GEOTECHNICAL INVESTIGATION REPORT

Proposed Commercial Development
1591 and 1611 Michael Street
Ottawa, Ontario

February 14, 2023

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APPENDICES

1 INTRODUCTION

Terrapex Environmental Ltd. (Terrapex) was retained by Avenyn Capital Partners LP II (the Client) to carry out a geotechnical investigation for the proposed commercial development at the properties located at 1591 and 1611 Michael Street in Ottawa, Ontario (hereafter referred to as the "Site"). Authorization to proceed with this study was given by Mr. Roberto Campagna of Avenyn Capital Partners LP II.

The Site consists of two properties situated approximately 150 m northeast of the intersection of Newmarket Street and Michael Street. The property at 1591 Michael Street is currently vacant and covered with grass. The property at 1611 Michael Street is also vacant, with the surface mainly covered with a thin layer of clear stone.

According to the development plan provided by the Client, it is proposed to develop the Site with an above grade 44,262 ft^2 warehouse building,

The recommendations provided in this report are considered to be preliminary in nature, subject to review and revision upon completion of the grading and architectural plans.

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 geotechnical engineering recommendations for the proposed development.

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

2 FIELD WORK

The field work for this study was carried out on June 30 and July 7, 2022. It consisted of six (6) boreholes advanced by a drilling contractor commissioned and supervised by Terrapex utilizing conventional drilling techniques. The boreholes are designated as BH101 to BH106, advanced to depths ranging from 3.7 m to 5.8 m below ground surface (mbg), all at auger refusal.

The locations of the boreholes are shown on Figure 1 'Borehole Location Plan' in Appendix B. The borehole log sheets are enclosed in Appendix C of this report.

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 as penetration index values.

Groundwater level observations were made in all boreholes during their advancement. Monitoring wells were not installed in the boreholes.

The ground surface elevations at the locations of the boreholes were established on site by **Terrapex** using a rod and survey level.

The elevations of the boreholes were referenced to the top of the bolt collar of the fire hydrant located adjacent to the west sidewalk of Michael Street in front of the 1601 Michael Street property. The reference elevation was assumed as 100 m.

The fieldwork for this project was carried out under the full-time supervision of an experienced geotechnical 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 LABORATORY TESTS

The soil samples recovered from the split spoon sampler were properly sealed, labelled and delivered to our laboratory. They were visually classified and water content tests were conducted on all samples. The results of the classification, water contents, and Standard Penetration tests are presented on the borehole log sheets in Appendix C.

Grain-size analyses were carried out on three (3) soil samples (BH104 Samples 3, 5 and 7). The results of these tests are enclosed in Appendix D as Figures 1, 2, and 3.

In addition, two (2) soil samples, BH103 Sample 3 and BH104 Sample 3, were submitted to AGAT Laboratories for determination of pH and sulphate content and its 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 SITE AND SUBSURFACE CONDITONS

Full details of the subsurface soil and groundwater conditions at the site are given on the Borehole Log Sheets attached in Appendix C 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 east side of Michael Street, approximately 150 m north of Newmarket Street. It is currently vacant.

The property is irregular shaped and is surrounded by commercial and light industrial properties. The location of the site is shown on the attached Borehole Location Plan.

The ground surface topography of the site is relatively flat, with the ground surface elevations at the borehole locations varying between 98.7 m and 100.0 m.

4.2. TOPSOIL

Topsoil is present at the ground surface in Boreholes BH104 through BH106. The thickness of the topsoil ranges from 200 to 760 mm.

It should be noted that the topsoil thicknesses measured at the borehole locations are not representative of the entire site and should not be used as a basis for estimating the amount of topsoil that needs to be stripped from the site.

4.3. FILL MATERIAL

Fill material is present below the topsoil or from surface in all boreholes, extending to depths of 0.8 to 1.5 mbg. The fill material is generally non-cohesive and consists of silt, sand & gravel, gravelly sand, sand & silt, sandy silt, gravelly silty sand, locally with trace organics.

The fill is brown in colour and moist in appearance. The water content of the samples of the fill obtained from the boreholes range from 1 to 17% by weight. SPT in the fill provided N-values ranging from 4 to 20, indicating a loose to compact condition.

4.4. NATIVE SOIL

The native soils below the fill material include clayey silt, sandy silt till, silty sand till, gravelly sand till, sandy silt, sand, sandy silt, and sand & silt.

4.4.1 SILTY CLAY

Silty clay is present in BH101, directly underlying the fill material. The layer extends to a depth of 2.7 mbg.

The silty clay is brown in colour with the water content of samples ranging from 6% to 8% by weight; moist in appearance.

SPT carried out in the silty clay layer provided N-values ranging from 38 to 43 indicating a hard consistency.

4.4.2 GLACIAL TILL DEPOSITS

Glacial till deposits including sandy silt till, silty sand till, and gravelly sand till were encountered in all boreholes. These layers were encountered at different depths, interbedded with other cohesive and non-cohesive deposits.

The till soils are brown to grey in color with their water content ranging from 7 to 15% by weight; moist to wet in appearance.

SPT carried out in the tills provided N-values ranging from 14 to 97, indicating a compact to very dense compactness condition.

Grain size analysis was carried out on one (1) representative sample of sandy silt till. The test result is enclosed in Appendix D as Figure 1 and summarized in the following table.

Sample No. and Depth	Sample Description	Gravel %	Sand %	Silt %	Clay %
BH104 Sample 3; 1.5 m	Sandy silt, some clay, trace gravel (TILL)	7	28	53	12

Based on the results of the grain size analysis, the Coefficient of Permeability (k) of the sandy silt till is estimated to be less than 3×10^{-7} cm/sec. Higher permeabilities are expected for non-cohesive soils with higher percentages of sand and gravel.

4.4.3 NON-COHESIVE DEPOSITS

Non-cohesive deposits, comprising sandy silt, silty sand, sand, and sand & silt, locally with trace to some clay were encountered in boreholes BH102 through BH106. These layers are overlain by the glacial till deposit in BHs 102 to 104, extending to the termination depth of the boreholes at 3.7 to 5.8 mbg. The layer was also encountered in BH105 within the till deposit from 3.8 m to 4.7 mbg and in BH106 underlying the fill and extending to 2.3 m and then below the till deposit at 4.6 m, extending to the termination depth of the borehole at 5 mbg.

The non-cohesive deposits are brown to grey in colour with the water content of the samples ranging from 6% to 24% weight; moist to wet in appearance.

SPT carried out in these deposits provided N-values ranging from 10 to 96 blows for 300 mm penetration, indicating a compact to very dense compactness condition.

Grain size analysis was carried out on two (2) representative samples of the sandy silt and silt soils. The test results are enclosed in Appendix D as Figures 2 and 3 and summarized in the following table.

Sample No. and Depth	Sample Description	Gravel %	Sand %	Silt %	Clay %
BH104 Sample 5; 3.0 m	SANDY SILT, some gravel, trace clay	11	30	53	6
BH104 Sample 7; 4.6 m	SILT, some clay, trace sand and gravel	3	5	81	11

Based on the results of the grain size analysis, the Coefficient of Permeability (k) of these deposits are estimated to be less than 2×10^{-6} cm/sec and 5×10^{-7} cm/sec for samples 5 and 7, respectively. Higher permeabilities are expected for non-cohesive soils with higher percentages of sand and gravel.

4.4.4 BEDROCK

According to available surficial geology maps, the bedrock at the site is expected to be comprised of Shale, limestone, dolostone, siltstone of Georgian Bay Formation; Blue Mountain Formation; Billings Formation; Collingwood Member; Eastview Member.

No rock coring was carried out in the drilled boreholes. According to available well records and historic borehole data, bedrock of limestone/shale is expected to be situated at 6 mbg, or shallower in the general area of the site.

The depths at which auger refusal was encountered in the drilled boreholes are presented in the Table below. However, since no rock coring was carried out at the site, it could not be determined whether the refusal was on bedrock or in boulders that are occasionally present in till deposits.

Borehole No.	Auger Refusal Depth (mugs)	Auger Refusal Elevation (m)	Comments
BH101	5.1	94.3	Inferred boulder or bedrock
BH102	5.2	94.0	Inferred boulder or bedrock
BH103	3.7	96.3	Inferred boulder or bedrock
BH104	5.8	92.9	Inferred boulder or bedrock
BH105	5.3	94.0	Inferred boulder or bedrock
BH106	5.1	94.0	Inferred boulder or bedrock

4.5. GROUNDWATER

Groundwater levels were measured during drilling and upon completion of advancement of the boreholes, as summarized in the following table.

Borehole No.	Date	Groundwater Depth (mbg)	Groundwater Elevation (m)	Comment
BH101	June 30, 2022	1.8	97.7	Water level in the open borehole
BH102	June 30, 2022	1.7	97.6	Water level in the open borehole
BH103	June 30, 2022	N/A	N/A	Shallow boreholes
BH104	June 30, 2022	5.2	93.6	Water level in the open borehole
BH105	July 7, 2022	4.7	94.6	Wet soil layer appearance
BH106	July 7, 2022	N/A	N/A	N/A

Monitoring wells were not installed in the boreholes, and as such the long-term groundwater level could not be determined.

It should be noted that groundwater levels are subject to seasonal fluctuations. A higher groundwater level condition may also develop following significant rainfall events.

5 DISCUSSION AND RECOMMENDATIONS

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

According to the development plan provided by the Client, it is proposed to develop the Site with a 44,262 ft^2 warehouse building, at grade.

The construction methods described in this report are not specifications or recommendations to the contractors or as the only suitable methods. The collected data and the interpretation presented in this report may not be sufficient to assess all the factors that may influence the construction. 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 as they might deem necessary. The contractor should also select the method of construction, equipment and sequence based on their previous experience on similar projects.

5.1. EXCAVATION

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

It should be noted that the native soils at this site include glacial deposits, non-sorted sediment and therefore may contain boulders. Provisions must be made in the excavation and foundation installation contracts for the removal of possible boulders, if encountered.

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

Temporary excavation sidewalls in Type 3 soils should not exceed 1.0 horizontal to 1.0 vertical. Excavations extended below the water table into wet sandy soils must be sloped at a maximum inclination of 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 to occur within the presumed excavation depths of 1.7 m or shallower. It is anticipated that adequate control of groundwater seepage can be achieved with a series of filter sump pumps in the bases of the excavations.

Excavations extending below the groundwater table into the non-cohesive till deposits, will require dewatering, otherwise it will result in base instability and flowing conditions.

Surface water should be directed away from open excavations.

It will be necessary to determine the construction dewatering requirements and to collect the information required for the application for Permit to Take Water (PTTW), should this be deemed necessary.

5.3. SITE GRADING

Grading and architectural plans were not available at the time of writing this report. It is assumed that only minor modifications to site grading will be required. Given the compactness of the soils at the site there is generally no concern regarding slight grade raises as it relates to long-term settlements. However, the grading plan needs provided to Terrapex for review and comment.

5.4. ENGINEERED FILL

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

- All surface vegetation, organic materials, softened and/or disturbed soils must be removed, and the exposed subgrade soils proof-rolled under the supervision of the Geotechnical Engineer prior to any fill placement.
- In the event that the fill will be used to support structures, the existing fill must be removed in its entirety prior to placement of new fill.
- 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% Standard Proctor maximum Dry Density (SPMDD).
- 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.

- 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 unusual soil conditions become apparent during construction, due to subsurface groundwater influences, our office should be contacted in order to assess the conditions and recommend appropriate remedial measures.

5.5. 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 sheepsfoot 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 within the fill and native soils within the presumed excavation depth generally range from approximately 1 to 24%.

5.6. SERVICE TRENCHES

Based on the assumed site grades, sewer pipes and watermains are anticipated to be supported on undisturbed native deposits 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% Standard Proctor Maximum Dry Density. Bedding details should follow the applicable governing design detail. 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 Terrapex 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 materials such that at least 95% of Standard Proctor Maximum Dry Density (SPMDD) is obtained in the lower zone of the trench and 98% of SPMDD for the upper 1 m.

In areas of narrow trenches or confined spaces such as around manholes, catch basins, etc., the use of aggregate fill such as Granular 'B' Type I (OPSS 1010) is required if there is to be post-construction grade integrity.

5.7. FOUNDATION DESIGN

We understand that the proposed building will be above grade, with no basement.

Based on the soil stratigraphy observed in the boreholes, conventional spread or strip footings may be used to support the proposed building.

Foundations founded on undisturbed native deposits encountered at/blow 1.5 mbg may be designed based on a bearing resistance of 300 kPa at Serviceability Limit States (SLS) and factored geotechnical bearing resistance at Ultimate Limit States (ULS) of 450 kPa.

The total and differential settlements of spread footing foundations designed in accordance with the recommendations provided above should not exceed the conventional limits of 25 mm and 19 mm respectively.

Due to variations in the consistency of the founding soils and/or loosening caused by excavating disturbance and/or seasonal frost effects, all footing subgrades 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, the 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 at all times. If unstable subgrade conditions develop, Terrapex should be contacted in order to assess the conditions and make appropriate recommendations.

All exterior footings and footings in unheated areas should be provided by at least 1.8 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.

5.8. FLOOR SLAB

The soil stratigraphy within the footprint of the proposed building includes a fill layer extending from 0.8 m to 1.5 mbg, underlain by native strata.

Subgrade preparation should include the removal of any organic materials, and loose and weak soils. After removal of all unsuitable materials, the subgrade should then be proof-rolled with heavy rubber tired equipment and adjudged as satisfactory before preparing the granular base course. The proof-rolling operation should be witnessed by the Geotechnical Engineer. Any soft or unsuitable subgrade areas which deflect significantly 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 200 mm and comprised of free draining material using Granular “A” be provided as a base for the slab-on-grade. The base material should be compacted to 100% of its SPMMD.

Provided the subgrade, under-floor fill and granular base are prepared in accordance with the above recommendations, the Modulus of Subgrade Reaction (ks) for floor slab design will be 25,000 kPa/m.

Perimeter drainage at the foundation level is not required provided the finished floor surface is at least 150 mm above the prevailing grade and the surrounding surfaces slope away from the buildings.

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.

5.9. LATERAL EARTH PRESSURE

Parameters used in the determination of earth pressure acting on structures subject to

unbalanced pressures are defined below.

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:

SOIL PARAMETER VALUES

SOIL	Parameters				
	Φ'	γ	Ka	Kp	Ko
Fill Material	28°	20.0	0.36	2.77	0.53
Clayey Silt	32°	21.5	0.31	3.25	0.47
Glacial Till Deposits	34°	22.0	0.28	3.54	0.44
Non-cohesive Deposits	33°	21.5	0.29	3.39	0.46

1. Passive and sliding resistance within the zone subject to frost action (i.e. within 1.8 m below finished grade) should be disregarded in the lateral resistance computations.
2. Temporary and/or permanent surcharges at the ground surface should be considered in accordance with the applicable Soil Mechanics methods.

The design earth pressures in compacted backfill should be augmented with the dynamic effects of the compaction efforts, which typically are taken as a uniform 12 kPa pressure over the entire depth below grade where the calculated earth pressure based on the above earth pressure factors is less than 12 kPa.

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

$$\mathbf{P = K (\gamma h + q)}$$

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

K = applicable lateral earth pressure coefficient

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 is provided behind the walls to ensure that there is no hydrostatic pressure acting in conjunction with the earth pressure.

5.10. PAVEMENT DESIGN

Based on the existing topography of the site and the presumption that there will be minor re-grading, it is anticipated that the sub-grade material for the pavement will generally comprise of silty clay, sandy silt to silt or fill soil.

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 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.

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

RECOMMENDED ASPHALTIC CONCRETE PAVEMENT STRUCTURE DESIGN (MINIMUM COMPONENT THICKNESSES)

Pavement Layer	Compaction Requirements	Light Duty Pavement	Heavy Duty Pavement
Surface Course Asphaltic Concrete	97% Marshall Density	40 mm Hot-Laid HL3	50 mm Hot-Laid HL3
Binder Course Asphaltic Concrete	97% Marshall Density	50 mm Hot-Laid HL8	70 mm Hot-Laid HL8
Granular Base	100% SPMDD	150 mm compacted depth OPSS Granular A	150 mm compacted depth Granular A
Granular Sub-Base	100% SPMDD	200 mm compacted depth Granular B	300 mm compacted depth Granular B

* Standard Proctor maximum dry density (ASTM-D698)

The subgrade must be compacted to at least 98% of SPMDD for at least the upper 1.0 m 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.

Control of surface water is a significant factor in achieving good pavement life. Grading adjacent to the pavement areas must be designed so that water is not allowed to pond adjacent to the outside edges of the pavement or curb. In addition, the need for adequate drainage cannot be over-emphasized. The subgrade must be free of depressions and sloped (preferably at a minimum gradient of three percent) to provide effective drainage toward subgrade drains. Sub-drains are recommended to intercept excess subsurface moisture at the curb lines and catch basins. The invert of sub-drains should be maintained at least 0.3 m below subgrade level.

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, topsoil, 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 Terrapex personnel for final recommendations of sub-base thicknesses.

- In the event that pavement construction takes place in the spring thaw, the 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 (2012) 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.A of the Ontario Building Code (2012). The classification is based on the determination of the average shear wave velocity in the top 30 metres 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 consists of fill material, followed by loose to very dense sandy silt till, hard clayey silt and compact to very dense non-cohesive soils, underlain by bedrock. Accordingly, the site designation for seismic analysis is Class C.

The site specific 5% damped spectral acceleration coefficients, and the peak ground acceleration factors are provided in the 2012 Ontario Building Code - Supplementary Standard SB-1 (August 15, 2006), Table 1.2, location Ottawa, Ontario.

5.12. CHEMICAL CHARACTERIZATION OF SUBSURFACE SOIL

Two (2) native soil samples obtained from Boreholes BH103 Sample 3 and BH104 Sample 3 from approximate depth of 1.5 mbg were submitted to AGAT Laboratories 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 are 8.5 and 8.1, for BH103 Sample 3 and BH104 Sample 3, respectively, indicating a slight alkalinity.

The water-soluble sulphate contents of the tested samples are 0.0064% and 0.0035%. 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 buildings.

6 LIMITATIONS OF REPORT

The Limitations of Report, as quoted in Appendix 'A', are an integral part of this report.

Yours respectfully,
Terrapex Environmental Ltd.

Meysam Najari, Ph.D.
Vice President – Geotechnical Services

Vic Nersesian, P.Eng.
Senior Geotechnical Engineer

APPENDIX A

LIMITATIONS OF REPORT

LIMITATIONS OF REPORT

This report has been completed in accordance with the terms of reference for this project as agreed upon by Tara Developments (the Client) and Terrapex Environmental Ltd. (Terrapex) and generally accepted engineering consulting practices in this area.

The conclusion and recommendations in this report are based on information determined at the inspection locations. Soil and groundwater conditions between and beyond the test holes may differ from those encountered at the test hole locations, and conditions may become apparent during construction which could not be detected or anticipated at the time of the soil investigation. If new or different information is identified, Terrapex should be requested to re-evaluate its conclusions and recommendations and amend the report as appropriate.

The design recommendations given in this report are applicable only 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 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.

This report was prepared for the sole use of Avenyn Capital Partners LP II. Terrapex accepts no liability for claims arising from the use of this report, or from actions taken or decisions made as a result of this report, by parties other than Avenyn Capital Partners LP II. The material herein reflects Terrapex's judgement in light of the information available to it at the time of preparation. We recommend, therefore, 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 also recommend 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, Terrapex's responsibility is limited to accurately interpreting the conditions encountered at the test holes, only.

The comments given in this report on potential construction problems and possible methods are intended for the guidance of the design engineer, only. The number of inspection locations may not be sufficient to determine all the factors that may affect construction methods and costs. Contractors bidding on this project or undertaking the 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.

APPENDIX B

BOREHOLE LOCATION PLAN

TERRAPEX

SAMPLE LOCATIONS

1591 AND 1611 MICHAEL STREET
OTTAWA, ONTARIO

CLIENT

AVENYN FUND

LEGEND

BOREHOLE

0 25m 50m

(APPROXIMATE)

SOURCE: VU MAP FIRST BASE SOLUTIONS, SATELLITE IMAGERY. SITE PLAN PROVIDED BY CLIENT.

PROJECT #	CO892.00
SCALE	AS SHOWN
DATE	AUGUST 2022
DRAWN	SW
CHECKED	
DRAWING #	FIGURE 1

APPENDIX C

BOREHOLE LOG SHEETS

CLIENT: Avenyn Capital Partners LP II	PROJECT NO.: CO892.00	**RECORD OF: BH101**
ADDRESS: 1591 and 1611 Michael Street		
CITY/PROVINCE: OTTAWA, ONTARIO	NORTHING (m):	EASTING (m): ELEV. (m) 99.45
CONTRACTOR: OGS	METHOD: Hollow Stem Auger + Split Spoon Sampling	
BOREHOLE DIAMETER (cm): 20	WELL DIAMETER (cm):	SCREEN SLOT #: SAND TYPE: SEALANT TYPE:

SAMPLE TYPE: AUGER | DRIVEN | CORING | DYNAMIC CONE | SHELBY | SPLIT SPOON

GWL (m)	SOIL SYMBOL	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	SHEAR STRENGTH (kPa) / N-VALUE (Blows/300mm)	WATER CONTENT (%) PL W.C. LL	SAMPLE NO.	SAMPLE TYPE	RECOVERY (%)	SV/TOV (ppm or %LEL) (new title)	LABORATORY TESTING	WELL INSTALLATION	REMARKS
		compact, moist, dark brown silt some gravel, some sand (FILL)	0	99	10	2	1		5				
			0.5										
			1	98.5	17	14	2A		75				
						10	2B						
			1.5	98									
▼		hard, moist, brown CLAYEY SILT			43	6	3		33				
			2	97.5									
			2.5	97	38	8	4A		83				
						10	4B						
		dense, moist to wet, grey SILTY SAND trace gravel, trace clay (TILL)	3	96.5									
					41	10	5		55				
			3.5	96									
			4	95.5	44	10	6		75				
			4.5	95									
			5	94.5	50/150	7	7		17				
		END OF BOREHOLE											Auger Refusal at 5.1 m

TERRAPEX

LOGGED BY: HM	DRILLING DATE: 30-JUN-22
INPUT BY: SW/EMZ	MONITORING DATE:
REVIEWED BY: VN	PAGE 1 OF 1

CLIENT: Avenyn Capital Partners LP II	PROJECT NO.: CO892.00	**RECORD OF: BH102**
ADDRESS: 1591 and 1611 Michael Street		
CITY/PROVINCE: OTTAWA, ONTARIO	NORTHING (m):	EASTING (m): ELEV. (m) 99.27
CONTRACTOR: OGS	METHOD: Hollow Stem Auger + Split Spoon Sampling	
BOREHOLE DIAMETER (cm): 20	WELL DIAMETER (cm):	SCREEN SLOT #: SAND TYPE: SEALANT TYPE:

SAMPLE TYPE: AUGER | DRIVEN | CORING | DYNAMIC CONE | SHELBY | SPLIT SPOON

GWL (m)	SOIL SYMBOL	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	SHEAR STRENGTH (kPa) / N-VALUE (Blows/300mm)	WATER CONTENT (%) PL W.C. LL	SAMPLE NO.	SAMPLE TYPE	RECOVERY (%)	SV/TOV (ppm or %LEL) (new title)	LABORATORY TESTING	WELL INSTALLATION	REMARKS
		compact, most, dark brown gravelly sand (FILL)	0	99	20	11	1A		100				
			0.5				1B						
		compact, moist, brown sand and gravel (FILL)	1	98.5	16	14	2		50				
			1.5	98									
▼		dense to very dense, moist, brown GRAVELLY SAND trace silt, trace clay (TILL)	2	97.5	50	15	3		67				
			2.5	97	47		4		33				
		dense, moist, grey SANDY SILT	3	96.5	31	10	5A		83				
		dense to very dense, wet, grey SAND trace silt	3.5	96		13	5B						
			4	95.5	53	12	6		58				
		very dense, wet, grey SANDY SILT some gravel	4.5	95									
			5	94.5	64	14	7		83				
		END OF BOREHOLE											Auger refusal at 5.2 m

TERRAPEX

LOGGED BY: HM	DRILLING DATE: 30-JUN-22
INPUT BY: SW/EMZ	MONITORING DATE:
REVIEWED BY: VN	PAGE 1 OF 1

CLIENT: Avenyn Capital Partners LP II	PROJECT NO.: CO892.00	**RECORD OF: BH103**
ADDRESS: 1591 and 1611 Michael Street		
CITY/PROVINCE: OTTAWA, ONTARIO	NORTHING (m):	EASTING (m): ELEV. (m) 100.02
CONTRACTOR: OGS	METHOD: Hollow Stem Auger + Split Spoon Sampling	
BOREHOLE DIAMETER (cm): 20	WELL DIAMETER (cm):	SCREEN SLOT #: SAND TYPE: SEALANT TYPE:

SAMPLE TYPE: AUGER | DRIVEN | CORING | DYNAMIC CONE | SHELBY | SPLIT SPOON

GWL (m)	SOIL SYMBOL	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	SHEAR STRENGTH (kPa) / N-VALUE (Blows/300mm)	WATER CONTENT (%) PL W.C. LL	SAMPLE NO.	SAMPLE TYPE	RECOVERY (%)	SV/TOV (ppm or %LEL) (new title)	LABORATORY TESTING	WELL INSTALLATION	REMARKS
		compact, moist, dark brown/brown sand and silt (FILL)	0	100	14	4	1		13				
			0.5	99.5									
			1	99	11	11	2		83				
		dense to very dense, moist SILTY SAND trace gravel, trace clay (TILL) brown	1.5	98.5		10							
			2	98	43		3		67				
		----------											
		grey	2.5	97.5	62	8	4		100				
		very dense, moist, grey SANDY SILT	3	97									
					122	10	5		67				
			3.5	96.5									
		END OF BOREHOLE											Auger refusal at 3.7 m

TERRAPEX	LOGGED BY: HM	DRILLING DATE: 30-JUN-22
	INPUT BY: SW/EMZ	MONITORING DATE:
	REVIEWED BY: VN	PAGE 1 OF 1

CLIENT: Avenyn Capital Partners LP II	PROJECT NO.: CO892.00	**RECORD OF: BH104**
ADDRESS: 1591 and 1611 Michael Street		
CITY/PROVINCE: OTTAWA, ONTARIO	NORTHING (m):	EASTING (m): ELEV. (m) 98.72
CONTRACTOR: OGS	METHOD: Hollow Stem Auger + Split Spoon Sampling	
BOREHOLE DIAMETER (cm): 20	WELL DIAMETER (cm):	SCREEN SLOT #: SAND TYPE: SEALANT TYPE:

SAMPLE TYPE: AUGER | DRIVEN | CORING | DYNAMIC CONE | SHELBY | SPLIT SPOON

GWL (m)	SOIL SYMBOL	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	SHEAR STRENGTH (kPa) / N-VALUE (Blows/300mm)	WATER CONTENT (%) PL W.C. LL	SAMPLE NO.	SAMPLE TYPE	RECOVERY (%)	SV/TOV (ppm or %LEL) (new title)	LABORATORY TESTING	WELL INSTALLATION	REMARKS
		TOPSOIL (760 mm)	0	98.5	7	17	1		15				
		loose, moist, dark brown silt some gravel, some sand (FILL)	0.5										
			1	98	6		2		88				
		compact to dense, moist, brown SANDY SILT trace gravel, some clay (TILL)	1.5	97.5		14							
			2	97	14		3		58				
			2.5	96.5	46	10	4A		100				
		dense to very dense, moist, grey SANDY SILT trace to some gravel, trace clay	3	96		9	4B						
			3.5	95.5	61	10	5		83				
			4	95									
			4.5	94.5	44	15	6		100				
		some clay	5	94	97	13	7		100				
			5.5	93.5	114	6	8						
		END OF BOREHOLE		93									Auger refusal at 5.8 m

TERRAPEX	LOGGED BY: HM	DRILLING DATE: 30-JUN-22
	INPUT BY: SW/EMZ	MONITORING DATE:
	REVIEWED BY: VN	PAGE 1 OF 1

CLIENT: Avenyn Capital Partners LP II | PROJECT NO.: CO892.00 | **RECORD OF: BH105**

ADDRESS: 1591 and 1611 Michael Street

CITY/PROVINCE: OTTAWA, ONTARIO | NORTHING (m): | EASTING (m): | ELEV. (m) 99.31

CONTRACTOR: OGS | METHOD: Hollow Stem Auger + Split Spoon Sampling

BOREHOLE DIAMETER (cm): 20 | WELL DIAMETER (cm): | SCREEN SLOT #: | SAND TYPE: | SEALANT TYPE:

SAMPLE TYPE: AUGER | DRIVEN | CORING | DYNAMIC CONE | SHELBY | SPLIT SPOON

GWL (m)	SOIL SYMBOL	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	SHEAR STRENGTH (kPa) / N-VALUE (Blows/300mm)	WATER CONTENT (%) PL W.C. LL	SAMPLE NO.	SAMPLE TYPE	RECOVERY (%)	SV/TOV (ppm or %LEL) (new title)	LABORATORY TESTING	WELL INSTALLATION	REMARKS
		Topsoil (600mm)	0	99	4	17	1		33				
		loose, moist, brown sandy silt trace gravel (FILL)	0.5	98.5	9	9	2A		67				
			1			17	2B						
		dense, moist, brown SANDY SILT trace gravel, trace clay (TILL)	1.5	98									
			2	97.5	44	11	3		67				
		dense to very dense, moist SILTY SAND trace gravel, trace clay (TILL) brown	2.5	97		10	4		100				
			3	96.5	49								
		---------- grey	3.5	96	53	7	5A		92				
						8	5B						
		dense, moist, grey SANDY SILT	4	95.5		17	6		100				
			4.5	95	40								
		very dense, wet, grey SANDY SILT trace gravel, trace clay (TILL)	5	94.5	97	17 14	7A 7B		58				
		END OF BOREHOLE											Auger refusal at 5.3 m

TERRAPEX

LOGGED BY: HM | DRILLING DATE: 07-July-22

INPUT BY: SW/EMZ | MONITORING DATE:

REVIEWED BY: VN | PAGE 1 OF 1

CLIENT: Avenyn Capital Partners LP II	PROJECT NO.: CO892.00	**RECORD OF: BH106**
ADDRESS: 1591 and 1611 Michael Street		
CITY/PROVINCE: OTTAWA, ONTARIO	NORTHING (m):	EASTING (m): ELEV. (m) 99.14
CONTRACTOR: OGS	METHOD: Hollow Stem Auger + Split Spoon Sampling	
BOREHOLE DIAMETER (cm): 20	WELL DIAMETER (cm):	SCREEN SLOT #: SAND TYPE: SEALANT TYPE:

SAMPLE TYPE: AUGER | DRIVEN | CORING | DYNAMIC CONE | SHELBY | SPLIT SPOON

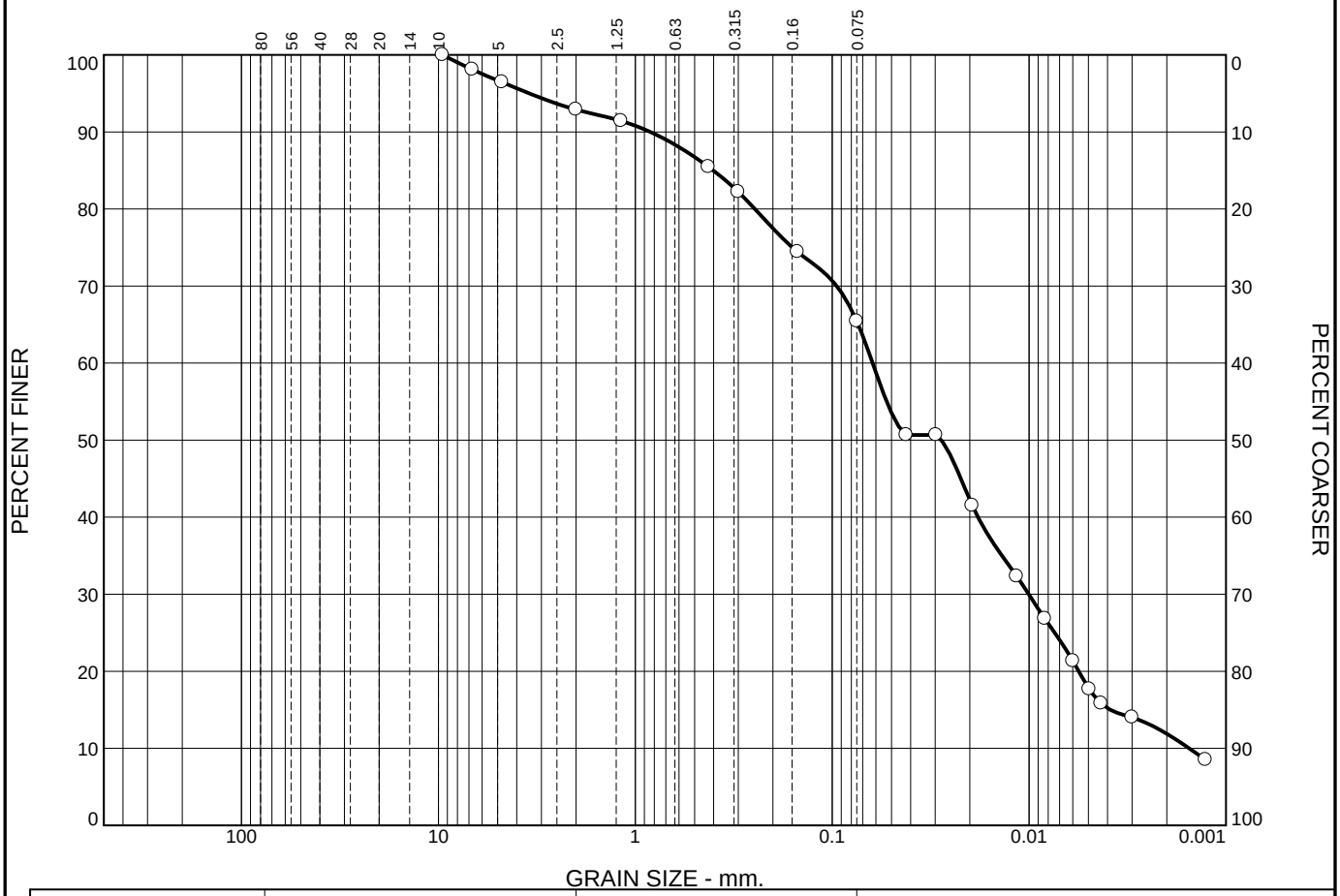
GWL (m)	SOIL SYMBOL	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	SHEAR STRENGTH (kPa) / N-VALUE (Blows/300mm)	WATER CONTENT (%) PL W.C. LL	SAMPLE NO.	SAMPLE TYPE	RECOVERY (%)	SV/TOV (ppm or %LEL) (new title)	LABORATORY TESTING	WELL INSTALLATION	REMARKS
		TOPSOIL (200 mm)	0	99	6	17	1A		67				
		loose, moist, dark brown gravelly silty sand trace organics (FILL)	0.5	98.5			1B						
		compact, moist, brown SAND AND SILT trace gravel	1	98	10	24	2		75				
		dense, moist, brown SANDY SILT trace gravel	1.5	97.5	33	14	3		83				
			2	97									
		moist, grey SANDY SILT trace gravel, trace clay (TILL)	2.5	96.5	21	14	4		67				
		compact	3	96									
			3.5	95.5	28	14	5		92				
		---------- dense	4	95	40	13	6		75				
		very dense, moist, grey SANDY SILT	4.5	94.5	96	12	7		76				
			5										
		END OF BOREHOLE											Auger refusal at 5.1 m

TERRAPEX	LOGGED BY: HM	DRILLING DATE: 07-July-22
	INPUT BY: SW/EMZ	MONITORING DATE:
	REVIEWED BY: VN	PAGE 1 OF 1

APPENDIX D

GEOTECHNICAL LABORATORY TEST RESULTS

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0	7	8	20	53	12

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.4022	0.0624	0.0279	0.0100	0.0039	0.0015	1.05	40.54

Material Description	USCS	AASHTO
○ Sandy Silt Till, Moist, Brown		

Project No. CO892.00 **Client:** Avenyn Capital Partners LP II

Project: 1591/1611 Michael Street, Ottawa

○ **Location:** BH104 **Sample Number:** BH 104, Sample 3

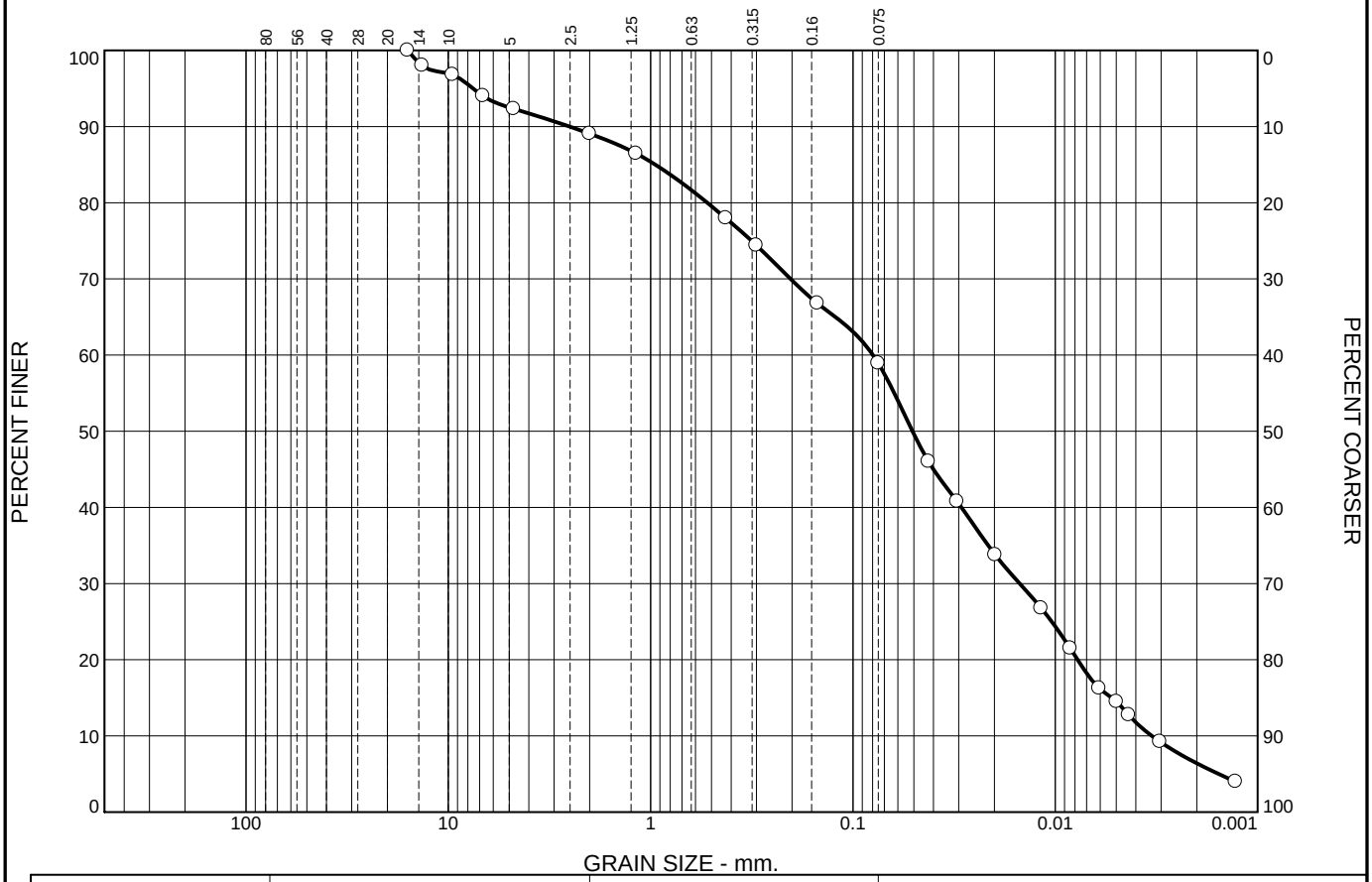
Remarks:

Terrapex

Toronto, Ontario

Figure 1

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0	11	11	19	53	6

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.9480	0.0797	0.0508	0.0150	0.0053	0.0033	0.85	23.90

Material Description	USCS	AASHTO
○ SANDY SILT some gravel trace clay		

Project No. CO892.00 **Client:** Avenyn Capital Partners LP II

Project: 1591/1611 Michael Street, Ottawa

○ **Sample Number:** BH 104, Sample 5

Remarks:

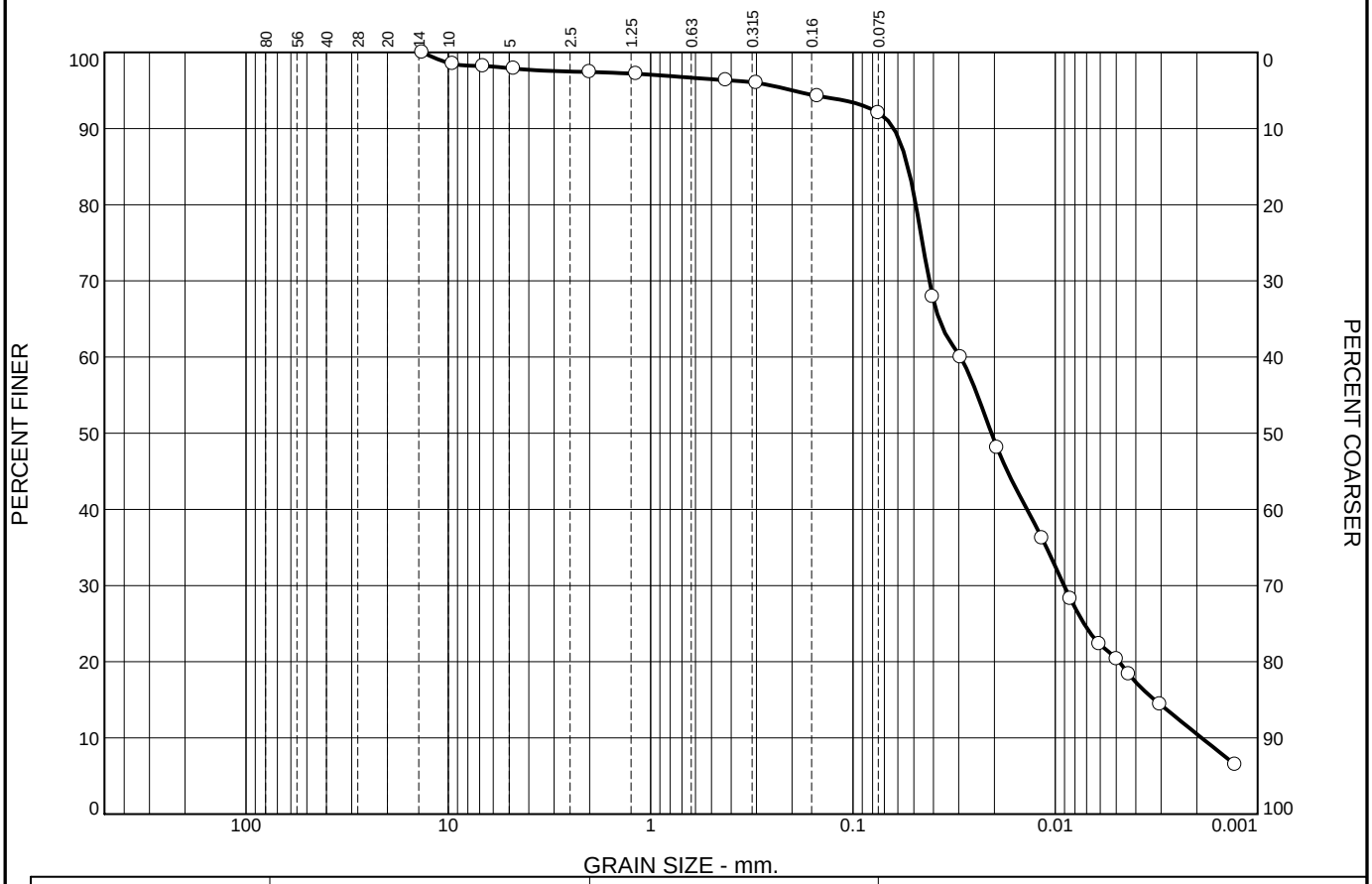
Terrapex

Toronto, Ontario

Figure 2

Tested By: UB

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0	3	1	4	81	11

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.0536	0.0294	0.0207	0.0090	0.0032	0.0019	1.47	15.56

Material Description	USCS	AASHTO
○ SILT some clay trace sand trace gravel		

Project No. CO892.00 **Client:** Avenyn Capital Partners LP II

Project: 1591/1611 Michael Street, Ottawa

○ **Sample Number:** BH 104, Sample 7

Remarks:

Terrapex

Toronto, Ontario

Figure 3

Tested By: UB

APPENDIX E

CERTIFICATE OF CHEMICAL ANALYSES

AGAT Laboratories

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

CLIENT NAME: TERRAPEX ENVIRONMENTAL LIMITED
20 GURDWARA ROAD, UNIT 1
OTTAWA, ON K2E 8B3
613-745-6471

ATTENTION TO: Hussain Mohammed

PROJECT: CO892.00

AGAT WORK ORDER: 22Z923365

SOIL ANALYSIS REVIEWED BY: Jacky Zhu, Spectroscopy Technician

DATE REPORTED: Jul 27, 2022

PAGES (INCLUDING COVER): 6

VERSION*: 1

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

*Notes

Disclaimer:

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

AGAT Laboratories

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CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 22Z923365

PROJECT: CO892.00

CLIENT NAME: TERRAPEX ENVIRONMENTAL LIMITED

ATTENTION TO: Hussain Mohammed

SAMPLING SITE:1591 and 1611 Michael St

SAMPLED BY:HM

Sulphate + pH

DATE RECEIVED: 2022-07-20

DATE REPORTED: 2022-07-27

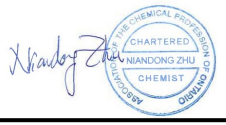
		SAMPLE DESCRIPTION:		BH103-SS3	BH104-SS3
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2022-06-30 12:00	2022-06-30 13:00
Parameter	Unit	G / S	RDL	4123504	4123535
Sulphate (2:1)	µg/g		2	64	35
pH (2:1)	pH Units		NA	8.48	8.09

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

4123504-4123535 EC, pH, Chloride and Sulphate were determined on the extract obtained from the 2:1 leaching procedure (2 parts DI water: 1 part soil).

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



AGAT Laboratories

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

Quality Assurance

CLIENT NAME: TERRAPEX ENVIRONMENTAL LIMITED

AGAT WORK ORDER: 22Z923365

PROJECT: CO892.00

ATTENTION TO: Hussain Mohammed

SAMPLING SITE:1591 and 1611 Michael St

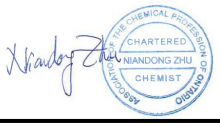
SAMPLED BY:HM

Soil Analysis

RPT Date: Jul 27, 2022			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Sulphate + pH															
Sulphate (2:1)	4112675		78	82	5.0%	< 2	98%	70%	130%	96%	80%	120%	100%	70%	130%
pH (2:1)	4120300		8.48	8.69	2.4%	NA	98%	80%	120%						

Comments: NA signifies Not Applicable.
pH duplicates QA acceptance criteria was met relative as stated in Table 5-15 of Analytical Protocol document.
Duplicate NA: results are under 5X the RDL and will not be calculated.

Certified By:



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CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Time Markers

AGAT WORK ORDER: 22Z923365

PROJECT: CO892.00

CLIENT NAME: TERRAPEX ENVIRONMENTAL LIMITED

ATTENTION TO: Hussain Mohammed

Sample ID	Sample Description	Sample Type	Date Sampled	Date Received
4123504	BH103-SS3	Soil	30-JUN-2022	20-JUL-2022

Sulphate + pH

Parameter	Date Prepared	Date Analyzed	Initials
Sulphate (2:1)	26-JUL-2022	26-JUL-2022	LC
pH (2:1)	25-JUL-2022	25-JUL-2022	AM

Sample ID	Sample Description	Sample Type	Date Sampled	Date Received
4123535	BH104-SS3	Soil	30-JUN-2022	20-JUL-2022

Sulphate + pH

Parameter	Date Prepared	Date Analyzed	Initials
Sulphate (2:1)	26-JUL-2022	26-JUL-2022	LC
pH (2:1)	25-JUL-2022	25-JUL-2022	AM

AGAT Laboratories

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

Method Summary

CLIENT NAME: TERRAPEX ENVIRONMENTAL LIMITED

AGAT WORK ORDER: 22Z923365

PROJECT: CO892.00

ATTENTION TO: Hussain Mohammed

SAMPLING SITE:1591 and 1611 Michael St

SAMPLED BY:HM

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
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

AGAT Laboratories
5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

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

Report Information:

Company: Terraex
Contact: Hussain Mohammed
Address: 20 Overdrawn RD
Phone: (613)805-7287 Fax:
Reports to be sent to:
1. Email: H.Mohammed@terraex.com
2. Email:

Project Information:

Project: C0892.00
Site Location: 1591 and 1611 Michael St
Sampled By: HM
AGAT ID #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☑ No ☐
Company:
Contact:
Address:
Email:

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 #: 22792336 05
Cooler Quantity: 1 medium one - loose ice
Arrival Temperatures: 16.8 | 16.6 | 16.5
L.T→ 6.9 | 7.6 | 7.8
Custody Seal Intact: ☐ Yes ☐ No ☐ N/A
Notes: Bagged Ice

Turnaround Time (TAT) Required:

Regular TAT (Most Analysis) ☑ 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	Metals - ☐ CrVI, ☐ Hg, ☐ HWSB	BTEX, F1-F4 PHCs	Analyze F4G if required ☐ Yes ☐ No	PAHs	Total PCBs ☐ Arocior	VOC	O. Reg 558: Landfill Disposal Characterization TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	O. Reg 406: Excess Soils SPLP Rainwater Leach ☐ VOCs ☐ SVOCs	Excess Soils Characterization Package pH, ICPMS Metals, BTEX, F1-F4	Salt - EC/SAR	pH and Sulphate content	Potentially Hazardous or High Concentration (Y/N)
BH103-SS3	June 30/22	12:00 AM/PM	1	S														☑	
BH104-SS3	June 30/22	13:00 AM/PM	1	S														☑	
		AM/PM																	
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Samples Relinquished By (Print Name and Sign): Hussain Mohammed	Date July 21/22	Time 3:45	Samples Received By (Print Name and Sign): C. Griffiths JUL	Date 2 0 2022	Time 16h30
Samples Relinquished By (Print Name and Sign): C Cato Duro JUL	Date 2 1 2022	Time 16h00	Samples Received By (Print Name and Sign): Anthony Daselva	Date	Time
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time

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