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Preliminary Geotechnical Investigation
Proposed Residential Development
120 Bond Street
Orillia, Ontario

GEMTEC Project: 103139.001(2)

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Submitted to:

Sullnet Holdings Inc.
16 Hopkins Steet
Thorold, Ontario
L2V 0E9

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Proposed Residential Development
120 Bond Street
Orillia, Ontario

October 31, 2025
GEMTEC Project: 103139.001(2)

experience • knowledge • integrity

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October 31, 2025 File: 103139.001(2) – Rev0

Sullnet Holdings Inc.
16 Hopkins Steet
Thorold, Ontario
L2V 0E9

Attention: Mike Sullivan

Re: Preliminary Geotechnical Investigation
Proposed Residential Development, 120 Bond Steet, Orillia, Ontario

Enclosed is our Preliminary Geotechnical Investigation Report for the proposed residential development in the City of Orillia, Ontario. The report herein is based on the scope of work summarized in our change order dated December 2, 2024. This report was prepared by Robert Nugent and Doug Chisholm, P.Eng., and reviewed by John Hagan, P.Eng.

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DC/JH/rn/af/tc

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1.0 INTRODUCTION

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) has been retained by Sullnet Holding Incorporated (Sullnet) to carry out a geotechnical site investigation to support the proposed residential development at 120 Bond Street in the City of Orillia, Ontario, herein referred to as the "Site".

The purpose of the 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 engineering comments and recommendations on the geotechnical design aspects of the project (building foundations, site servicing and pavement structure), including construction considerations that could influence design decisions. The recommendations contained herein should be considered preliminary in nature and will need to be reviewed and updated as the design of the project advances.

In addition, groundwater levels from monitoring wells (noted as MW24-1 through MW24-3) installed as a separate investigation adjacent to the Site were obtained during our investigation to support a potential hydrogeological investigation and subsequent reporting. Reference is made to "Preliminary Geotechnical Investigation, Proposed Residential Development, 116 Bond Street, Orillia, Ontario" prepared by GEMTEC, dated January 10, 2025. The monitoring wells are installed to depths ranging from 4.0 to 6.1 metres (m) below existing ground surface (bgs) (borehole/monitoring well logs are enclosed in Appendix C). The approximate locations of the monitoring wells are shown on the enclosed Borehole Location Plan (refer to Figure 1 in Appendix B).

2.0 PROJECT DESCRIPTION

2.1 Background

The development property is approximately 0.15 hectares located at 120 Bond Street in Orillia, Ontario, as shown on Figure 1 in Appendix B. Based on discussions with the project team, the layout of the site is still early in concept, however, the preliminary proposed plan is the residential development will comprise of 14 stacked townhouses with typical shallow foundations and municipal servicing connections.

2.2 Site Geology and Topography

A review of surficial geology maps of the area indicates that the site geology is comprised of fine textured glaciolacustrine deposits, consisting predominantly of silt and clay with minor sand and gravel. It is also noted that stone-poor sandy silt to silty sand textured till deposits are indicated to be within 100 m of the site. Topographically the site gradually slopes towards the south of the property with elevations of up to 222.6 m above sea level (asl) at the roadway and elevations as low as 220.6 m at the south edge of the property.

3.0 METHODOLOGY

The field work for the site investigation was carried out on December 10, 2024. A total of two boreholes (noted as Boreholes BH24-1 to BH24-2) were advanced into the underlying soil to depths ranging from approximately 3.3 m to 4.6 m bgs. The approximate locations of the boreholes are shown on the enclosed Borehole Location Plan (refer to Figure 1 in Appendix B).

Co-ordination for clearances of underground utilities was provided by GEMTEC. The boreholes were drilled cognizant of the identifiable underground utilities.

The boreholes were advanced with a portable drill rig using solid stem augers supplied and operated by Kodiak Drilling of Oakville, Ontario.

Standard Penetration Tests (SPT) were carried out in the boreholes and samples of the soils encountered were recovered 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. The split-spoon samplers used in the investigation limits 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 (Appendix C) and in subsequent sections of this report, are the values measured directly in the field and are unfactored / uncorrected.

The boreholes were backfilled and sealed upon completion in accordance with the requirements detailed in the Revised Regulations of Ontario (R.R.O.) 1990, Regulation 903 (as amended) of the Ontario Resources Act.

The fieldwork was supervised throughout by a member of GEMTEC’s engineering staff who directed the drilling operations, logged the samples, and observed the in situ testing. Following the fieldwork, the soil samples were returned to GEMTEC’s laboratory for examination by a geotechnical engineer. Selected samples of the soil were tested for water content and grain size distribution, as applicable.

Descriptions of the subsurface conditions observed in the boreholes are provided on the Record of Borehole sheets in Appendix C. The results of the laboratory tests on soil samples are also provided on the Record of Borehole sheets (Appendix C), and detailed laboratory testing results are presented in Appendix D.

The borehole locations were identified using existing site features and should be considered approximate. The borehole elevations were advanced from existing ground surface.

4.0 SUBSURFACE CONDITIONS

As previously indicated, the soil, and groundwater conditions identified in the boreholes are presented on the Record of Borehole sheets in Appendix C. The Record of Borehole sheets indicate the subsurface conditions at the specific borehole locations only. Boundaries between zones on the Record of Borehole sheets are often not distinct, but rather are transitional and have been interpreted from discontinuous 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, as noted in the report. These conditions may vary seasonally or as a result of construction activities in the area.

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

The subsurface soil conditions at the site generally comprise of pavement, near-surface fill materials associated with the driveway structure and topsoil with a gravelly sandy silty clay material, underlain by a native silty sand and gravelly sand deposits. The following presents an overview of the subsurface conditions encountered in the boreholes advanced during this investigation.

4.1 Asphalt

Driveway asphalt was encountered at the ground surface in Borehole BH24-1. The asphalt thickness recorded was approximately 35 mm.

4.2 Topsoil

Topsoil was encountered at the ground surface in Borehole BH24-2. The topsoil thickness recorded was approximately 75 mm.

4.3 Fill

Underlying the asphalt in Borehole BH24-1 and the topsoil in Borehole BH24-2, a fill material comprising of non-cohesive gravelly sand associated with the driveway pavement structure to a cohesive sandy gravelly silty clay was present. The fill had a thickness of approximately 0.6 m. The fill was fully penetrated in all boreholes at a depth of approximately 0.7 m bgs.

The natural water content values measured on samples of the fill resulted in a moisture content of about 2 percent for the non-cohesive gravelly sand and about 28 percent for the cohesive sandy gravelly silty clay.

An Atterberg limits test was carried out on a sample of the sandy gravelly silty clay fill material and the results indicate the material tested has a low plasticity (see Appendices C and D). The results are summarized in Table 4.3.1 below. A grain size distribution tests was undertaken on one of the samples of the sandy gravelly silty clay from Borehole BH24-2. The results are provided in Appendix D and summarized in Table 4.3.2 below.

Table 4.3.1 – Summary of Atterberg Limits Test (Sandy Gravelly Silty Clay)

Location	Sample Number	Sample Depth (m)	Plastic Limit	Liquid Limit	Plasticity Index
BH24-2	1	0.08 – 0.6	24	48	24

Table 4.3.2 – Summary of Grain Size Distribution Test (Sandy Gravelly Silty Clay)

Location	Sample Number	Sample Depth (m)	Gravel (%)	Sand (%)	Silt / Clay (%)
BH24-2	1	0.08 – 0.6	30.4	24.7	44.9

4.4 Silty Sand

Underlying the gravelly sand fill in Borehole BH24-1, a silty sand deposit with varying organic contents was present. The silty sand deposit was encountered at a depth of about 0.7 m bgs. The silty sand deposit was fully penetrated at a depth of about 1.4 m bgs.

SPT carried out in the silty sand deposit resulted in SPT N-value of 8 blows per 0.3 m of penetration, which indicates a loose state. The natural water content value measured on a sample of the silty sand was about 19 percent.

4.5 Sandy Gravel /Gravelly Sand to Silty Sand Till

Underlying the silty sand layer in Borehole BH24-1 and the gravelly sandy silty clay fill unit in Borehole BH24-2, a native sandy gravel / gravelly sand to gravelly silty sand till deposit was present. The till deposit was encountered at depths ranging from 0.7 to 4.6 m bgs.

SPT carried out in the till deposit resulted in SPT N-value of 79 blows per 0.3 m of penetration to 50 blows per 0.05 m of penetration, which indicates a very dense state. The natural water content values measured on samples of the sand to sand and silt ranged from about 4 to 13 percent.

An Atterberg limits test was carried out on a sample of the sandy gravel/ gravelly sand deposit and the results indicate the material tested has a low plasticity (see Appendices C and D).

The results are summarized in Table 4.5.1 below. Two grain size distribution tests were undertaken on samples of the till from Boreholes BH24-1 and BH24-2. The results are provided in Appendix D and summarized in Table 4.5.2 below.

Table 4.5.1 – Summary of Atterberg Limits Test (Till)

Location	Sample Number	Sample Depth (m)	Plastic Limit	Liquid Limit	Plasticity Index
BH24-2	5	3.0 – 3.5	15	23	8

Table 4.5.2 – Summary of Grain Size Distribution Test (Till)

Location	Sample Number	Sample Depth (m)	Gravel (%)	Sand (%)	Silt / Clay (%)
BH24-1	3	1.5 – 2.0	25.0	43.5	31.5
BH24-2	5	3.0 – 3.5	46.4	30.7	22.9

It is noted that glacial till derived materials are known to include cobble and boulder size particles / materials. Any proposed work and construction methodology within the till should account for the presence of cobbles and boulders and the need to address them.

All boreholes were terminated due to practical auger refusal on inferred cobbles / boulders and / or possible bedrock.

4.6 Groundwater Levels

The groundwater level was measured in the monitoring wells installed as part of a separate investigation adjacent to the Site and are summarized in Table 4.6.

Table 4.6 – Groundwater Depth in Monitoring Well

Groundwater Elevation / Depth (bgs)		
Borehole No. (Well Depth)	April 16, 2024	January 7, 2025
MW24-1 (6.1 m)	EL. 219.6 m / 2.7 m	El. 218.5 m / 3.8 m
MW24-2 (4.4 m)	El. 219.0 m / 2.1 m	El. 218.5 m / 2.6 m
MW24-3 (4.0 m)	El. 218.3 m / 2.7 m	El. 218.4 m / 2.6 m

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.

5.0 GEOTECHNICAL RECOMMENDATIONS AND CONSIDERATIONS

The following sections of the report provide guidance on the geotechnical engineering design aspects of the project based on our interpretation of the boreholes advanced 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 off-site sources are outside the terms of reference for this report and have not been investigated or addressed herein.

5.1 Site Preparation and Grading

Based on preliminary design drawings, it is anticipated that a potential grade raise of up to about 2 m will occur in the northwest half of the site to accommodate servicing and provide positive drainage from the parking lot to Bond Street. Additional recommendations for engineered fill can be provided during the detailed design stage. Preliminary comments are with respect to grade raise, general site grading and engineered fill are provided below.

- All surficial asphalt, vegetation, topsoil, and existing fill should be carefully removed within the proposed building area down to competent native soils, subject to geotechnical review at the time of construction.
- The excavated inorganic soil will generally comprise of existing native sandy gravel/ gravelly sand to silty sand which are considered suitable for reuse as engineered fill. Excavated materials should be segregated and stockpiled separately, based on geotechnical review.

- The exposed subgrade soils should be heavily proofrolled to target 100 percent Standard Proctor Maximum Dry Density (SPMDD) for building areas and 95 percent SPMDD for paved areas while under geotechnical review.
    - 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., ditched, swales).
- Following geotechnical review and approval of the subgrade, the approved engineered fill material should be placed in maximum 200 mm loose lift thick and compacted to 100 percent SPMDD for building areas and 95 percent SPMDD for paved areas. Imported material to raise grades should comprise of either Granular B Type I or Select Subgrade Material (SSM) in accordance with OPSS.MUNI 1010. If wet subgrade conditions are present, the use of Granular B Type II may be required. An increased initial lift thickness may also be required, subject to geotechnical review.
- Engineered fill construction should be carried out under full-time field supervision by GEMTEC to approve subgrade preparation, backfill materials, placement and compaction procedures, and to verify that the minimum specified degree of compaction is achieved throughout.

5.2 Foundation Design

It is understood that the proposed site development includes 14 stacked townhouses. Based on our understanding and for the purposes of this report, the proposed residential buildings are anticipated to be two stories and the founding depth is currently unknown. However, it is anticipated to be shallow footings with an underside of footing elevation of minimum 1.7 m bgs.

It should be noted that our foundation recommendations are based on the assumption that no former excavation, existing underground utility or structure is within, or intercepts, the zone of influence of the proposed footings. The zone of influence for the proposed footings can be described as any line drawn from the underside edge of the footing downward and outward at an inclination of 1 horizontal to 1 vertical (45 degrees to the horizontal). Consideration should be given to maintaining a horizontal buffer of 0.5 m from the face of the footing.

Complete removal of any existing or remaining foundations, if encountered, from either previous structures or underground utilities or lowering of the founding elevation (if appropriate) may be required, subject to review by GEMTEC at the time of construction. Consideration should be given to providing GEMTEC the proposed construction drawings for review prior to construction to aid in mitigating potential construction issues and delay claims.

Construction of stepped footings should be in accordance with the current Ontario Building Code, or as designed by a structural engineer.

5.2.1 Frost Depth

The foundations for the proposed building should be provided with at least 1.7 m of earth cover for frost protection purposes. Alternatively, the required frost protection could be provided by means of a combination of earth cover and extruded polystyrene insulation. Further details regarding insulation of foundations can be provided at the detailed design stage, if necessary.

5.2.2 Shallow Foundations

The proposed development will require site clearing and potentially engineered fill to support footings. The existing fill materials including, if encountered, topsoil and deleterious materials are not considered suitable for the support of foundations and should be removed from the proposed building footprint.

Based on the anticipated nominal footing depth of 1.7 m bgs and provided lot grading drawings completed by Tatham Engineering, conventional shallow footing construction would result in underside of footing at about elevations of El. 219.1 to 221.1 m. Footings should be extended down to native non-cohesive (gravelly sand/ sandy gravel to silty sand) deposits capable of providing the required bearing capacity and / or footings sized appropriately to suit the available bearing capacity. Alternatively, footings can be founded on engineered fill constructed as noted above.

It is understood that only minor grade adjustments will be completed / required for the proposed building.

Conventional shallow footing construction would be feasible on the native non-cohesive gravelly sand/ sandy gravel to silty sand deposits and / or engineered fill constructed as noted above at about elevations El. 219.1 to 221.1 m. Based on the anticipated subsurface conditions, it is recommended all footings be founded on the non-cohesive till (about elevations EL. 221.2 to 221.3 m) where a recommended factored geotechnical resistance at Ultimate Limit States (ULS) of 450 kPa and a geotechnical reaction at Serviceability Limit States (SLS) of 300 kPa may be assumed for design purposes.

The provided factored ULS bearing resistance value is based on the limit state resistance factor of 0.5. The geotechnical reaction at SLS provided are based on anticipated maximum total and differential settlement of 25 mm and 19 mm, respectively. The recommended bearing resistances and reactions provided above are based on a minimum equivalent footing width of 600 mm.

5.2.3 Seismic Considerations

The seismic site classification presented below is based on the physical borehole information obtained at depths of less than 30 m and on general knowledge of the local geology and physiography. In this regard, GEMTEC's drilling program included boreholes drilled to depths up to about 6.1 m below the existing ground surface. Based on the results of the current geotechnical

site investigation and the local geological conditions, a Site Class D is appliable for Seismic Site Response classification for the site based on Table 4.1.8.4.A of the Ontario Building Code (2012).

Should optimization of the site class be recommended by the structural engineer, in situ geophysical testing should be carried out at the site, although a higher site class cannot be guaranteed.

5.3 Pavement Structure

The pavement subgrade is assumed to be sandy gravel to silty gravel which is considered low frost susceptible. The surface of the material at subgrade level should be heavily proofrolled under the supervision of GEMTEC personnel to identify any soft, loose or otherwise deleterious areas requiring sub-excavation and replacement with suitable fill.

Site-specific traffic information was not available at the time of preparation of this report. Based on the provided concept plan, majority of the paved areas which are anticipated to be resident and visitor parking areas which will only be used by passenger vehicles and other lightly loaded vehicles.

Based on the results of this investigation and the anticipated frost-susceptibility characteristics of the subgrade soils, the recommended flexible pavement designs are as follows:

Table 5.3 – Recommended Pavement Structures

Material	Thickness (mm)
Asphalt – Surface Course (HL3 or SP12.5)	40
Asphalt – Binder Course (HL8 or SP19.0)	60
Granular A Base	150
Granular B Type I Subbase	300
Total Thickness	**550**

The proposed asphaltic concrete pavement mixtures should be designed with Performance Graded Asphalt Cement (PGAC) 58-34.

The above pavement design is based on the assumption that the pavement subgrade has been adequately prepared and construction will be carried out during the dry time of the year. Adequate preparation of the subgrade includes trench backfill and any subgrade fill has been compacted to the specified compaction, the subgrade is graded with the required crossfall, drainage of the subgrade soils is provided, and the subgrade surface has not been disturbed by construction operations or precipitation. Further, construction should be carried out in the dry and not during

periods of inclement weather. Depending on the actual conditions of the pavement subgrade at the time of construction, it may be necessary for additional sub-excavation, increased granular thickness, and / or the use of a geogrid reinforcement, subject to geotechnical review.

The proposed granular subbase and base should comprise of material conforming to OPSS.MUNI 1010 requirements for Granular B Type I and Granular A, respectively, and compacted to 100 percent SPMDD. Compaction of the granular materials should be carried out at a moisture content that is generally within about 2 percent of the material's optimum moisture content. The asphalt should be compacted in accordance with OPSS.MUNI 310 requirements. Laboratory testing of granular material and asphalt should be carried out by a Canadian Council of Independent Laboratories (CCIL) certified laboratory.

The new pavement structure thickness should be tapered at 10 horizontal to 1 vertical to match the existing pavement structure at tie in locations and transitions from light duty to heavy duty pavement structure. The transverse joints in the asphalt should be keyed in accordance with OPSS.MUNI 310 Clause 310.07.11.03 with a minimum 0.5 m wide stepped joint (where existing asphalt thickness permits).

5.4 Pavement Drainage Considerations

It should be noted that for the pavement to function properly, it is critical that provisions be made for water to drain out of and not collect in or below the pavement structure.

From a pavement design perspective, it is recommended that subdrains be incorporated in the design in conjunction with crowning of the final subgrade to promote drainage towards the pavement edge. Subdrains should be installed a minimum 300 mm below the design subgrade level. Reference should be made to OPSD 216.010, OPSD 216.020 and OPSD 216.021 for details relating to pipe location, filter fabric or sock, bedding and cover materials. To aid with minimizing potential differential frost movement between catch basins or maintenance holes and pavement structure, the catch basins/maintenance holes should be backfilled with free draining material with frost tapers.

5.5 Temporary Excavations

The overburden excavations for the proposed building construction and associated servicing will be carried out into the sandy gravel deposits.

The sides of the excavations within overburden soils should be sloped in accordance with the requirements in Ontario Regulation 213/91 under the Occupational Health and Safety Act. According to the Act, most of the soils at this site can be classified as Type 3 soils. Therefore, for design purposes, allowance should be made for 1 horizontal to 1 vertical (1H:1V), or flatter, excavation slopes.

Conventional hydraulic excavation equipment would be expected to be suitable for excavation in the overburden soils; however, the soils are compact to very dense 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 servicing. The contractor should be made aware of the potential presence of cobbles and / or boulders within the overburden soils.

Excavation of the native soils above the groundwater are not anticipated to present any excavation constraints. In contrast, excavation in the native sand below the groundwater level could present challenges. Groundwater inflow from the sand deposits could cause sloughing of the sides of the excavation and disturbance to the soils at the bottom of the excavation. Flatter side slopes, of 3H:1V, may be required if excavation is required below the groundwater level. All excavated material should be stockpiled well away (i.e., minimum 2 m) from the sides of the excavation.

If there is insufficient space to excavate temporary open cuts, it is recommended that a shoring system consisting of braced steel sheet piles or potentially a slide rail system designed by a Professional Engineer including assessment of the potential for basal heave be utilized. If shoring is implemented at the Site, the requirements of OPSS.MUNI 539 should be followed. The design of temporary works is (entirely) the responsibility of the contractor.

5.6 Installation of Underground Services

The following comments are provided based on the assumption that the underground service excavations will extend to a maximum depth of about 2.5 m bgs following final grading.

5.6.1 Pipe Bedding and Cover

The native gravelly sand/ sandy gravel till to silty sand deposits are anticipated at the invert level which are generally considered satisfactory for pipe support. Where soft / loose soil or other deleterious materials are encountered at the design invert level, it may be necessary to sub-excavate and replace, re-compact or increase the granular bedding thickness, subject to geotechnical field review and approval.

The bedding and cover for the proposed utilities should consist of least 150 mm of OPSS.MUNI 1010 Granular A backfill placed in accordance with the applicable OPSD for the type of underground utility installed.

Bedding, and cover materials should be placed in lifts not exceeding 200 mm thick and compacted to at least 95 percent SPMDD.

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 fill materials and native

deposits could potentially migrate into the voids of the material and cause loss of lateral pipe support and pipe / ground settlement.

5.6.2 Trench Backfill

It is anticipated that most of the inorganic overburden materials (fill and native non-cohesive soils) encountered during the subsurface investigation will be acceptable for reuse as trench backfill. Topsoil, organic, wet, frozen, oversized (greater than 150 mm in diameter) or other deleterious material should be wasted from the trench. 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.

In order to reduce the potential for differential frost heaving between the area over the trench and the adjacent hard surfaced area, it is recommended that the backfill material match the soil exposed on the trench walls. The depth of frost penetration in exposed areas can normally be taken as 1.7 m bgs. Backfill below the zone of seasonal frost penetration could consist of either acceptable excavated soil or imported granular material conforming to OPSS.MUNI 1010 Select Subgrade Material (SSM).

To minimize future settlement of the backfill and achieve an acceptable subgrade for the areas of hard surfacing, the trench backfill should be placed in maximum 300 mm loose lifts and uniformly compacted to at least 95 percent 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 within 2 percent of the material's optimum moisture content in order to achieve the specified compaction and mitigate potential subgrade instability issues.

The specified density for compaction of the backfill materials may be reduced where the trench backfill is not located below or in close proximity to existing or future areas of hard surfacing and/or structures, provided that some settlement above the trench is acceptable.

The actual water content of the soil at the time of placement and compaction may differ from the soils natural state. The contractor should have contingency plans for wetting or drying backfill soils as needed to achieve the required compaction.

5.7 Potential Impacts of Groundwater

The depth of the groundwater was generally at or just below the maximum anticipated excavation depth of 2.5 m bgs. In this regard, temporary construction dewatering may be required and that groundwater control could be addressed through in-excavation water controls (i.e., localized sump pumping techniques). It should also be noted that in-excavation water controls may be necessary to manage incidental precipitation and potential perched water conditions. Following detailed design and construction plans for servicing have been finalized, the dewatering requirements for the site should be re-assessed and, if necessary, a formal discharge and monitoring plan developed.

It is noted that groundwater levels may be higher during wet periods of the year, such as the early spring or following periods of precipitation.

The rate and volume required for dewatering will be dependent on final excavation depths, subsurface soil conditions, the groundwater levels at the time of construction and the construction methods and staging selected by the Contractor. Based anticipated grade raise as noted on the provided lot grading drawings completed by Tatham Engineering Limited and the Site conditions observed, it is estimated that dewatering would be less than 50,000 L/day. As such, an Environmental Activity and Sector Registry (EASR) in accordance with Environmental Protection Act Part II.2 Section 20.21 would not be required for this project. Following detailed design and construction plans for servicing have been finalized, the dewatering requirements for the site should be re-assessed and, if necessary, a formal discharge and monitoring plan developed.

5.8 Corrosivity and Sulphate Attack Test Results

Two combined soil samples, one taken from Borehole BH24-1 and one from Borehole BH24-2 between ground surface and 2.2 m depth bgs were submitted for basic analytical testing relating to potential corrosion of buried concrete and steel (pH, conductivity, chloride, and sulphate). The chemical testing was carried out under standard chain-of-custody protocols by a Canadian Association for Laboratory Accreditation (CALA)-certified analytical laboratory. A summary of the corrosivity and sulfate attack test results can be found in Table 5.8. Certificate of Analysis is provided in Appendix D.

Table 5.8 – Corrosivity and Sulfate Attack Test Results

Parameter	BH24-1 (SA1-3)	BH24-2 (SA1-3)
Chloride (mg/L)	55	12
Sulphate (mg/L)	97	16
pH	7.87	8.71
Electrical Conductivity	0.476	0.101
Resistivity	2100	9900
Redox Potential 1	164	210
Redox Potential 2	166	212
Redox Potential 3	161	217

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 for this material, and buried steel elements installed in this material will therefore likely not require protection from corrosion.

Based on the results of the laboratory testing, and according to the Canadian Standards Association "*Concrete Materials and Methods of Concrete Construction*" (CSA A23.1-14 Table 3), the concentrations of sulphate in the recovered soil samples (97 and 16 mg/L) is considered to have low exposure to sulphate attack. As such, any concrete that will be in contact with the subsurface soils may be batched with General Use hydraulic (GU) Portland cement.

Other factors (i.e., structurally reinforced or non-structurally reinforced, freeze-thaw environment, chloride exposure, agricultural environment) should be considered in selecting the Class of Exposure and associated air entrainment and concrete mix proportions for any concrete.

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 of the Site.

6.0 ADDITIONAL CONSIDERATIONS

6.1 Effects of Construction Induced Vibration

Some of the construction operations (such as granular material compaction, excavation, etc.) will cause ground vibration on and off of the Site. The vibrations will attenuate with distance from the source but may be felt at nearby structures. The magnitude of the vibrations will be much less than that required to cause damage to the nearby structures or services in good condition. Construction vibration monitoring can be discussed further prior to construction or following a vibration related complaint.

6.2 Monitoring Well Abandonment

All monitoring wells installed as part of the separate investigation noted above should be decommissioned by a licensed well technician. The well abandonment could be carried out in advance of, or during construction.

7.0 CLOSURE

We trust this report provides sufficient information for your present purposes. If you have any questions concerning this report, please do not hesitate to contact our office.

Regards,

GEMTEC Consulting Engineers and Scientists Limited

Robert Nugent
Geotechnical Analyst

Doug Chisholm, P.Eng.
Materials Inspection and Testing Lead – Barrie

John Hagan, P.Eng.
Branch Manager, Senior Pavement Engineer

APPENDIX A

Conditions and Limitations of this Report

GEMTEC
Consulting Engineers and Scientists

Conditions and Limitations of This Report

1. **Standard of Care:** GEMTEC has prepared this report in a manner consistent with generally accepted engineering or environmental consulting practice in the jurisdiction in which the services are provided at the time of the report. No other warranty, expressed or implied is made.
2. **Copyright:** The contents of this report are subject to copyright owned by GEMTEC, save to the extent that copyright has been legally assigned by us to another party or is used by GEMTEC under license. To the extent that GEMTEC owns the copyright in this report, it may not be copied without our prior written agreement for any purpose other than the purpose indicated in this report. The methodology (if any) contained in this report is provided to the Client in confidence and must not be disclosed or copied to third parties without the prior written agreement of GEMTEC. Disclosure of that information may constitute an actionable breach of confidence or may otherwise prejudice our commercial interests.
3. **Complete Report:** This report is of a summary nature and is not intended to stand alone without reference to the instructions given to GEMTEC by the Client, communications between GEMTEC and the Client and to any other reports prepared by GEMTEC for the Client relative to the specific site described in the report. In order to properly understand the suggestions, recommendations and opinions expressed in this report, reference must be made to the whole of the report. GEMTEC can not be responsible for use of portions of the report without reference to the entire report.
4. **Basis of Report:** This Report has been prepared for the specific site, development, design objectives and purposes that were described to GEMTEC by the Client. The factual data, interpretations and recommendations pertain to a specific project as described in this report and are not applicable to any other project or site location. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the document, subject to the limitations provided herein, are only valid to the extent that this report expressly addresses the proposed development, design objectives and purposes. Any change of site conditions, purpose or development plans may alter the validity of the report and GEMTEC cannot be responsible for use of this report, or portions thereof, unless GEMTEC is requested to review any changes and, if necessary, revise the report.
5. **Time Dependence:** If the proposed project is not undertaken by the Client within 18 months following the issuance of this report, or within the timeframe understood by GEMTEC to be contemplated by the Client, the guidance and recommendations within the report should not be considered valid unless reviewed and amended or validated by GEMTEC in writing.
6. **Use of This Report:** The information, recommendations and opinions expressed in this report are for the sole benefit of the Client. No other party may use or rely on this report or any portion thereof without GEMTEC's express written consent. If the report was prepared to be included for a specific permit application process, then upon the reasonable request of the client, GEMTEC may authorize in writing the use of this report by the regulatory agency as an Approved User for the specific and identified purpose of the applicable permit review process.

   Contractors bidding on, or undertaking the work, should rely on their own investigations, as well as their own interpretations of the factual data presented in the report, as to how subsurface conditions may affect their work, including but not limited to proposed construction techniques, schedule, safety and equipment capabilities.
7. **No Legal Representations:** GEMTEC makes no representations whatsoever concerning the legal significance of its findings, or as to other legal matters touched on in this report, including but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and change. Such interpretations and regulatory changes should be reviewed with legal counsel.

8. **Decrease in property value:** GEMTEC shall not be responsible for any decrease, real or perceived, of the property or site's value or failure to complete a transaction, as a consequence of the information contained in this report.
9. **Reliance on Provided Information:** The evaluation and conclusions contained in this report have been prepared on the basis of conditions in evidence at the time of site inspections and on the basis of information provided to us. We have relied in good faith upon representations. information and instructions provided by the Client and others concerning the site. Accordingly, we cannot accept responsibility for any deficiency, misstatement or inaccuracy contained in this report as a result of misstatements, omissions, misrepresentations. or fraudulent acts of the Client or other persons providing information relied on by us. We are entitled to rely on such representations, information and instructions and are not required to carry out investigations to determine the truth or accuracy of such representations, information and instructions.
10. **Investigation Limitations:** Site investigation programs are a professional estimate of the scope of investigation required to provide a general profile of subsurface conditions but even a comprehensive investigation, sampling and testing program may fail to detect all or certain subsurface conditions.

    The data derived from the site investigation program and subsequent laboratory testing are interpreted by trained personnel and extrapolated across the site to form an inferred geological representation and an engineering opinion is rendered about overall subsurface conditions and their likely behaviour with regard to the proposed development. Conditions between and beyond the borehole/test hole locations may differ from those encountered at the borehole/test hole locations and the actual conditions at the site might differ from those inferred to exist, since no subsurface exploration program, no matter how comprehensive, can reveal all subsurface details and anomalies. Accordingly, GEMTEC does not warrant or guarantee the exactness of of the subsurface descriptions.

    Soil and groundwater conditions shown in the factual data and described in the report are the observed conditions at the time of their determination-or measurement. Unless otherwise noted, those conditions form the basis of the recommendations in the report. Groundwater conditions may vary between and beyond reported locations and can be affected by annual, seasonal and meteorological conditions. The condition of the soil, rock and groundwater may be significantly altered by construction activities (traffic, excavation, groundwater level lowering, pile driving, blasting, etc.) on the site or on adjacent sites. Excavation may expose the soils to changes due to wetting, drying or frost. Unless otherwise indicated the soil must be protected from these changes during construction.

    In addition, fill of variable physical and chemical composition can be present over portions of the site or on adjacent properties. The professional services retained for this project include only the geotechnical aspects of the subsurface conditions at the site, unless otherwise specifically stated and identified in the report. The presence or implication(s) of possible surface and/or subsurface contamination resulting from previous activities or uses of the site and/or resulting from the introduction onto the site of materials from off-site sources are outside the terms of reference for this project and have not been investigated or addressed.
11. **Sample Disposal:** GEMTEC will dispose of all uncontaminated soil and/or rock samples 60 days following issue of this report or, upon written request of the Client, will store uncontaminated samples and materials at the Client's expense. In the event that actual contaminated soils, fills or groundwater are encountered or are inferred to be present, all contaminated samples shall remain the property and responsibility of the Client for proper disposal.
12. **Follow-Up and Construction Services:** All details of the design were not known at the time of submission of GEMTEC's report. GEMTEC should be retained to review the final design, project plans and documents prior to construction, to confirm that they are consistent with the intent of GEMTEC's report.

    During construction, GEMTEC should be retained to perform sufficient and timely observations of encountered conditions to confirm and document that the subsurface conditions do not

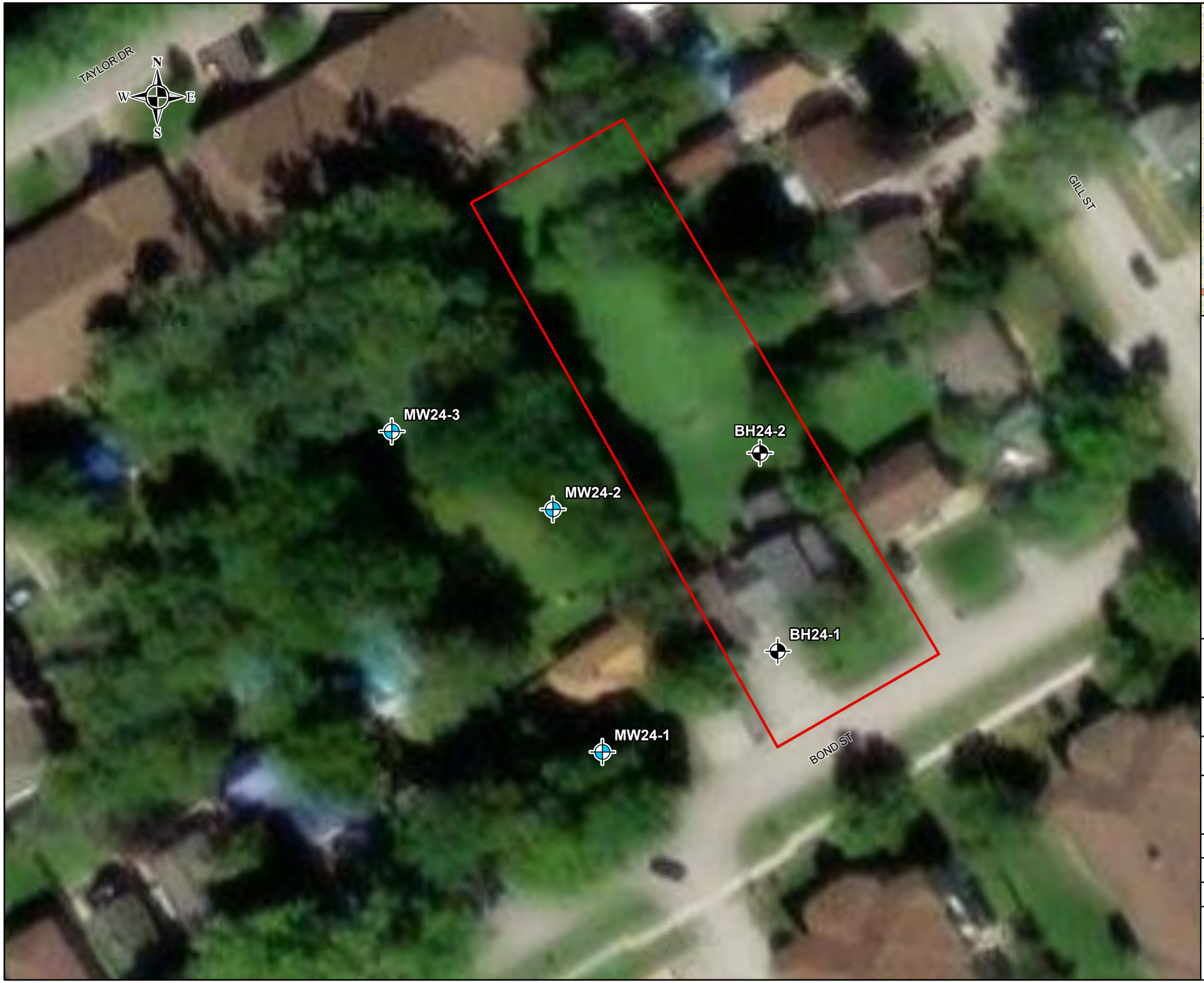
materially differ from those interpreted conditions considered in the preparation of GEMTEC's report and to confirm and document that construction activities do not adversely affect the suggestions, recommendations and opinions contained in GEMTEC's report. Adequate field review, observation and testing during construction are necessary for GEMTEC to be able to provide letters of assurance, in accordance with the requirements of many regulatory authorities. In cases where this recommendation is not followed, GEMTEC's responsibility is limited to interpreting accurately the information encountered at the borehole locations, at the time of their initial determination or measurement during the preparation of the Report.

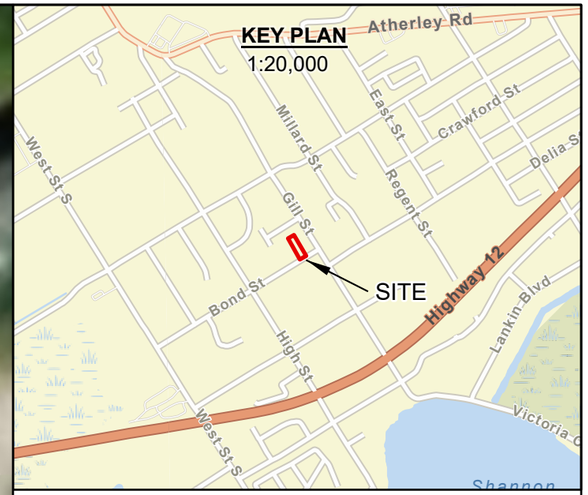
13. **Changed Conditions:** Where conditions encountered at the site differ significantly from those anticipated in this report, either due to natural variability of subsurface conditions or construction activities, it is a condition of this report that GEMTEC be notified of any changes and be provided with an opportunity to review or revise the recommendations within this report. Recognition of changed soil and rock conditions requires experience and it is recommended that GEMTEC be employed to visit the site with sufficient frequency to detect if conditions have changed significantly.
14. **Drainage:** Drainage of subsurface water is commonly required either for temporary or permanent installations for the project. Improper design or construction of drainage or dewatering can have serious consequences. GEMTEC takes no responsibility for the effects of drainage unless specifically involved in the detailed design and construction monitoring of the system.

APPENDIX B

Site Figures

Borehole Location Plan





Legend

BH / MW # BOREHOLE ID

BOREHOLE LOCATION

MONITORING WELL LOCATION

SITE BOUNDARY

NOTES:

1. All locations approximate
2. Coordinate system: NAD 1983 UTM Zone 17N
3. Geographic dataset source: Ontario GeoHub.
4. Contains information licensed under the Open Government Licence – Ontario.
5. Service Layer Credits: World Street Map: Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community World Imagery: Maxar, Microsoft

Scale:

1:500

0 5 10 20 30 40 Meters

Drawing: BOREHOLE LOCATION PLAN

Client: SULLNET HOLDINGS INC.

Project: PRELIMINARY GEOTECHNICAL INVESTIGATION, PROPOSED RESIDENTIAL DEVELOPMENT, 120 BOND STREET, ORILLIA, ONTARIO

Drwn By:	S.J.	Chkd By:	R.N.
Project No.	103139.001	Revision No.	0
Date	FEBRUARY 2025		**FIGURE 1**

GEMTEC
Consulting Engineers and Scientists
44 Cedar Pointe Dr Unit 1102,
Barrie, ON L4N 5R7
T: (249) 493-6271
www.gemtec.ca

Folder: N:\Projects\103100\103139.001\06_Civil Drafting\Design\GeoTech\

APPENDIX C

Record of Boreholes

Abbreviations and Terminology Used on
Records of Boreholes
Record of Borehole Sheets BH24-1 to BH24-2

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

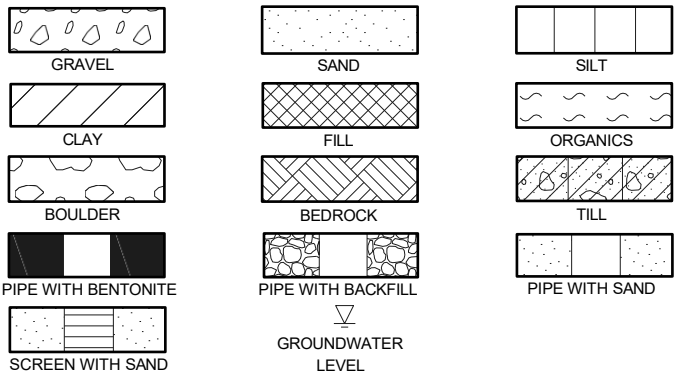
PENETRATION RESISTANCE

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.

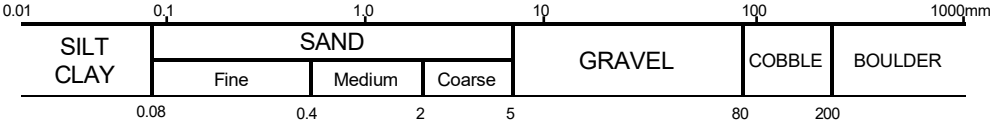
Dynamic Penetration Resistance
The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) to drive a 50 mm (2 in.) diameter 60° cone attached to 'A' size drill rods for a distance of 300 mm (12 in.).

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

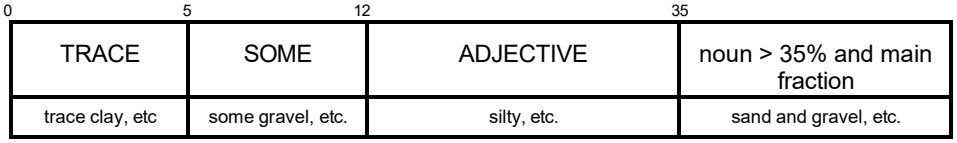
COHESIONLESS SOIL Compactness		COHESIVE SOIL Consistency	
SPT N-Values	Description	Cu, kPa	Description
0-4	Very Loose	0-12	Very Soft
4-10	Loose	12-25	Soft
10-30	Compact	25-50	Firm
30-50	Dense	50-100	Stiff
>50	Very Dense	100-200	Very Stiff
		>200	Hard



GRAIN SIZE



DESCRIPTIVE TERMINOLOGY

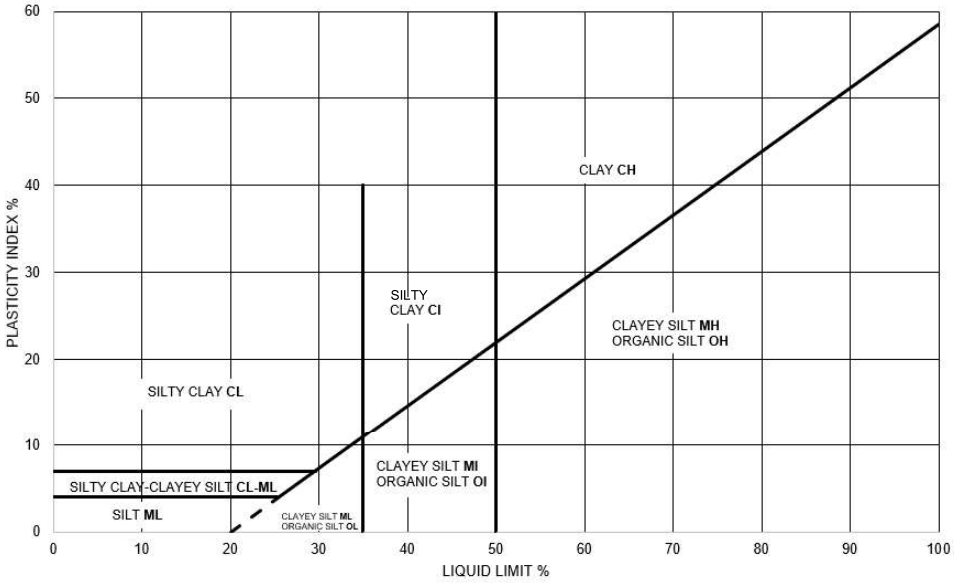


Method of Soil Classification

GEMTEC's Soil Classification is based on the MTC Soil Classification Manual (January 1980)

Organic or Inorganic	Soil Group	Type of Soil		Gradation or Plasticity	$Cu = \frac{D_{60}}{D_{10}}$	$Cc = \frac{(D_{30})^2}{D_{10} X D_{60}}$	USCS Group Symbol	Group Name
Inorganic (Organic Content less than 30%)	Coarse Grained Soils (>50% is larger than 0.075 mm)	Gravel (>50% of coarse fraction is > 4.75 mm)	Gravel with ≤12% fines	Poorly Graded	<4	≤1 or ≥3	GP	Gravel
				Well Graded	≥4	1 to 3	GW	Gravel
			Gravel with >12% fines	Below A Line	N/A		GM	Silty Gravel
				Above A Line	N/A		GC	Clayey Gravel
		Sand (≥50% coarse fraction is > 4.75 mm)	Sand with ≤12% fines	Poorly Graded	<6	≤1 or ≥3	SP	Sand
				Well Graded	≥6	1 to 3	SW	Sand
			Sand with >12% fines	Below A Line	N/A		SM	Silty Sand
				Above A Line	N/A		SC	Clayey Sand

Soil Group	Type of Soil	Liquid Limit	Field Tests			USCS Group Symbol	Group Name
			Dilatancy	Thread Diameter	Toughness		
Fine Grained Soils (≥50% is smaller than 0.075 mm)	Silts (Non-Plastic or PI and LL plot below A-Line)	<50	Rapid	>6 mm	N/A	ML	Silt
			Slow	3 to 6 mm	None to low	ML	Clayey Silt
			Slow to V. Slow	3 to 6 mm	Low	OL	Organic Silt
		≥50	Slow to V. Slow	3 to 6 mm	Low to Medium	MH	Clayey Silt
			None	1 to 3 mm	Medium to High	OH	Organic Silt
	Clays (PI and LL plot above A-Line)	Liquid Limit <35	None	~3 mm	Low to Medium	CL	Silty Clay
		Liquid Limit 35 to 50	None	1 to 3 mm	Medium	CI	Silty Clay
		Liquid Limit >50	None	<1 mm	High	CH	Clay
Highly Organic (> 30%)	Peat (Amorphous or Fibrous)					PT	Peat



Dual Symbol – Is used to indicate when soils are transitional. For coarse grained soils, it is used when the soil has between 5 and 12% fines (e.g., SP-SC, Sand to Silty Sand). For fine-grained soils it is used when the plasticity index and liquid limit values plot in the area shown in the plasticity chart on this page.

Borderline Symbol – Is used to indicate soils that are not clearly in one soil type but have similar behaviour and properties as similar materials (e.g., CL/CI or GM/SM).

RECORD OF BOREHOLE BH24-1

CLIENT: Sullnet Holdings Inc.
PROJECT: Proposed Development, 120 Bond Street, Orillia, Ontario
JOB#: 103139.001
LOCATION: See Borehole Location Plan

SHEET: 1 OF 1
DATUM: Geodetic
BORING DATE: Dec 10 2024

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 Solid Stem Auger	Ground Surface		222.60						
		ASPHALT (35 mm)		0.04						
		FILL - (SP) GRAVELLY SAND, trace fines; brown; non-cohesive, moist			1	GS				
				221.91						
1		(SM) SILTY SAND, trace organics; brown; non-cohesive, moist, loose		0.69	2	SS	203	8		
				221.23						
2		(SM) GRAVELLY SILTY SAND, trace plastic fines; brown; (TILL); non-cohesive, moist, very dense		1.37	3	SS	203	79	M	
					4	SS	102	50 / 0.14		
3					5	SS	203	50 / 0.25		
				219.30						
		End of Borehole		3.30						
4		Notes:								
		1. Borehole open and dry upon completion of drilling.								
		2. Borehole terminated due to practical auger refusal at approximately 3.3 m depth.								
5		3. Borehole was backfilled with a mixture of bentonite and cuttings upon completion of drilling.								
6										
7										
8										
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: AW
CHECKED: RN

GEO - BOREHOLE LOG 103139001_120_BOND_2025-02-24.GPJ GEMTEC 2018.GDT 25/2/28

RECORD OF BOREHOLE BH24-2

CLIENT: Sullnet Holdings Inc.
PROJECT: Proposed Development, 120 Bond Street, Orillia, Ontario
JOB#: 103139.001
LOCATION: See Borehole Location Plan

SHEET: 1 OF 1
DATUM: Geodetic
BORING DATE: Dec 10 2024

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, Solid Stem Auger	Ground Surface		222.00						
		TOPSOIL (75 mm)		0.08						
		FILL - (CL) SANDY GRAVELLY SILTY CLAY, some organics; brown; cohesive, W>PL			1	GS			MH	
				221.31						
1		(GP-SP) GRAVELLY SAND to SANDY GRAVEL, trace to some silt, trace clay; brown to grey, (TILL); non-cohesive, moist, very dense		0.69	2	SS	356	85		
					3	SS	406	73		
2					4	SS	432	55		
3		- Grey at approximately 3.0 m depth.			5	SS	406	80	MH	
					6	SS	51	50 / 0.05		
4										
		End of Borehole		217.38 4.62	7	SS	51	50 / 0.05		
5		Notes:								
		1. Groundwater measured at approximately 2.5 m below ground surface in open borehole upon completion of drilling.								
6		2. Borehole caved at approximately 3.4 m depth in open borehole upon completion of drilling.								
		3. Borehole terminated due to practical auger refusal at approximately 3.6 m depth, an additional borehole BH24-2b was advanced about 2 m north of BH24-2. Auger refusal was encountered at approximately 4.6 m depth in BH24-2b.								
7		4. Borehole was backfilled with a mixture of bentonite and cuttings upon completion of drilling.								
8										
9										
10										

SOIL PROFILE | 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: AW
CHECKED: RN

GEO - BOREHOLE LOG 103139001_120_BOND_2025-02-24.GPJ GEMTEC 2018.GDT 25/2/28

APPENDIX D

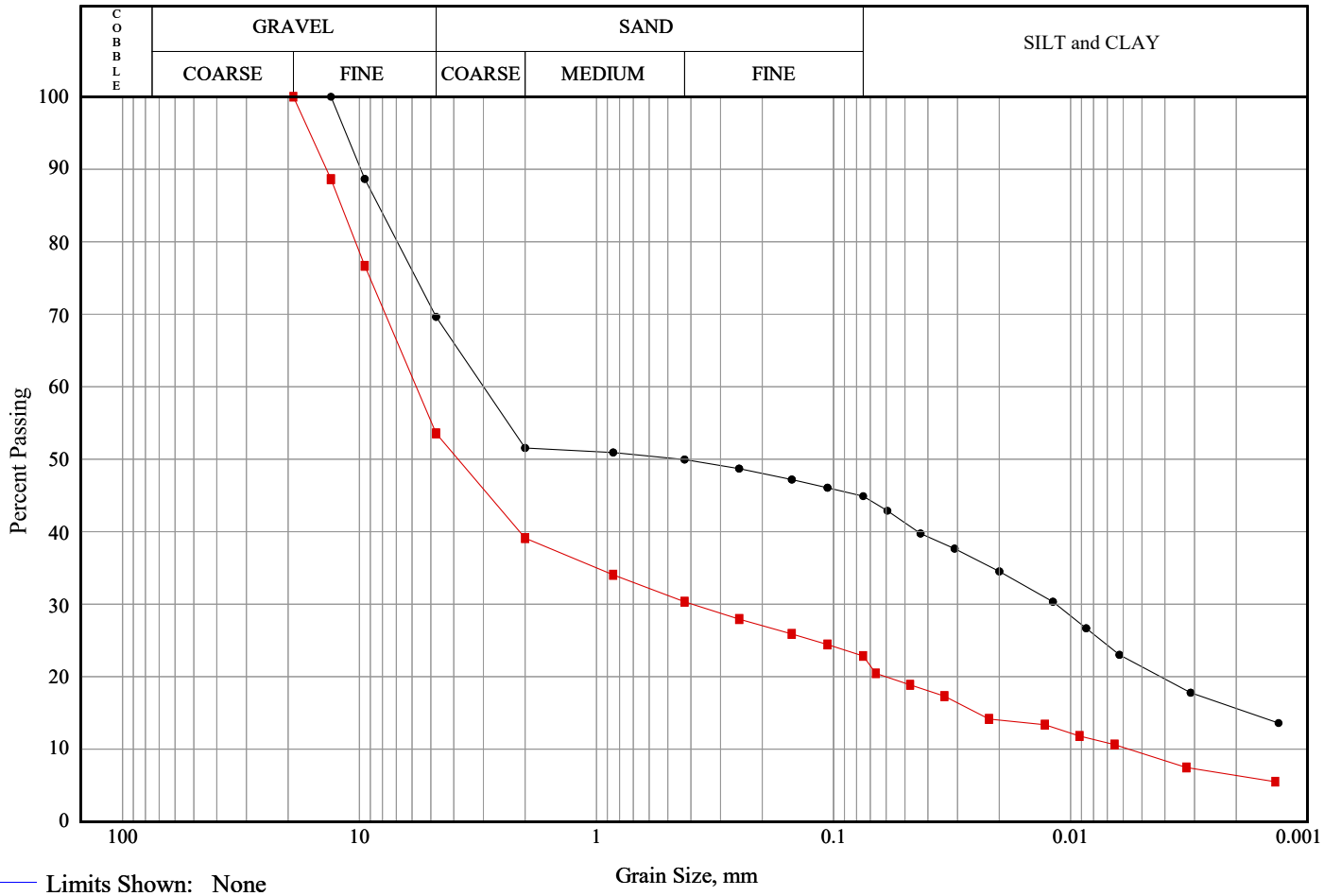
Laboratory Testing Figures

Soils Grading Chart

Plasticity Chart

GEMTEC Consulting Engineers and Scientists	Client: Sullnet Holdings Inc.	Soils Grading LS-702/ASTM D-422
	Project: Proposed Development, 116 Bond Street, Orillia, Ontario	
	Project #: 103139001(2)	

Note: More information available upon request



Limits Shown: None

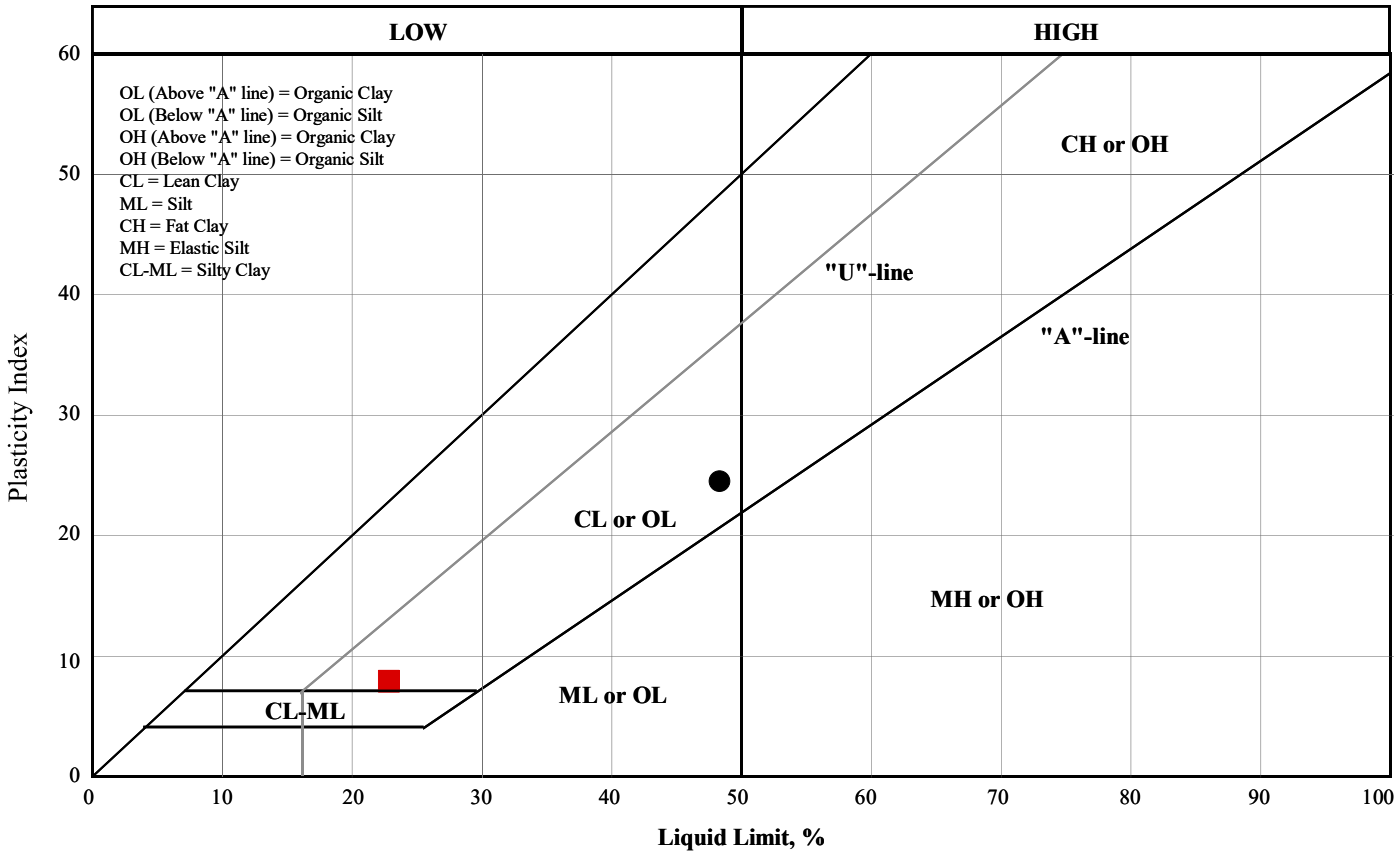
Line Symbol	Sample	Borehole/ Test Pit	Sample Number	Depth	% Cob.+ Gravel	% Sand	% Silt and Clay
●	(CL) SANDY GRAVELLY SILTY CLAY	BH24-2	SA-1	0-0.6	30.4	24.7	44.9
■	(GP) SANDY GRAVEL - TILL	BH24-2	SA-5	3.0-3.5	46.4	30.7	22.9

Line Symbol	USCS Classification	USCS Symbol	D_{10}	D_{15}	D_{30}	D_{50}	D_{60}	D_{85}	% 5-75µm
●	Gravel and sand and silt , some clay	GC	---	0.002	0.01	0.44	3.00	8.31	29.3
■	Sandy gravel , some silt , trace clay	SC	0.006	0.025	0.40	3.84	5.76	11.94	16.5

GEMTEC
Consulting Engineers and Scientists
Oshawa, ON

Client:	Sullnet Holdings Inc.
Project:	Proposed Development, 116 Bond Street, Orillia, Ontario
Project #:	103139001(2)

Plasticity Chart
(LS-7034/ASTM D4318)



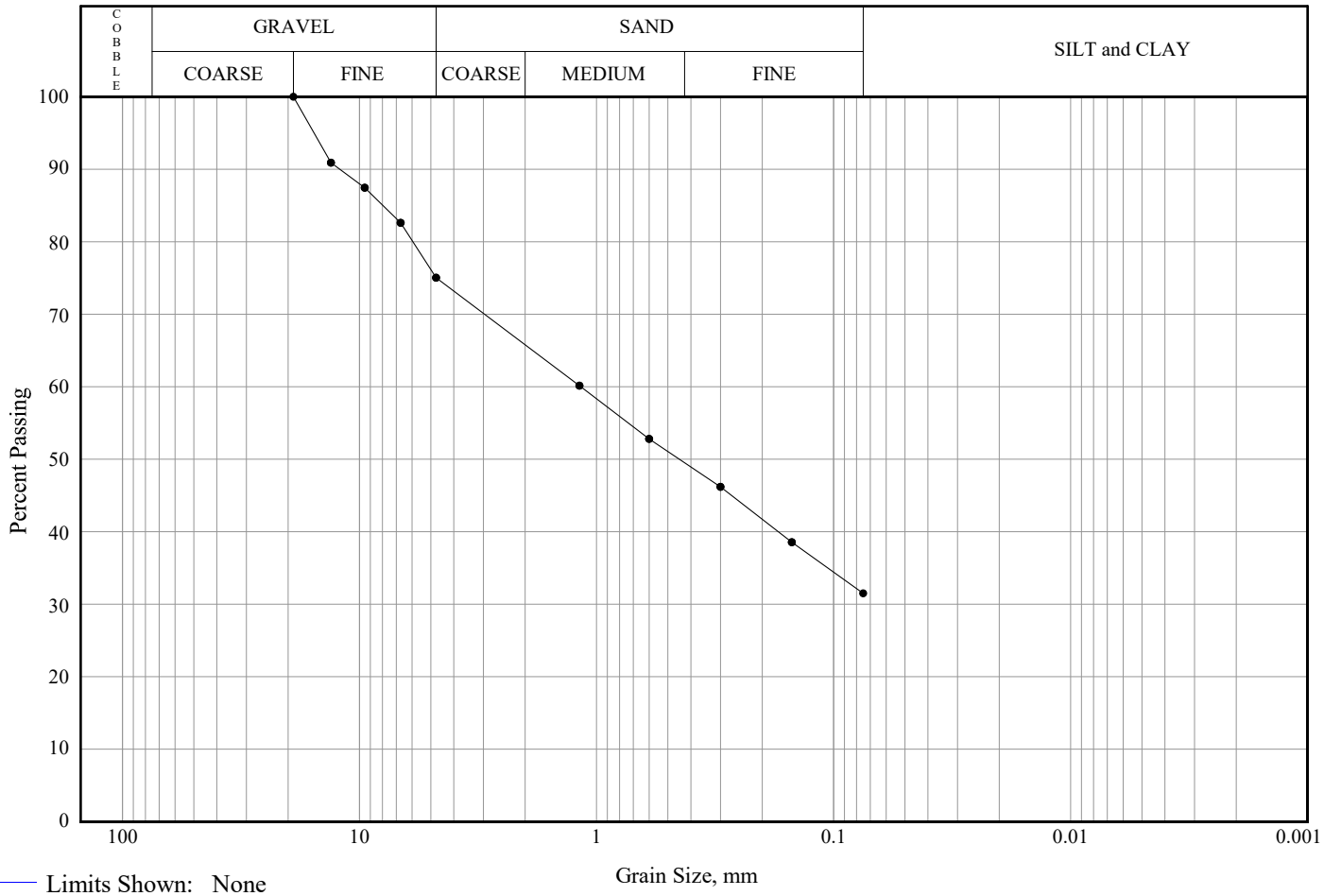
Symbol	Borehole /Test Pit	Sample Number	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Non-Plastic	Moisture Content, %
●	BH24-2	SA-1	0-0.6	48	24	24	N/A	27.9
■	BH24-2	SA-5	3.0-3.5	23	15	8	N/A	3.8

CCIL
Canadian Council of Independent Laboratories
Conseil canadien des laboratoires indépendants

Note: More information available upon request

GEMTEC Consulting Engineers and Scientists	Client: Sullnet Holdings Inc.	Soils Grading Chart
	Project: Proposed Development, 116 Bond Street, Orillia, Ontario	
	Project #: 103139001(2)	

Note: More information available upon request



Limits Shown: None

Line Symbol	Sample	Borehole/ Test Pit	Sample Number	Depth	% Cob.+ Gravel	% Sand	% Silt and Clay
—●—	(SM) GRAVELLY SILTY SAND - TILL	BH24-1	SA-3	1.5-2.0	25.0	43.5	31.5

Line Symbol	USCS Classification	USCS Symbol	D_{10}	D_{15}	D_{30}	D_{50}	D_{60}	D_{85}	% 5-75µm
—●—	Gravelly silty sand	SM	---	---	---	0.45	1.17	7.97	---

APPENDIX E

Analytical Laboratory Results

AGAT Laboratories Certificate of Analysis

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
1102 - 44 CEDAR POINTE DRIVE
BARRIE, ON L4N 5R7
705-795-5079

ATTENTION TO: Robert Nugent

PROJECT: Proposed Development - 103139.001(2)

AGAT WORK ORDER: 25T237202

ROCK ANALYSIS REVIEWED BY: Jewel Shibu, Lab Supervisor

SOIL ANALYSIS REVIEWED BY: Nivine Basily, Inorganic Team Lead

DATE REPORTED: Jan 16, 2025

PAGES (INCLUDING COVER): 7

VERSION*: 1

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

*Notes

Disclaimer:

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- *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 is available on request from AGAT Laboratories, in accordance with ISO/IEC 17025:2017, ISO/IEC 17025:2005 (Quebec), DR-12-PALA and/or NELAP Standards.*
- *This document is signed by an authorized signatory who meets the requirements of the MELCCFP, CALA, CCN and NELAP.*
- *For environmental samples in the Province of Quebec: The analysis is performed on and results apply to samples as received. A temperature above 6°C upon receipt, as indicated in the Sample Reception Notification (SRN), could indicate the integrity of the samples has been compromised if the delay between sampling and submission to the laboratory could not be minimized.*

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: 25T237202

PROJECT: Proposed Development - 103139.001(2)

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Robert Nugent

SAMPLING SITE:120 Bond Street, Orillia, Ontario

SAMPLED BY:Aaron Woodman

(284-137) Sulfide (CGY)

DATE RECEIVED: 2025-01-08

DATE REPORTED: 2025-01-16

SAMPLE DESCRIPTION:				**BH24-1 (SA 1-3)**	**BH24-2 (SA 1-3)**
SAMPLE TYPE:				**Soil**	**Soil**
DATE SAMPLED:				**2024-12-10**	**2024-12-10**
Parameter	**Unit**	**G / S**	**RDL**	**6448359**	**6448362**
Sulfide	%		0.01	0.02	0.04

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

6448359-6448362 Sulfide is a calculated parameter and is non-accredited. The parameters that are components of the calculation are accredited.

Analysis performed at AGAT Calgary (unless marked by *)

Certified By: Jewel Shibu

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Certificate of Analysis

AGAT WORK ORDER: 25T237202

PROJECT: Proposed Development - 103139.001(2)

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Robert Nugent

SAMPLING SITE:120 Bond Street, Orillia, Ontario

SAMPLED BY:Aaron Woodman

Corrosivity Package

DATE RECEIVED: 2025-01-08

DATE REPORTED: 2025-01-16

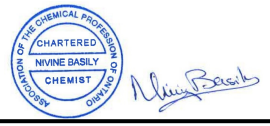
		SAMPLE DESCRIPTION:		BH24-1 (SA 1-3)	BH24-2 (SA 1-3)
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2024-12-10	2024-12-10
Parameter	Unit	G / S	RDL	6448359	6448362
Chloride (2:1)	µg/g		2	55	12
Sulphate (2:1)	µg/g		2	97	16
pH (2:1)	pH Units		NA	7.87	8.71
Electrical Conductivity (2:1)	mS/cm		0.005	0.476	0.101
Resistivity (2:1) (Calculated)	ohm.cm		1	2100	9900
Redox Potential 1	mV		NA	164	210
Redox Potential 2	mV		NA	166	212
Redox Potential 3	mV		NA	161	217

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

6448359-6448362 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:



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Quality Assurance

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

AGAT WORK ORDER: 25T237202

PROJECT: Proposed Development - 103139.001(2)

ATTENTION TO: Robert Nugent

SAMPLING SITE:120 Bond Street, Orillia, Ontario

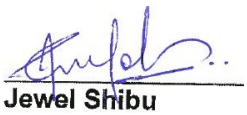
SAMPLED BY:Aaron Woodman

Rock Analysis

RPT Date: Jan 16, 2025			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
(284-137) Sulfide (CGY)															
Total Sulfur	6451172	6451172	0.04	0.07	NA	< 0.01	106%	80%	120%						
Sulfate	6444618	6444618	0.05	0.05	0.0%	< 0.01	116%	80%	120%						

Comments: RPDs are calculated using raw analytical data and not the rounded duplicate values reported.
Duplicate/ Replicate NA: Results are less than 10X the RDL and RPD will not be calculated

Certified By:



Jewel Shibu

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Quality Assurance

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

AGAT WORK ORDER: 25T237202

PROJECT: Proposed Development - 103139.001(2)

ATTENTION TO: Robert Nugent

SAMPLING SITE:120 Bond Street, Orillia, Ontario

SAMPLED BY:Aaron Woodman

Soil Analysis

RPT Date: Jan 16, 2025			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)	6446832		532	550	3.3%	< 2	95%	70%	130%	98%	80%	120%	NA	70%	130%
Sulphate (2:1)	6446832		123	124	0.9%	< 2	100%	70%	130%	101%	80%	120%	97%	70%	130%
pH (2:1)	6450549		7.69	7.89	2.6%	NA	97%	80%	120%						
Electrical Conductivity (2:1)	6450549		0.161	0.195	19.4%	< 0.005	95%	80%	120%						
Redox Potential 1	6448359					NA	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.

Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated.

Certified By:

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Method Summary

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

AGAT WORK ORDER: 25T237202

PROJECT: Proposed Development - 103139.001(2)

ATTENTION TO: Robert Nugent

SAMPLING SITE:120 Bond Street, Orillia, Ontario

SAMPLED BY:Aaron Woodman

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	ASTM G200-20, SM 2580 B	REDOX POTENTIAL ELECTRODE
Redox Potential 3	INOR-93-6066	ASTM G200-20, SM 2580 B	REDOX POTENTIAL ELECTRODE

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5835 Coopers Avenue
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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)

Report Information:

Company: GEMTEC CONSULTING ENGINEERS & SCIENTISTS
Contact: ROBERT NUGENT
Address: 44 Cedar Pointe Drive, Unit 1102, Barrie, Ontario L4N 5R7
Phone: 7058266977 Fax:
Reports to be sent to:
1. Email: robert.nugent@gemtec.ca
2. Email: doug.chisholm@gemtec.ca

Project Information:

Project: Proposed Development - 103139.001(2)
Site Location: 120 Bond Street, Orillia, Ontario
Sampled By: Aaron Woodman
AGAT Quote #: PO: 103139.001(2)
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: Alysha Finigan
Address: 850 CHAMPLAIN AVE, UNIT 101, OSHAWA ON, LIJ 8C3
Email: alysha.finigan@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

Sample Matrix Legend

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

Laboratory Use Only

Work Order #: 25T237202
Cooler Quantity: 1 Sm
Arrival Temperatures: 6.1 6.3
Custody Seal Intact: ☐ Yes ☐ No ☒ N/A
Notes: bottled ice

Turnaround Time (TAT) Required:

Regular TAT ☑ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

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

OR Date Required (Rush Surcharges May Apply):

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

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

Sample 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 Analyze F4G if required ☐ Yes ☐ No	O. Reg 153: PAHs	O. Reg 153: PCBs	O. Reg 153: VOC	O. Reg 558: Landfill Disposal Characterization 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	Salt - EC/SAR	Corrosivity	Sulphide						Potentially Hazardous or High Concentration (Y/N)
BH24-1 (SA 1-3)	2024-12-10	AM PM	1	S													☑	☑						
BH24-2 (SA 1-3)	2024-12-10	AM PM	1	S													☑	☑						
		AM PM																						
		AM PM																						
		AM PM																						
		AM PM																						
		AM PM																						
		AM PM																						
		AM PM																						
		AM PM																						
		AM PM																						

Samples Relinquished By (Print Name and Sign)	Date	Time	Samples Received By (Print Name and Sign)	Date	Time
Robert Nugent	01-08-25	12:00 pm.		Jan 9	9:15
Samples Relinquished By (Print Name and Sign)	Date	Time	Samples Received By (Print Name and Sign)	Date	Time
Samples Relinquished By (Print Name and Sign)	Date	Time	Samples Received By (Print Name and Sign)	Date	Time

Page 1 of 1

N°:

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