be used, provided their moisture content is maintained within 2% of the soil's optimum moisture content. All fill must be placed and compacted to not less than 98% of SPMDD.
- For fine-grained soils, as encountered at the site, the degree of compaction specification alone cannot ensure distress free subgrade. Proof-rolling must be carried out and witnessed by GEMS personnel for final recommendations of sub-base thicknesses.
- In the event that pavement construction takes place in the spring thaw, late fall, or following periods of significant rainfall, it should be anticipated that an increase in thickness of the granular sub-base layer will be required to compensate for reduced subgrade strength.

5.11 Earthquake Design Parameters

The Ontario Building Code (2024) stipulates the methodology for earthquake design analysis, as set out in Subsection 4.18.7. The determination of the type of analysis is predicated on the importance of the structure, the spectral response acceleration and the site classification.

The parameters for determination of the Site Classification for Seismic Site Response are set out in Table 4.1.8.4.B of the Ontario Building Code (2024). The classification is based on the determination of the average shear wave velocity in the top 30 meters of the site stratigraphy, where shear wave velocity (vs) measurements have been taken. In the absence of such measurements, the classification is estimated on the basis of empirical analysis of undrained shear strength or penetration resistance. The applicable penetration resistance is that which has been corrected to a rod energy efficiency of 60% of the theoretical maximum or the (N60) value.

Based on the borehole information, the subsurface stratigraphy generally comprises fill material, followed by generally compact to dense silty fine sand. Provided that the proposed building is founded on compact native soil or engineered fill, the site designation for seismic analysis is Class D.

The site specific 5% damped spectral acceleration coefficients, and the peak ground acceleration factors are provided in the 2024 Ontario Building Code - Supplementary Standard SB-1 , Seismic Design Data for Selected Locations in Ontario for Part 9 Design, Table 3, location Aurora, Ontario.

5.12 Chemical Characterization of Subsurface Soil

Two (2) native soil samples obtained from Boreholes MW1 (Sample 3, 1.5 m depth) and MW4 (Sample 4, 2.3 m depth) were submitted to Bureau Veritas for pH index test and water-soluble sulphate content to determine the potential of attacking the subsurface concrete. The Certificate of Analysis provided by the analytical chemical testing laboratory is contained in Appendix E of this report.

The test results revealed that the pH index of the soil samples is 8.15 and 8.07; indicating a slight alkalinity.

The water-soluble sulphate content of the tested samples is less than 0.00020% and 0.00041%. The concentration of water-soluble sulphate content of the tested samples is below the CSA Standard of 0.1% water-soluble sulphate (Table 12 of CSA A23.1, Requirements for Concrete Subjected to Sulphate Attack). Special concrete mixes against sulphate attack are therefore not required for the sub-surface concrete of the proposed building.

6.0 Limitations and Review of Final Design and Construction

GEMS has prepared this report for our client and its agents exclusively. GEMS accepts no responsibility for any damage that may be suffered by third parties as a result of decisions or actions based on this report.

The findings and conclusions are site-specific and were developed in a manner consistent with that level of care and skill normally exercised by professionals currently practicing under similar conditions in the area. The report should not be used after that without GEMS review/approval.

The project has been conducted according to our instructions and work program. Additional conditions, and limitations on our liability are set forth in our work program/contract. No warranty, expressed or implied, is made.

The conclusions and recommendations in this report are based on information determined at the inspection locations. Soil and groundwater conditions between and beyond the test holes by differ from those encountered at the test hole locations, and conclusions may become apparent during construction which could not be detected or anticipated at the time of the soil investigation.

The design recommendations given in this report are applicable to the project described in the text, and then only if constructed substantially in accordance with details of alignment and elevations stated in the report. Since all of the details of the design may not be known to us, in our analysis certain assumptions had to be made as set out in this report. The actual conditions may, however, vary from those assumed, in which case changes and modifications may be required to our recommendations.

We recommend that we be retained during the final design stage to review the design drawings and to verify that they are consistent with our recommendations or the assumptions made in our analysis. We recommend also that we be retained during construction to confirm that the subsurface conditions throughout the site do not deviate materially from those encountered in the test holes. In cases where these recommendations are not followed, the company's responsibility is limited to accurately interpreting the conditions encountered at the test hole locations.

The comments given in this report on potential construction problems and possible methods are intended for the guidance of the design engineers and architects, only. The number of inspection locations may not be sufficient to determine all the factors that may affect construction methods and costs. The contractors bidding on this project or undertaking construction should, therefore, make their own interpretation of the factual information presented and draw their own conclusions as to how the subsurface conditions may affect their work.

7.0 Closing

We trust this information will meet your current requirements. Please do not hesitate to contact the undersigned should you have any questions or require additional information.

Yours truly,

Groundwater Environmental Management Services Inc.

Prepared By:

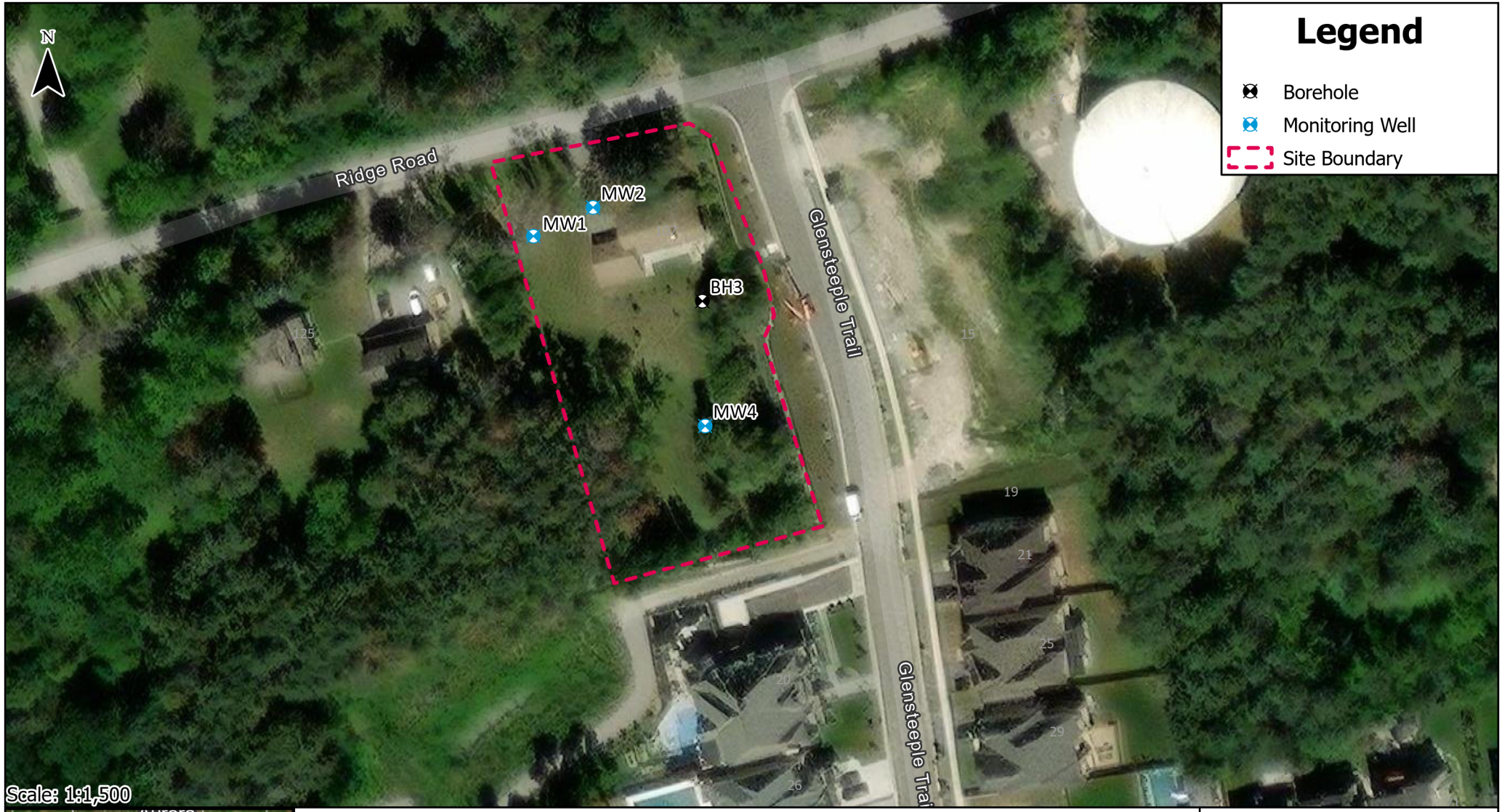
Alexander Dobrogost, P.Eng.
Geotechnical Project Manager

Reviewed By:

Vic Nersesian, P.Eng.
Principal Geotechnical Engineer

Appendix A

Figure 1 – Borehole Location Plan



Borehole Location Plan
107 Ridge Road, Aurora, ON

Client: 2693642 Ontario Inc.	Project # 25-0102	Created by: G.Hogan

Date Saved: 2025-02-11

Figure 1 of 1

GEMS
Groundwater Environmental Management Services

0 25 50 Meters

Maxar, Microsoft, Earthstar Geographics, Esri Canada

Appendix B

Borehole Log Sheets

CLIENT: JKO Planning | PROJECT NO.: 25-0102 | **BOREHOLE NO. : MW1**

PROJECT: 107 Ridge Road

LOCATION: Aurora, ON | NORTHING (m): 4869857.05 | EASTING (m): 623116.18 | ELEV. (m) 294.18

DRILLING CONTRACTOR: Drill Tech Drilling | BOREHOLE DIAMETER (cm): 15.24 | WELL DIAMETER (cm): 5.08

DRILLING METHOD: Solid Stem Auger with Split Spoon Sampling | TOTAL DEPTH OF BOREHOLE (m): 6.56

DEPTH (m)	SOIL DESCRIPTION	ELEVATION (m)	SAMPLE NO.	SAMPLE TYPE	SPT(N)	RECOVERY (%)
0	FILL compact, moist, brown and black sandy silt, trace clay, some organics	294	1A		16	
0.5	compact, moist, brown SANDY SILT	293.5	1B			
1		293	2		16	
1.5		292.5	3		21	
2		292				
2.5	compact	291.5	4		20	
3	------ dense	291	5		39	
3.5	moist, brown SILTY, fine SAND trace clay	290.5				
4		290				
4.5		289.5	7		49	
5		289				
5.5		288.5				
6		288	8		42	
6.5		287.5				
7	END OF BOREHOLE					

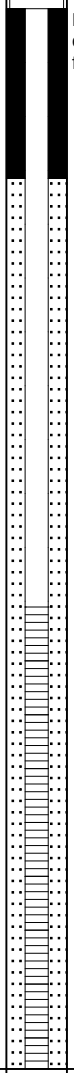
SHEAR STRENGTH ● (kPa) 40 80 120 160 | ▲ N-VALUE (Blows/300mm) 20 40 60 80

WATER CONTENT (%) PL W.C. LL 20 40 60 80

N-VALUE: 16, 16, 21, 20, 39, 49, 42

WATER CONTENT: PL 27, 10, 4, 4, 3, 3, 4, 15

WELL INSTALLATION NOTES



REMARKS: Borehole was dry and open immediately following drilling

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LOGGED BY: AC | DRILLING DATE: February 6, 2025

REVIEWED BY: KC | PAGE 1 OF 1

CLIENT: JKO Planning | PROJECT NO.: 25-0102 | **BOREHOLE NO. : MW2**

PROJECT: 107 Ridge Road

LOCATION: Aurora, ON | NORTHING (m): 4869863.43 | EASTING (m): 623128.45 | ELEV. (m) 296.00

DRILLING CONTRACTOR: Drill Tech Drilling | BOREHOLE DIAMETER (cm): 15.24 | WELL DIAMETER (cm): 5.08

DRILLING METHOD: Solid Stem Auger with Split Spoon | TOTAL DEPTH OF BOREHOLE (m): 5.03

DEPTH (m)	SOIL DESCRIPTION	ELEVATION (m)	SAMPLE NO.	SAMPLE TYPE	SPT(N)	RECOVERY (%)	REMARKS
0	ASPHALTIC CONCRETE 50 mm FILL, moist, brown, gravely sand	296	1A				Borehole was dry and open immediately following drilling
0.5		295.5	1B		50		
1	FILL very loose, moist, dark brown sandy silt, trace organics	295	2		4		
1.5		294.5					
2		294	3		3		
2.5	very loose	293.5	4		3		
3	------	293					
3.5	loose ------	292.5	5		5		
4	compact moist, brown SILTY, fine SAND trace clay	292	6		15		
4.5	------ dense	291.5					
5		291	7		32		
	END OF BOREHOLE						

SHEAR STRENGTH ● (kPa) 40 80 120 160 | ▲ N-VALUE (Blows/300mm) 20 40 60 80

WATER CONTENT (%) PL W.C. LL 20 40 60 80

WELL INSTALLATION NOTES

WELL SCHEMATIC

GEMS

LOGGED BY: AC | DRILLING DATE: February 6, 2025

REVIEWED BY: KC | PAGE 1 OF 1

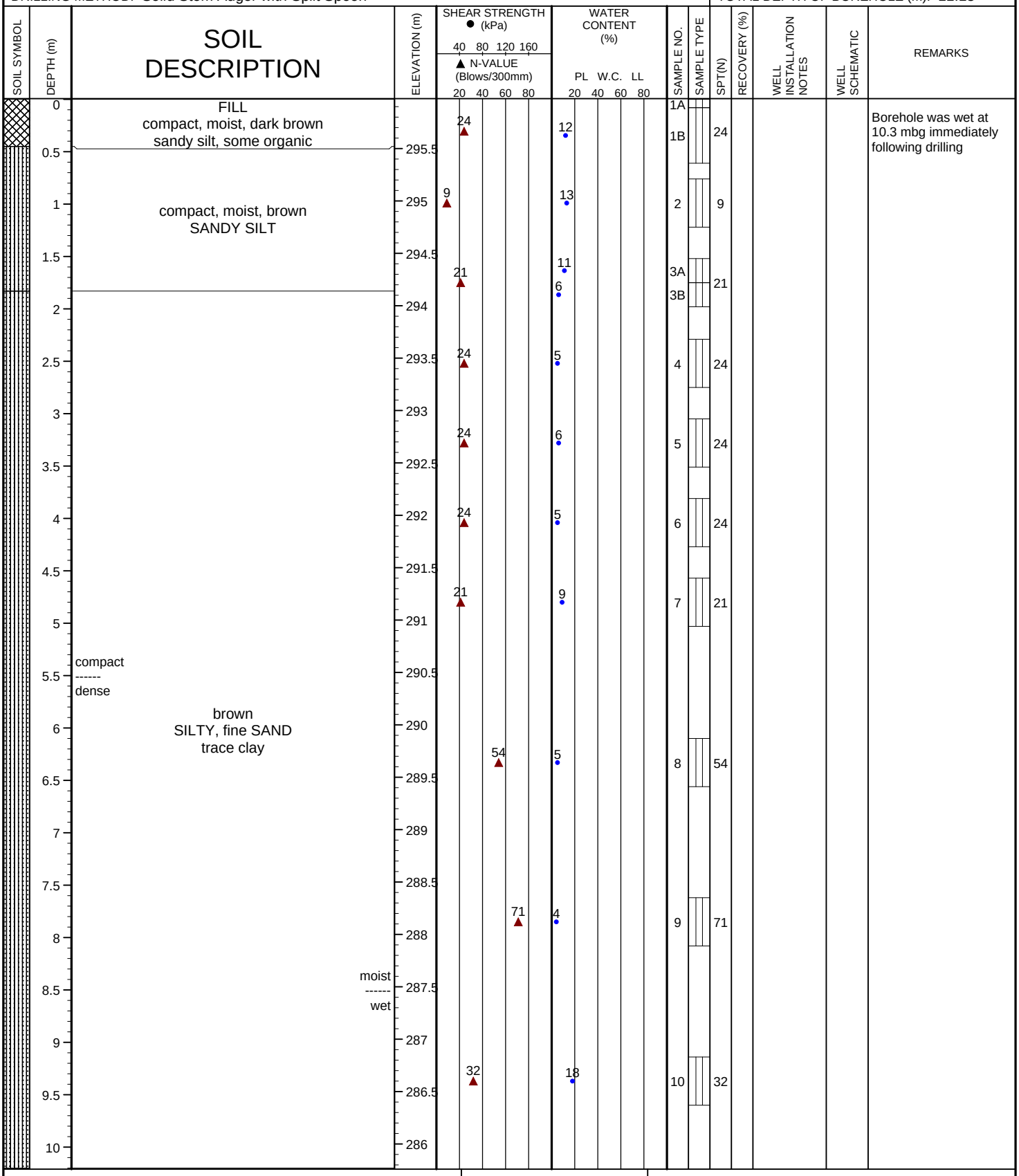
CLIENT: JKO Planning | PROJECT NO.: 25-0102 | **BOREHOLE NO. : BH3**

PROJECT: 107 Ridge Road

LOCATION: Aurora, ON | NORTHING (m): 4869845.91 | EASTING (m): 623149.41 | ELEV. (m) 295.97

DRILLING CONTRACTOR: Drill Tech Drilling | BOREHOLE DIAMETER (cm): 15.24 | WELL DIAMETER (cm): 5.08

DRILLING METHOD: Solid Stem Auger with Split Spoon | TOTAL DEPTH OF BOREHOLE (m): 11.13



GEMS

LOGGED BY: AC | DRILLING DATE: February 6, 2025

REVIEWED BY: KC | PAGE 1 OF 2

CLIENT: JKO Planning | PROJECT NO.: 25-0102 | **BOREHOLE NO. : BH3**

PROJECT: 107 Ridge Road

LOCATION: Aurora, ON | NORTHING (m): 4869845.91 | EASTING (m): 623149.41 | ELEV. (m) 295.97

DRILLING CONTRACTOR: Drill Tech Drilling | BOREHOLE DIAMETER (cm): 15.24 | WELL DIAMETER (cm): 5.08

DRILLING METHOD: Solid Stem Auger with Split Spoon | TOTAL DEPTH OF BOREHOLE (m): 11.13

SOIL SYMBOL	DEPTH (m)	SOIL DESCRIPTION	ELEVATION (m)	SHEAR STRENGTH ● (kPa) 40 80 120 160 / ▲ N-VALUE (Blows/300mm) 20 40 60 80	WATER CONTENT (%) PL W.C. LL 20 40 60 80	SAMPLE NO.	SAMPLE TYPE	SPT(N)	RECOVERY (%)	WELL INSTALLATION NOTES	WELL SCHEMATIC	REMARKS
	10.5	dense, wet, brown SILTY, fine SAND trace clay	285.5	▲ 20	● 21	11		20				
	11		285									
		END OF BOREHOLE										

GEMS

LOGGED BY: AC | DRILLING DATE: February 6, 2025

REVIEWED BY: KC |

CLIENT: JKO Planning | PROJECT NO.: 25-0102 | **BOREHOLE NO. : MW4**

PROJECT: 107 Ridge Road

LOCATION: Aurora, ON | NORTHING (m): 4869820.80 | EASTING (m): 623149.99 | ELEV. (m) 296.48

DRILLING CONTRACTOR: Drill Tech Drilling | BOREHOLE DIAMETER (cm): 15.24 | WELL DIAMETER (cm): 5.08

DRILLING METHOD: Solid Stem Auger with Split Spoon | TOTAL DEPTH OF BOREHOLE (m): 5.03

DEPTH (m)	SOIL DESCRIPTION	ELEVATION (m)	SHEAR STRENGTH ● (kPa) 40 80 120 160 / ▲ N-VALUE (Blows/300mm) 20 40 60 80	WATER CONTENT (%) PL W.C. LL 20 40 60 80	SAMPLE NO.	SAMPLE TYPE	SPT(N)	RECOVERY (%)	WELL INSTALLATION NOTES	WELL SCHEMATIC	REMARKS
0	FILL, loose, moist, dark brown sandy silt, some organics	296	13		1A						Borehole was dry and open immediately following drilling
0.5	FILL stiff, moist, dark brown clayey silt, some sand, trace gravel				1B		13				
1		295.5	13		2A		13				
	TOPSOIL				2B						
1.5		295									
2		294.5	20		3		20				
2.5		294	21		4		21				
3	compact, moist, brown SILTY, fine SAND trace clay	293.5									
3.5		293	30		5		30				
4		292.5	26		6		26				
4.5		292									
5		291.5	22		7		22				
	END OF BOREHOLE										

GEMS

LOGGED BY: AC | DRILLING DATE: February 6, 2025

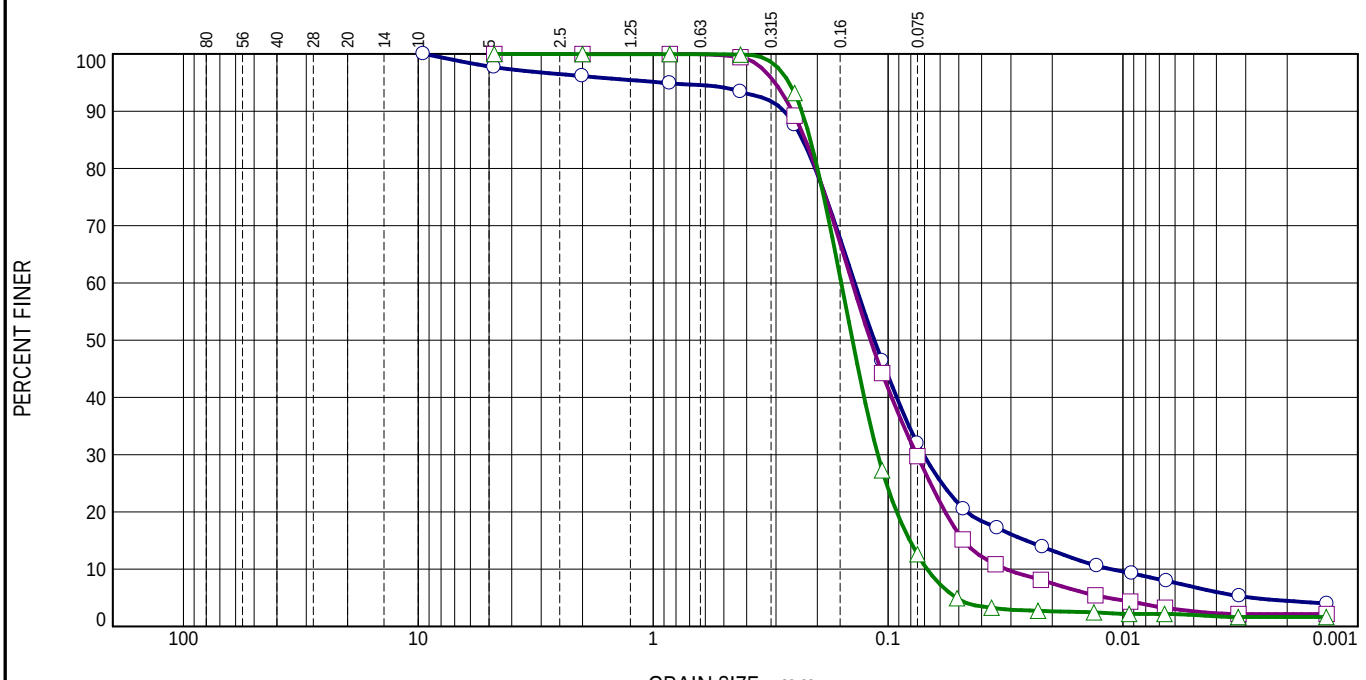
REVIEWED BY: KC | PAGE 1 OF 1

Appendix C

Geotechnical Laboratory Testing

Particle Size Distribution Report

ASTM D422



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	2.3	1.6	2.7	61.4	27.5	4.5
□	0.0	0.0	0.0	0.0	0.6	69.6	27.6	2.2
△	0.0	0.0	0.0	0.0	0.1	87.3	11.0	1.6

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.2311	0.1387	0.1144	0.0706	0.0258	0.0112	3.19	12.34
□			0.2251	0.1420	0.1188	0.0755	0.0477	0.0315	1.27	4.51
△			0.2142	0.1582	0.1418	0.1107	0.0807	0.0683	1.13	2.32

Material Description	USCS	AASHTO
○ Silty sand, trace clay, trace gravel □ Silty sand, trace clay △ Sand, some silt, trace clay		

Project No. 23-449-100 Client: GEMS Services Inc.

Project: 38 Brock Street West

○Source of Sample: 25-0102 Sample Number: VM-6387 (BH3/2)

□Source of Sample: 25-0102 Sample Number: VM-6387 (BH3/7)

△Source of Sample: 25-0102 Sample Number: VM-6387 (MW1/4)

Remarks:

○F.M.=0.61

□F.M.=0.42

△F.M.=0.47

DS CONSULTANTS LTD.

Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

CCIL

Figure

Tested By: Helen/Disha Checked By: Kirupa

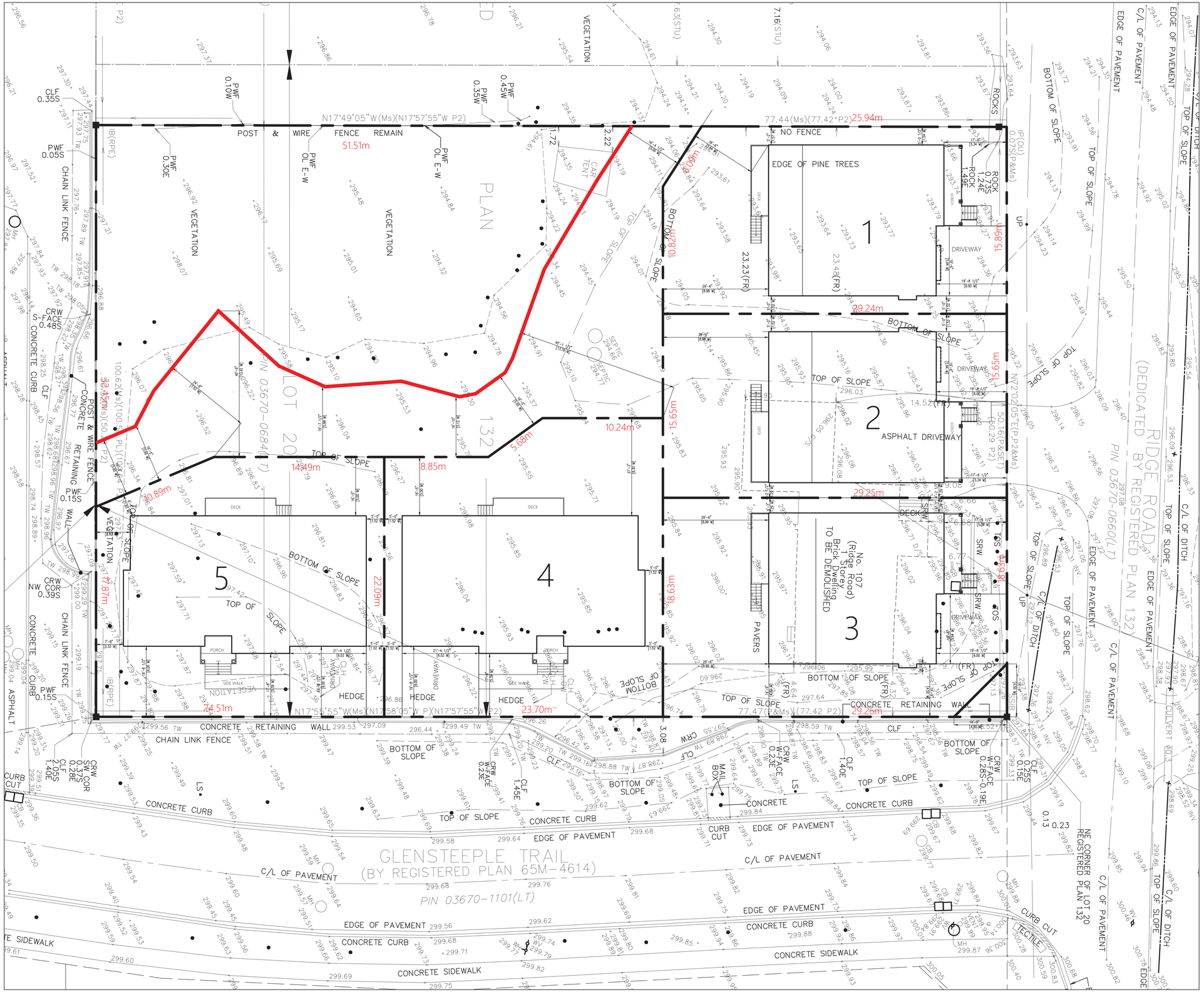
Appendix D

Draft Development Plans

SURVEYOR'S REAL PROPERTY REPORT
PART 1 - PLAN SHOWING
PART OF LOT 20
REGISTERED PLAN 132
GEOGRAPHIC TOWNSHIP OF KING
TOWN OF AURORA
REGIONAL MUNICIPALITY OF YORK

5 0 5 10 15 metres

GUIDO PARA SURVEYING



LOT AREA:

LOT 1:	456.71 sq.m.
LOT 2:	457.65 sq.m.
LOT 3:	534.86 sq.m.
LOT 4:	563.03sq.m.
LOT 5:	522.05 sq.m.

FOOTPRINT		LOT COVERAGE:
LOT 1: 2018.33 sq.ft.	187.50 sq.m.	41.05%
LOT 2: 2018.33sq.ft.	187.50 sq.m.	40.97%
LOT 3: 2018.33 sq.ft.	187.50 sq.m.	34.97%
LOT 4: 2488.55 sq.ft.	231.19 sq.m.	41.06%
LOT 5: 2488.55 sq.ft.	231.19 sq.m.	44.28%

GROSS FLOOR AREA:

LOT 1: 4072.20 sq.ft.	378.32 sq.m.
LOT 2: 4072.20sq.ft.	378.32 sq.m.
LOT 3: 4072.20 sq.ft.	378.32 sq.m.
LOT 4: 4105.00 sq.ft.	381.36 sq.m.
LOT 5: 4105.00 sq.ft.	381.36 sq.m.

NO.	ISSUE/REVISION	DATE

BATTAGLIA ARCHITECT INC.
Niousha Izadi
1050 McNicoll Ave. Unit14,Scarborough,Ontario,M1W2L8,416-492-7772

Project
PROPOSED SUBDIVISION
107 RIDGE RD.
AURORA, ON.

drawing
SITE PLAN

date: **MARCH / 11 / 2025**
scale: **1:150**
Drawn By: **NI**
project no.: **24-107**
drawing no.: **A1**

SURVEYOR'S REAL PROPERTY REPORT
PART 1 - PLAN SHOWING

PART OF LOT 20
REGISTERED PLAN 132

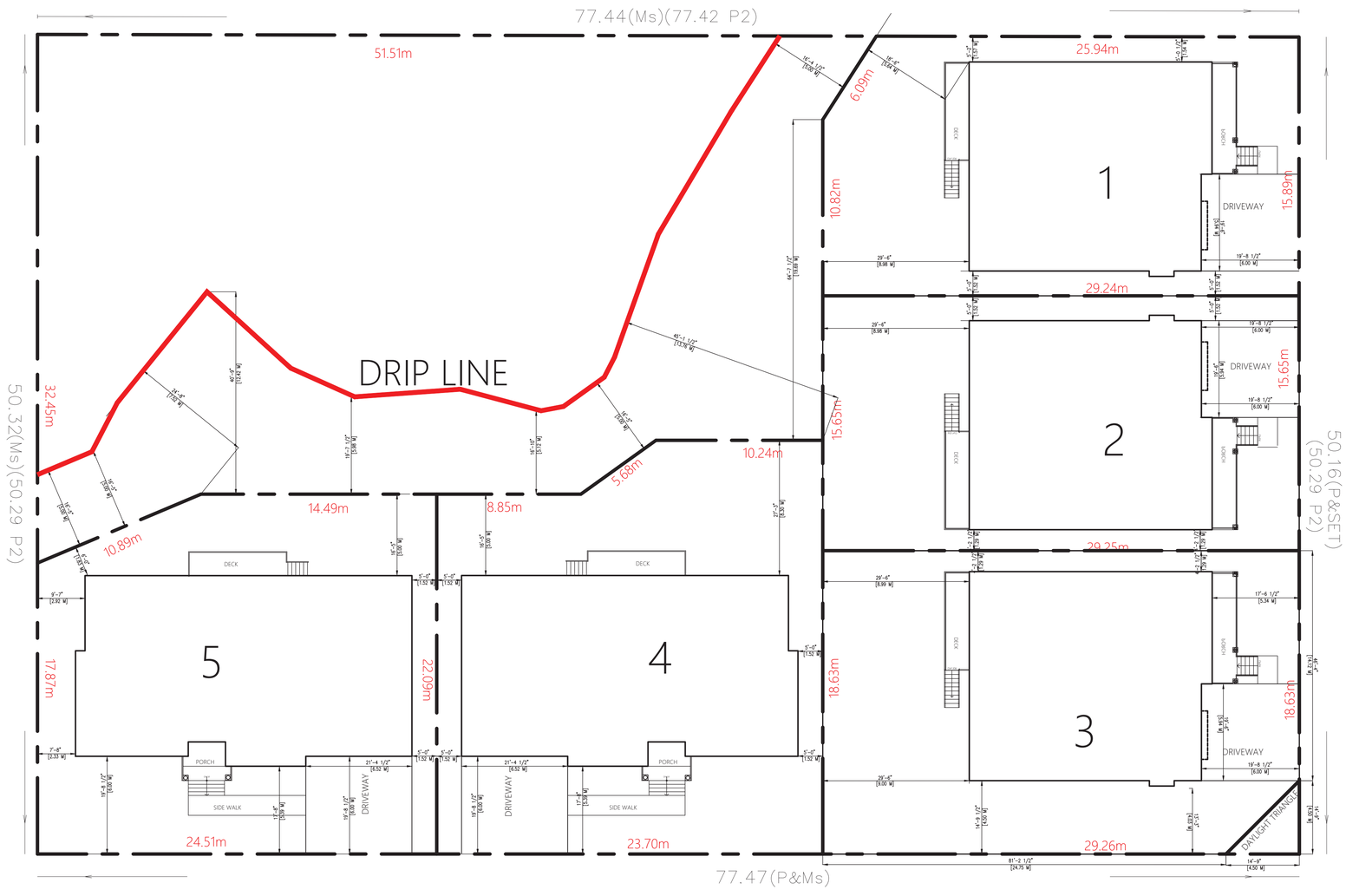
GEOGRAPHIC TOWNSHIP OF KING

TOWN OF AURORA

REGIONAL MUNICIPALITY OF YORK

5 0 5 10 15 metres

GUIDO PARA SURVEYING



LOT AREA:

LOT 1:	456.71 sq.m.
LOT 2:	457.65 sq.m.
LOT 3:	534.86 sq.m.
LOT 4:	563.03sq.m.
LOT 5:	522.05 sq.m.

FOOTPRINT		LOT COVERAGE:
LOT 1: 2018.33 sq.ft.	187.50 sq.m.	41.05%
LOT 2: 2018.33sq.ft.	187.50 sq.m.	40.97%
LOT 3: 2018.33 sq.ft.	187.50 sq.m.	34.97%
LOT 4: 2488.55 sq.ft.	231.19 sq.m.	41.06%
LOT 5: 2488.55 sq.ft.	231.19 sq.m.	44.28%

GROSS FLOOR AREA:

LOT 1: 4072.20 sq.ft.	378.32 sq.m.
LOT 2: 4072.20sq.ft.	378.32 sq.m.
LOT 3: 4072.20 sq.ft.	378.32 sq.m.
LOT 4: 4105.00 sq.ft.	381.36 sq.m.
LOT 5: 4105.00 sq.ft.	381.36 sq.m.

NO.	ISSUE/REVISION	DATE

BATTAGLIA ARCHITECT INC.
Niousha Izadi
1050 McNicoll Ave. Unit14,Scarborough,Ontario,M1W2J8,416-492-7772

Project
PROPOSED SUBDIVISION
107 RIDGE RD.
AURORA, ON.

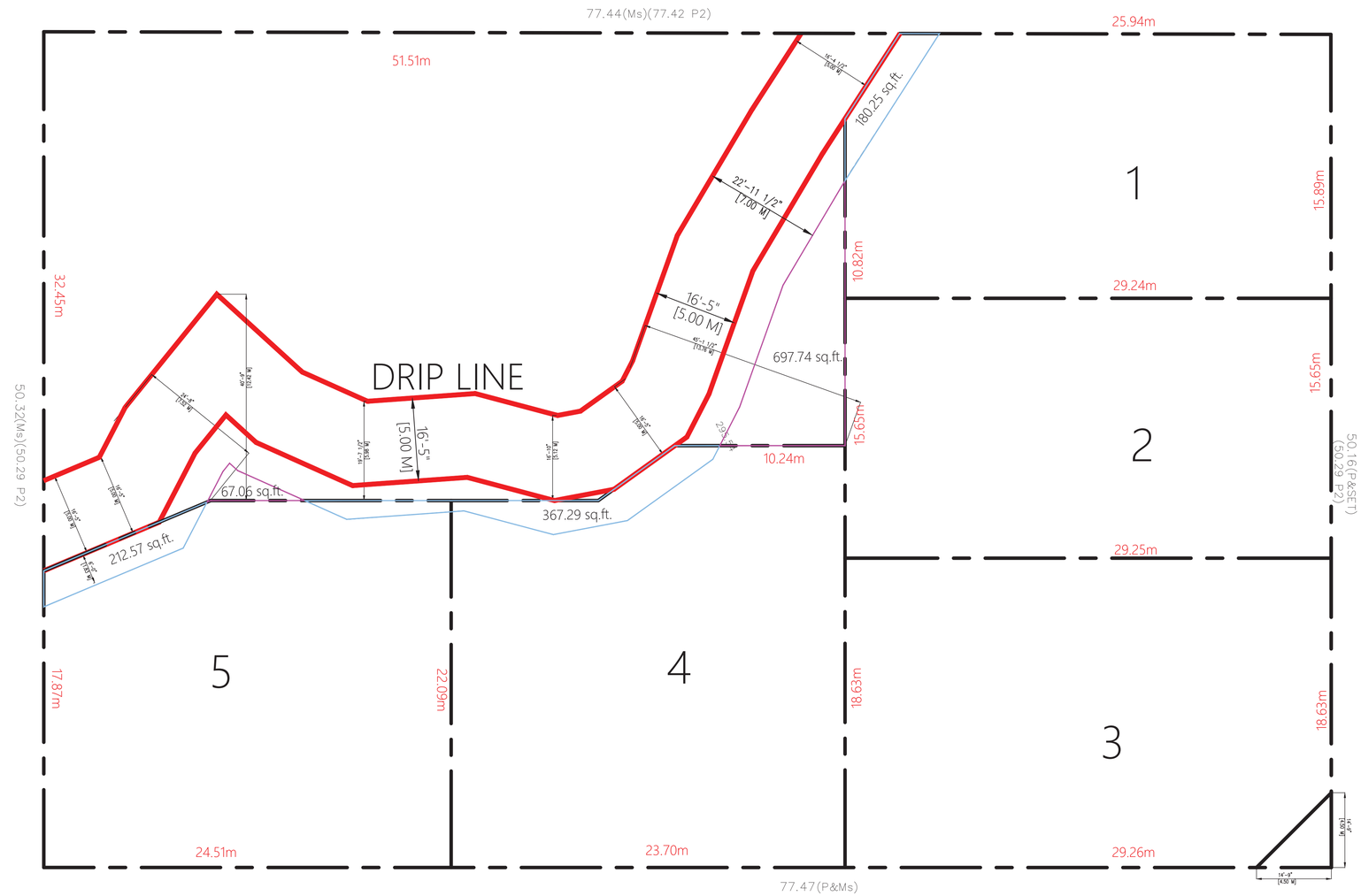
drawing
CONCEPT PLAN

date **MARCH / 11 / 2025**
scale **1:150**
Drawn By **NI**
project no. **24-107**
drawing no. **A2**

SURVEYOR'S REAL PROPERTY REPORT
PART 1 - PLAN SHOWING
PART OF LOT 20
REGISTERED PLAN 132
GEOGRAPHIC TOWNSHIP OF KING
TOWN OF AURORA
REGIONAL MUNICIPALITY OF YORK

5 0 5 10 15 metres

GUIDO PARA SURVEYING



RIDGE ROAD
(DEDICATED BY REGISTERED PLAN 132)
PIN 03670-0660(LT)

GLENSTEEPLE TRAIL
(BY REGISTERED PLAN 65M-4614)
PIN 03670-1101(LT)

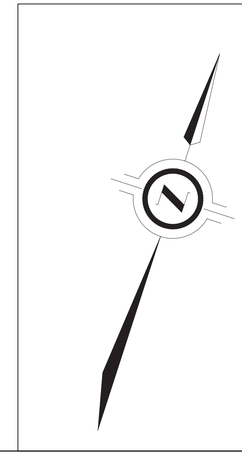
LOT AREA:

LOT 1:	456.71 sq.m.
LOT 2:	457.65 sq.m.
LOT 3:	534.86 sq.m.
LOT 4:	563.03sq.m.
LOT 5:	522.05 sq.m.

ENCROACHMENT TO 7 METER BUFFER:
760.11 sq.ft. 70.61 sq.m.

SET BACK MORE THAN 7 METER:
764.80sq.ft. 71.05sq.m.

5 Meter Width Buffer
From Drip Line



NO.	ISSUE/REVISION	DATE

BATTAGLIA ARCHITECT INC.
Niousha Izadi
1050 McNicoll Ave. Unit#4, Scarborough, Ontario, M1W2L8, 416-492-7772

Project
PROPOSED SUBDIVISION
107 RIDGE RD.
AURORA, ON.

drawing
BUFFER ENCROACHMENT CALCULATION

date	MARCH / 11 / 2025
scale	1:150
Drawn By	NI
project no.	24-107
drawing no.	A3

Appendix E

Chemical Laboratory Testing

Your Project #: 25-0102
Your C.O.C. #: C#998297-16-01

Attention: Alex Dobrogost

Groundwater Environmental Management Services Inc.
150 Rivermede Rd
Unit # 9
Concord, ON
CANADA L4K 3M8

Report Date: 2025/02/25
Report #: R8492880
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C518804
Received: 2025/02/21, 15:51

Sample Matrix: Soil
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
pH CaCl2 EXTRACT	2	2025/02/25	2025/02/25	CAM SOP-00413	EPA 9045 D m
Sulphate (20:1 Extract)	2	2025/02/25	2025/02/25	CAM SOP-00464	MOE E3013 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, EPA, APHA or the Quebec Ministry of Environment.

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. 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.

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.

Your Project #: 25-0102
Your C.O.C. #: C#998297-16-01

Attention: Alex Dobrogost

Groundwater Environmental Management Services Inc.
150 Rivermede Rd
Unit # 9
Concord, ON
CANADA L4K 3M8

Report Date: 2025/02/25
Report #: R8492880
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C518804
Received: 2025/02/21, 15:51

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
Jolanta Goralczyk, Project Manager
Email: Jolanta.Goralczyk@bureauveritas.com
Phone# (905)817-5751

==========

This report has been generated and distributed using a secure automated process.
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 Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

RESULTS OF ANALYSES OF SOIL

Bureau Veritas ID		AOGM65	AOGM66		AOGM66		
Sampling Date		2025/02/06 12:00	2025/02/06 11:30		2025/02/06 11:30		
COC Number		C#998297-16-01	C#998297-16-01		C#998297-16-01		
	UNITS	MW1-3	MW4-4	QC Batch	MW4-4 Lab-Dup	RDL	QC Batch
Inorganics							
Available (CaCl2) pH	pH	8.15	8.07	9880555			
Soluble (20:1) Sulphate (SO4)	ug/g	ND	41	9880450	42	20	9880450

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

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

TEST SUMMARY

Bureau Veritas ID: AOGM65
Sample ID: MW1-3
Matrix: Soil

Collected: 2025/02/06
Shipped:
Received: 2025/02/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	9880555	2025/02/25	2025/02/25	Gurparteek KAUR
Sulphate (20:1 Extract)	SKAL/EC	9880450	2025/02/25	2025/02/25	Massarat Jan

Bureau Veritas ID: AOGM66
Sample ID: MW4-4
Matrix: Soil

Collected: 2025/02/06
Shipped:
Received: 2025/02/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	9880555	2025/02/25	2025/02/25	Gurparteek KAUR
Sulphate (20:1 Extract)	SKAL/EC	9880450	2025/02/25	2025/02/25	Massarat Jan

Bureau Veritas ID: AOGM66 Dup
Sample ID: MW4-4
Matrix: Soil

Collected: 2025/02/06
Shipped:
Received: 2025/02/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Sulphate (20:1 Extract)	SKAL/EC	9880450	2025/02/25	2025/02/25	Massarat Jan

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GENERAL COMMENTS

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

Package 1	2.3°C

Results relate only to the items tested.

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Bureau Veritas Job #: C518804
Report Date: 2025/02/25

Groundwater Environmental Management Services Inc.
Client Project #: 25-0102
Sampler Initials: AC

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9880450	MJ1	Matrix Spike [AOGM66-01]	Soluble (20:1) Sulphate (SO4)	2025/02/25		NC	%	70 - 130
9880450	MJ1	Spiked Blank	Soluble (20:1) Sulphate (SO4)	2025/02/25		92	%	70 - 130
9880450	MJ1	Method Blank	Soluble (20:1) Sulphate (SO4)	2025/02/25	ND, RDL=20		ug/g	
9880450	MJ1	RPD [AOGM66-01]	Soluble (20:1) Sulphate (SO4)	2025/02/25	0.80		%	35
9880555	GTK	Spiked Blank	Available (CaCl2) pH	2025/02/25		100	%	97 - 103
9880555	GTK	RPD	Available (CaCl2) pH	2025/02/25	0.022		%	N/A

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.

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.

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)

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VALIDATION SIGNATURE PAGE

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

Louise Harding, Scientific Specialist

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 Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

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

C518804
2025/02/21 15:51

Page 1 of 1

BUREAU VERITAS

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

NONT-2025-02-3632

Lab Only:
Bottle Order #: 998297
COC #: C#998297-16-01
Project Manager: Jolanta Goralczyk

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#24874 Groundwater Environmental Management Ser	Company Name:		Quotation #:	~~Q85357~~
Attention:	Accounts Payable	Attention:	~~Logan Mcnabb~~ Alex Dobregost	P.O. #:	
Address:	150 Rivermede Rd Unit # 9	Address:	Alex.Dobregost@GemServices Inc.Com	Project:	25-0102
	Concord ON L4K 3M8			Project Name:	
Tel:	(905) 907-3077 Fax: (905) 907-6617	Tel:	~~(416) 697-3954~~ Fax:	Site #:	
Email:	Accounts.Payable@gemservicesinc.com	Email:	~~logan.mcnabb@gemservicesinc.com;labresults@gems~~	Sampled By:	AC

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)
- ☐ Table 1 ☐ Res/Park ☐ Medium/Fine
- ☐ Table 2 ☐ Ind/Comm ☐ Coarse
- ☐ Table 3 ☐ Agri/Other ☐ For RSC
- ☐ Table ___

Other Regulations
- ☐ CCME ☐ Sanitary Sewer Bylaw
- ☐ Reg 558 ☐ Storm Sewer Bylaw
- ☐ MISA Municipality ___
- ☐ PWQO ☐ Reg 406 Table ___
- ☐ Other Greatschaim1

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	RCAp - Comprehensive (Lab Filtered)	Total Metals Analysis by ICPMS	Turbidity	Total Coliforms, (CFU/100mL)	Total Phosphorus (Colourimetric)	pH / SO_4	# of Bottles	Comments
1		MW1-3	2025/02/06	12:00	Soil						X	1	
2		MW4-4	2025/02/06	11:30	Soil						X	1	
3													
4													
5													
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Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☐
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests..
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: Feb 26 Time Required: 5:00 pm ✓
Rush Confirmation Number: ___ *(call lab for #)*

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Alex Dobregost	25/02/21	9:30 am		25/02/21	15:51	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal Present	Yes	No
	1 1 1 5	Intact	✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/COC-TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/CHAIN-CUSTODY-FORMS-COCS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

White: Bureau Veritas Yellow: Client

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