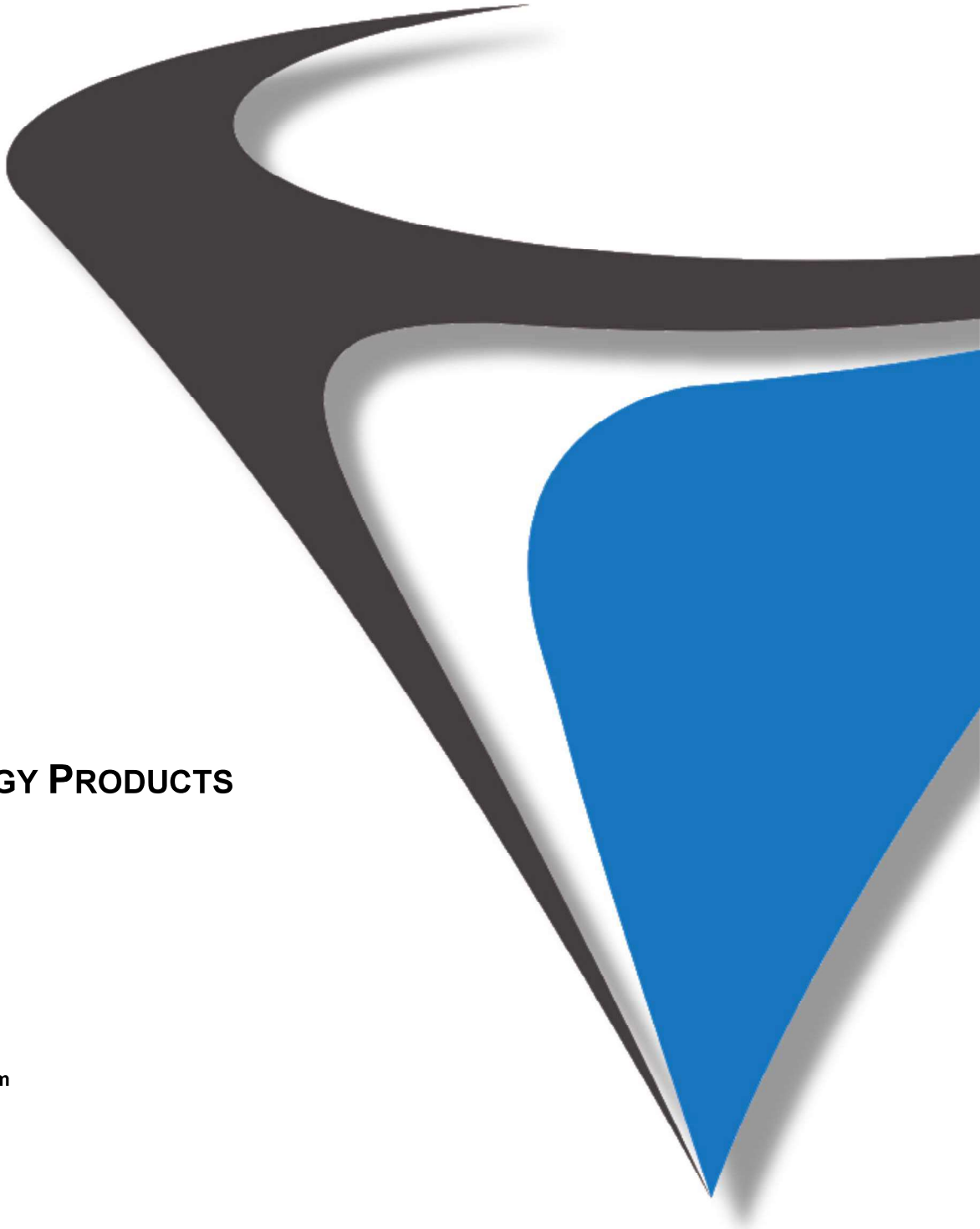
PRELIMINARY GEOTECHNICAL INVESTIGATION REPORT

Proposed Redevelopment of Gas Service Station
2180 Montreal Road
Ottawa, Ontario



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FINAL REPORT

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Prepared for:

SUNCOR ENERGY PRODUCTS PARTNERSHIP

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1.0 NTRODUCTION

Terrapex Environmental Ltd. (**Terrapex**) was retained by Suncor Energy Products Partnership to carry out a preliminary Geotechnical Investigation of the commercial property located at 2180 Montreal Road and 972 Shefford Road in Ottawa, Ontario.

The Site is currently an operating retail gasoline station under the Petro-Canada brand including a convenience store and a carwash at 2180 Montreal Road, as well as a vacant residential building and associated garage located at 972 Shefford Road. The Site is surrounded by Montreal Street to the north, Shefford Road to the east and neighbouring residential and commercial properties to the south and west.

The design drawings for the proposed redevelopment were not available at the time of preparing this report and/or were not provided to our office by Suncor Energy Products Partnership at this stage. As such, this geotechnical investigation is viewed as preliminary. Further investigation and analyses will be required once the details of the proposed construction become available.

The purpose of this preliminary investigation is to characterize the underlying soil and groundwater conditions, to determine the relevant geotechnical properties of encountered soils at the borehole locations and to provide preliminary geotechnical engineering recommendations of the future development.

This report presents the results of the preliminary 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. If any questions arise concerning the geotechnical aspects of the code and standards, this office should be contacted to review the design. This preliminary report is prepared as part of the initial stages of planning and design. The report will be finalized once the structural and architectural drawings are issued and that the investigation completed on site is sufficient for their design purposes; otherwise, further study may be necessary to carry out additional borings and reporting before recommendations of this office can be relied upon.

This report deals with the geotechnical issues only. The environmental site assessment is discussed in a separate report.

2.0 FIELDWORK

The fieldwork for this study was carried out between February 7 to March 6, 2024, and consisted of Fourteen (14) boreholes advanced by a drilling contractor commissioned by **Terrapex**. The locations of the boreholes were chosen by **Terrapex** to provide general coverage of the proposed development and are shown on the Borehole Location Plan enclosed in **Appendix B**. The fieldwork was carried out in conjunction with the Phase Two Environmental Site Assessment undertaken by Terrapex.

The boreholes designated as MW101 through MW112 were advanced to depths ranging from 5.2 m to 7.5 m below ground surface (mbgs); and MW113 and MW114 were advanced 25 m below ground surface to further characterize the underlying soil stratigraphy. Boreholes MW103 and MW105 were advanced by direct push method from 0 to 4.5 m below ground surface (mbgs) and MW108 and MW109 were also advanced by direct push method to termination depth. The remaining boreholes were advanced by conventional drilling techniques, using hollow stem augers with standard penetration tests (SPTs).

Except for MW109 and MW108, as well as MW103 and MW105 from 0 to 4.5 m below ground surface, Standard Penetration Tests (SPTs) 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 various 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. Results of SPT tests are shown on the Borehole Log Sheets in **Appendix C** of this report.

In situ vane tests were carried out in several of the boreholes, and pocket penetrometer was used on samples retained from the boreholes to estimate the undrained shear strength of the clayey soils.

Groundwater level observations were made in all boreholes during and upon the completion of advancing each borehole. Monitoring wells were installed in Boreholes MW101, MW102, MW103 through MW114 for long-term monitoring of groundwater levels.

The ground surface elevations at the locations of the boreholes and monitoring wells were established utilizing a Trimble GNSS Receiver.

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

3.0 LABORATORY TESTS

The soil samples recovered from the split spoon sampler and Thin Wall (Shelby Tubes) samples were logged, properly sealed, labelled and brought to our laboratory. They were visually classified and water content tests were conducted on all samples retained from Boreholes BH-MW101 to BH-MW114. The results of the classification, water contents, and Standard Penetration tests are presented on the borehole log sheets attached in **Appendix C** of this report**.**

Seventeen (17) grain size analyses and seventeen (17) Atterberg limits tests were carried out on selected native soil samples except for BH-MW113 where grain size analysis and Atterberg limits tests were carried out on selected fill soil sample. The results of these tests are enclosed in **Appendix D**.

Five (5) Thin Wall (Shelby Tubes) samples were submitted to Paterson Group to carry out advanced geotechnical laboratory testing, this included consolidation test, the results of which are enclosed in **Appendix D.**

In addition, selected three (3) native soil samples were submitted to AGAT Laboratories for chemical analyses in determination of pH and sulphate content and to determine potential for sulphate attack on buried concrete. The results of these tests are enclosed in Appendix E; discussed in Section 5.8 of this report.

4.0 SITE AND SUBSURFACE CONDITONS

Full details of the subsurface 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 currently an operating retail gasoline station under the Petro-Canada brand including a convenience store and a carwash at 2180 Montreal Road, as well as a vacant residential building and associated garage located at 972 Shefford Road. The Site is surrounded by Montreal Street to the north, Shefford Road to the east and neighbouring residential and commercial properties to the south and west. It occupies an area of approximately 0.614 hectares (6140 m^2).

The site is generally flat. The ground surface elevations established at the borehole locations range from 67.07 m to 67.90 m.

4.2 GROUND COVER

Topsoil is present at the ground surface in borehole MW107 with the approximate thickness of 80 mm.

Asphaltic concrete pavement is present at boreholes MW101, MW102, MW103, MW104, MW105 MW106, MW113 and MW114. The thickness of asphaltic concrete at the borehole locations ranges from approximately 64 to 100 mm.

4.3 FILL MATERIAL

Sand and Gravel with trace clay is present below the asphalt concrete pavement at Boreholes MW101, MW102, MW103, MW104, MW105 MW106, MW113 and MW114 and topsoil in borehole MW107. The fill material extends to depths ranging from 0.5 to 0.8 m below ground surface (mbgs).

The fill material is mostly brown, dark in color and moist in appearance. The water content of the samples of fill ranges from 3.9 to 5.6% by weight.

SPTs in the fill material provided N-values ranging from 2 to 31, indicating that the material is in a very loose to dense condition. It should be noted that the higher N-values at surface are a result of frozen ground or encountering gravel pieces.

4.4 SILTY CLAY

Silty clay deposit with a trace of sand is present below the fill material in Boreholes MW101 to MW107 and MW110 to MW113, extending to depths ranging from approximately 5.2 to 25 mbgs.

The silty clay deposit is generally brown and occasionally grey in colour. The water content of the samples of the silty clay from Boreholes MW101 to MW107 and MW110 to MW113 were about 32.6 to 78.2 % by weight; generally being wet in appearance.

Silty clay underlies the clayey silt extending to the explored depth of Borehole MW114. The layer is grey in colour with water content values ranging from 63% to 78% by weight, wet in appearance.

SPTs carried out in silty clay provided N-values ranging from 0 to 6 blows for 300 mm of penetration, indicating a very soft to firm consistency.

4.5 CLAYEY SILT

Clayey silt with trace sand is present below the fill material in Borehole MW114 extending to a depth of 3.8 mbgs.

The clayey silt is brown in colour. The water content of the samples of the layer range from 38 to 61% by weight; generally being wet in appearance.

SPTs carried out in the clayey silt provided N-values ranging from 2 to 4 blows for 300 mm of penetration, indicating a soft consistency.

4.6 LABORATORY TEST RESULTS

Sieve and hydrometer grain size analyses and Atterberg Limits tests were carried out on eleven (11) representative samples of silty clay/clayey silt. The test results are enclosed in Appendix D and are summarized in the following table.

Sample No. and Depth	Sample Description (According to CFEM, 4th Edition)	Gravel %	Sand %	Silt %	Clay %	Liquid Limit	Plasticity Index	Soil Classification
MW101 Sample 5 3.81 m - 4.42 m	SILTY CLAY trace sand	0	0	33	67	80	43	Inorganic clays of high plasticity
MW103 Sample 3 1.52 m – 2.13 m	SILTY CLAY, trace sand	0	1	23	76	87	46	Inorganic clays of high plasticity
MW103 Sample 5 3.05 m – 3.81 m	CLAY and SILT, trace sand	0	0	40	60	83	44	Inorganic clays of high plasticity
MW104 Sample 4 2.3 m – 2.9 m	SILTY CLAY trace sand	0	0	27	73	87	46	Inorganic clays of high plasticity
MW106 Sample 3 1.5 m -2.13 m	SILTY CLAY, trace sand	0	0	20	80	61	31	Inorganic clays of high plasticity
MW110 Sample 4 2.3 m – 2.9 m	SILTY CLAY, trace sand	0	0	30	70	87	45	Inorganic clays of high plasticity
MW110 Sample 6 3.81 m – 4.42 m	CLAY and SILT, trace sand	0	0	39	61	76	42	Inorganic clays of high plasticity
MW111-Sample 3 1.52 m – 2.13 m	CLAY and SILT, trace sand	0	1.0	39.0	60.0	81	42	Inorganic clays of high plasticity
MW111-Sample 4 2.3 m – 2.9 m	SILTY CLAY, trace sand	0	0	29	71	77	38	Inorganic clays of high plasticity
MW112-Sample 4 2.3 m – 2.9 m	SILTY CLAY, trace sand	0	1	30	69	85	44	Inorganic clays of high plasticity
MW112-Sample 5 3.05 m – 3.81 m	CLAY and SILT, trace sand	0	0	49	51	87	43	Inorganic clays of high plasticity
MW113-Sample 2	SILTY CLAY, trace sand	0	1	28	71	84	47	Inorganic clays of high plasticity
MW113-Sample 4 2.3 m – 2.9 m	SILTY CLAY, trace sand	0	0	30	70	80	46	Inorganic clays of high plasticity
MW113-Sample 10	SILTY CLAY, trace sand	0	0	30	70	85	44	Inorganic clays of high plasticity
MW114-Sample 3 1.52 m – 2.13 m	SILTY CLAY, trace sand	0	0	21	79	77	40	Inorganic clays of high plasticity
MW114-Sample 9	SILTY CLAY, trace sand	0	0	30	70	82	42	Inorganic clays of high plasticity
MW114-Sample 15	SILTY CLAY, trace sand	0	0	27	73	42	16	Inorganic clays of medium plasticity

Based on the results of the grain size analysis, the Coefficient of Permeability (k value) of the silty clay is estimated to be less than 10^{-7} cm/sec, corresponding to very low permeability.

4.7 GROUNDWATER

Groundwater level in the monitoring wells was measured on March 28, 2024. The groundwater level measurements are shown on the individual borehole logs and are summarized in the following table.

Borehole No.	Groundwater Depth (mbgs)	Groundwater Elevation (m)
MW101	1.38	66.08
MW102	1.68	65.60
MW103	1.56	66.34
MW104	1.29	66.25
MW105	1.35	66.34
MW106	0.98	66.08
MW107	1.65	65.76
MW108	1.86	65.58
MW110	1.07	66.78
MW111	0.72	67.10
MW112	1.52	65.95
MW113	1.36	66.28
MW114	1.47	66.32

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

5.0 DISCUSSION AND RECOMMENDATIONS

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

The preliminary investigation has revealed that the site stratigraphy consists of a surface cover of asphaltic concrete pavement, topsoil and fill material, followed mostly by silty clay. On the basis of our field work and laboratory tests, the following comments and recommendations are made.

We understand that the site is an active Petro Canada gas station building, and residential building with a garage towards the southern side of the property and the proposed future use of the site is unknown and **Terrapex** assumes that the proposed grading will not vary from the existing grade. The recommendations provided in this report is based on the assumptions that the development will consist of low-rise structures without basement, and possible gas services.

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. Contractor's 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. The contractor should also select the method of construction, equipment and sequence based on their previous experience on similar projects.

5.1 EXCAVATION AND BACKFILL

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

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

Temporary excavation sidewalls in Type 3 soils should not exceed 1.0 horizontal to 1.0 vertical. Excavation extended below the water table must be sloped at a maximum inclination of 3.0 horizontal to 1.0 vertical.

Locally, where loose or soft soil is encountered at shallow depths or within zones of persistent seepage, it will be necessary to flatten the side slopes as necessary 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.

The excavations resulting from the removal of the existing underground fuel storage tanks, convenience store, pump islands and from former buildings foundations will need to be backfilled with a suitable compactable fill material. The engineered fill operation should be monitored, and density tests should be performed on a full-time basis. The exposed subgrade soils must also be approved by the Geotechnical Engineer prior to any fill placement. Soils used as engineered fill should be free of organic and/or other unsuitable material. The engineered fill must be placed in lifts not exceeding 200 mm in thickness and compacted to 98% of the material's Standard Proctor Maximum Dry Density (SPMDD).

As an alternative to soil or aggregate backfill, lean concrete with a minimum compressive strength of 1 MPa at 28 days may be used in lieu of engineered fill to support the proposed foundations.

5.2 GROUNDWATER CONTROL

The groundwater level measured in the monitoring wells vary from 0.7 to 1.7 meter below ground surface, corresponding to geodetic elevations varying from 65.6 to 66.8 m. 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 anticipated to be encountered within excavations depth of foundation and service pipe installation. Dewatering will be required prior to any excavation below the groundwater table. Based on the soil information revealed from borehole drilling, it may be possible to carry out the dewatering by pumping from perimeter sumps and trenches. However, the effectiveness of this method can only be proven by field pump testing. Or otherwise, a positive dewatering system should be adopted. In that case, A contractor specializing in dewatering should be retained to design the dewatering systems. 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 application for permit to Take Water (PTTW), should this be deemed necessary.

5.3 GROUND IMPROVEMENT BY PRELOADING

In general, the subsurface soil at the site was consisted of very soft to firm silty clay below the ground cover.

The soil conditions at the site are considered unsuitable for support of foundations of the proposed structures due to the presence of the weak silty clay deposits across the site. Significant settlement of the weak silty clay deposits will occur under increased load conditions from

structures and any potential grade raise. Ground improvement by wick drains and surcharge loading (site preloading program) should be considered.

In general, the preloading program will consist of three steps: wick drain installation, granular blanket placement and surcharge load placement.

In the areas where ground improvement will be conducted, all topsoil, existing fill, existing pavement structure, concrete blocks, construction debris, mud and any other unsuitable materials must be removed, and the exposed subgrade should be inspected and approved by a qualified geotechnical engineer prior to any placement of backfill.

After the preparation of the subgrade, a granular blanket should be placed to collect seepage from the vertical wick drains on the surface. Prior to the placement of the granular blanket, the subgrade should be graded to have a slope of about 0.5% to 1% toward exterior drainage ditches. Any backfill required to raise the grade for a sloped subgrade surface should consist of Granular B material compacted to at least 95% of SPMDD. The thickness of the granular blanket should be at least 500 mm. The granular blanket should be free-draining Granular 'B' Type II material and should satisfy the physical and gradation requirements as specified in OPSS 1010. The granular blanket can be used as a granular pad for the installation of the wick drains. The granular blanket should be compacted to 92% ± 2% of SPMDD.

Surcharge load can then be placed over the area to induce soil consolidation.

Detail design of the wick drain installation depth and patten, the hight of the preloading material, the duration of the preloading and predicted settlement will be further analysed if this ground improvement method is to be adopted by client/designer. Settlement and pore pressure dissipation monitoring are recommended. The actual required duration of the surcharge loading will be determined by field monitoring of settlement and pore pressure dissipation in the weak silty clay deposits.

5.4 FOUNDATION DESIGN

We understand that the client has not provided details about the proposed development of the site. The recommendations are based on preliminary geotechnical investigation.

It is assumed that the proposed structure will consist of above grade building with no basement. Shallow conventional spread and strip footing foundations may be used to support the proposed structure.

Spread and strip footing founded on native soil after completion of the site preloading program can be designed for a bearing resistance of 75 kPa at Serviceability Limit States (SLS) and factored geotechnical bearing resistance of 125 kPa at Ultimate Limit States (ULS) if the site be preloaded of minimum 5.0 m height of soil and the settlement observed is satisfactory.

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

Due to variations in the consistency of the founding soils and/or loosening caused by excavation 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 0.6 m.

All exterior footings should be provided with at least 1.8 m of soil cover or equivalent artificial insulation for frost protection purposes. To minimize the amount of excavation required for construction of the footings at the above bearing depths, trench and pour method could be considered below the frost depth.

In the event the foundations are extended below the water level, it will be necessary to control the ingress of groundwater prior to the excavation for the foundations. The foundation excavations must be maintained stable and dry during construction.

The subgrade susceptible to disturbance when wet, so construction scheduling should consider the amount of excavation left exposed to the elements during foundation preparation.

Rainwater or groundwater seepage entering the foundation excavation must be pumped away (not allowed to pond). The foundation subgrade soils should be protected from freezing, inundation, and equipment traffic at all times.

The subgrade tends to weather and deteriorate rapidly on exposure to atmosphere or surface water. Terrapex recommends that footings placed on the exposed soil should be poured on the same day as they are excavated, after removal of all unsuitable founding materials and approval of the bearing surface. Alternatively, a concrete mud slab could be used to protect a bearing surface where footing construction is to be delayed.

If construction proceeds during freezing weather conditions, adequate temporary frost protection for the footing bases and concrete must be provided.

5.5 SERVICE TRENCHES

Civil and Grading plans were not available at the time of preparation of this report. It is assumed that in the event that service trenches are required, it is suggested to be supported on undisturbed native deposits which are considered suitable for supporting the proposed structures.

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

Normal Class 'B' bedding may be used for underground utilities. Granular 'A' or 19 mm crusher-run limestone can be used as bedding material; all granular materials should meet OPS 1010 specifications. The bedding material should be compacted to a minimum of 95% SPMDD. 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 or imported granular material such that at least 95% of 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.

5.6 REUSE OF ON-SITE EXCAVATED SOIL

On-site excavated inorganic soils are considered suitable for reuse as backfill material or engineering fill, provided their water content is within 2% of their optimum water content (OWC) as determined by Standard Proctor test, and the materials are effectively compacted with a suitably sized 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 and monitored by a qualified field engineer/geotechnical inspector during backfilling. Alternatively, suitable imported material can be used.

On-site soils that are wetter than their OWC should be dried sufficiently prior to use as backfill in order to achieve the specified degree of compaction.

In areas of narrow trenches or confined spaces such as around manholes, foundations, foundation walls, etc., the use of aggregate fill such as Granular “B” (OPSS 1010) is required if there is to be post-construction grade integrity.

5.7 CONCRETE SLAB-ON-GRADE

It is assumed and anticipated that subgrade below the floor slab of the proposed structure will consist of existing fill materials which is considered to be adequate to support a slab-on-grade construction provided the condition of the fill is improved.

Subgrade preparation should include the removal of all organic materials, debris and any weak, loose and disturbed soils. After removal of all unsuitable materials, the subgrade should be proof rolled with a fully loaded tandem axle dump truck. The proof-rolling operation should be witnessed by the Geotechnical Engineer. Any soft or wet subgrade areas which deflect significantly should be sub-excavated and replaced with suitable approved earth fill material compacted to at least 98% SPMDD. It is recommended that the condition of the existing fill is improved by applying compactive effort to increase the density of the materials; the existing fill material should be compacted to at least 98 % of the SPMDD.

It is recommended that a combined moisture barrier and a levelling course, having a minimum thickness of 150 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 98% SPMDD. Alternatively, 19 mm clear stone (OPSS 1004) may be used and compacted by vibration to a dense state, with filter fabric separating the clear stone and the subgrade soils.

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 10 MPa/m.

The soils at this site are susceptible to frost effects which would have the potential to deform hard landscaping adjacent to the building. At locations where the building is 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.

5.8 PAVEMENT DESIGN

It is assumed and anticipated that the site will be resurfaced with asphaltic concrete and Portland Cement concrete pavements.

Preparation for construction of the new pavement should include the removal of existing pavement components (asphaltic concrete and/or granular materials) and any unsuitable materials such as organic, weak/softened and/or disturbed soils. After removal of all unsuitable soils, the subgrade should be proof rolled with fully loaded tandem axle dump truck. The proof-rolling operation should be witnessed by the Geotechnical Engineer. Any soft or wet subgrade areas which deflect significantly should be sub-excavated and replaced with suitable approved earth fill material compacted to at least 98% of SPMDD.

Sub-excavated areas may be backfilled with excavated material from the site or similar clean imported fill material, free from topsoil, organic or other deleterious matter, provided the material is placed in large areas where it can be compacted with heavy compactors. Oversize particles (cobbles, boulders) larger than 150 mm should be discarded from fill materials. Fill materials should not be frozen and should not be too wet for efficient compaction (water content at optimum or within 2 % of optimum). The fill placement should not be performed during winter months when freezing temperatures occur persistently or intermittently. All fills must be placed in lifts not exceeding 200 mm in thickness and compacted to at least 98% of the material's SPMDD.

It is assumed the proposed pavement will support heavy fuel delivery trucks, heavy tractor trailers and light passenger vehicles. The pavement thickness designs provided below consider these loading conditions.

Pavement Component	Light Duty Pavement (mm)	Heavy Duty Pavement (mm)
Asphaltic Concrete Surface Course (HL3)	40	50
Asphaltic Concrete Base Course (HL8)	50	80
Granular Base Course (OPSS Granular 'A')	150	150
Granular Base Course (OPSS Granular 'B' Type I)	300	450

The subgrade must be compacted to at least 98% of SPMMD. The granular materials should be placed in lifts not exceeding 200 mm thick and be compacted to a minimum of 100% SPMDD.

Asphaltic concrete materials should be rolled and compacted per OPSS 310. The granular and asphaltic concrete pavement materials and their placement should conform to OPSS 310, 501, 1010 and 1150, and the pertinent Municipality specifications.

Concrete (rigid) pavement is proposed in the area of the pump islands. It is recommended that the granular components placed at the underside of the concrete pavement are laid and compacted in accordance with the granular component layers recommended for the asphaltic concrete (flexible) pavement such that the subgrade profile is maintained at the interface between rigid and flexible pavement structures.

The pavement thickness designs provided above, presume that construction will take place under favourable conditions. In the event that construction takes place during the spring thaw, the late fall, or following heavy rainfall events, a thicker granular sub-base layer may be required to compensate for reduced subgrade strength.

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. In addition, the need for adequate drainage cannot be over-emphasized. The finished pavement surface and underlying subgrade should be free of depressions and should be crowned and sloped to provide effective drainage. Surface water should not be allowed to pond adjacent to the outside edges of pavement areas. Sub-drains may be provided to facilitate effective and assured drainage of the pavement structures as required to intercept excess subsurface moisture and minimize subgrade softening. The invert of sub-drains should be maintained at least 0.3 m below subgrade level.

5.9 EARTHQUAKE DESIGN PARAMETERS

The Ontario Building Code (2012) stipulates the methodology for earthquake design analysis, as set out in Subsection 4.1.8.7. 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 soft to very soft silty clay to an approximate depth of 25 m below grade. Accordingly, the site designation for seismic analysis is Class E.

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.

5.10 CHEMICAL CHARACTERIZATION OF SUBSURFACE SOIL

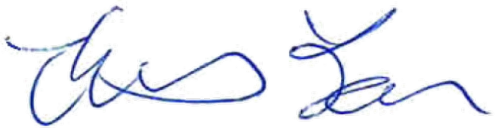
Three (3) native soil samples obtained from Borehole BH-MW106 Sample 3 from an approximately depth of 1.5 mbgs and Borehole BH-MW111 Sample 3 from an approximately depth of 1.5 mbgs and Sample 4 from an approximately depth of 2.3 mbgs were submitted to AGAT Laboratories for pH index test and water-soluble 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 range from 6.51 to 6.80. The water-soluble sulphate contents of the soil samples range from 49 µg/g (0.0049%) to 147 µg/g (0.0147). 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 future development.

6.0 LIMITATIONS OF REPORT

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

Yours respectfully,
Terrapex Environmental Ltd.



Yacouba Doro, BSc. Eng., MBA, P.Eng., PMP
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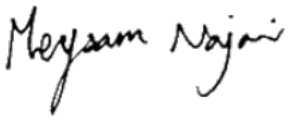
Senior Geotechnical Engineer - Geotechnical



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

APPENDIX A
LIMITATIONS OF REPORT

LIMITATIONS OF REPORT

The conclusions and recommendations in this report are based on information determined at the inspection locations. Soil and groundwater conditions between and beyond the test holes 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.

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 Suncor Energy Products Partnership Development Group by **Terrapex**. The material in it reflects **Terrapex's** judgement in light of the information available to it at the time of preparation. Any use which a Third Party makes of this report, or any reliance on decisions which the Third Party may make based on it, are the sole responsibility of such Third Parties.

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 recommend also that we be retained during construction to confirm that the subsurface conditions throughout the site do not deviate materially from those encountered in the test holes. In cases where these recommendations are not followed, the company's responsibility is limited to accurately interpreting the conditions encountered at the test holes, only.

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

LEGEND

- SITE BOUNDARY
- PARCEL
- T TRANSFORMER
- GRAB SAMPLE
- MONITORING WELL

0 5 10 15 20
Metres

DATA SOURCE: CITY OF OTTAWA
MAP PROJECTION: NAD 1983 UTM ZONE 18N

CLIENT: SUNCOR ENERGY

SITE LOCATION:
2180 MONTREAL ROAD
OTTAWA, ONTARIO

TERRAPEX

TITLE:
GENERAL SITE LAYOUT

DRAWN BY:	PROJECT NO.:	CHECKED BY:
JS/SW	CO952.01	CB
REVISION:	DATE:	FIGURE:
00	APRIL 2024	**2**

C:\Users\jsenoul\OneDrive - Terrapex Environmental Ltd\PROJECTS\Ottawa\CO900\CO952.01 2180 Montreal Rd, Ottawa\MXD\CO952.01 FIG 2 GENERAL SITE LAYOUT.mxd

APPENDIX C
BOREHOLE LOG SHEETS

CLIENT: SUNCOR	PROJECT NO.: CO952.01	**RECORD OF: MW101**
ADDRESS: 2180 MONTREAL ROAD	STATION:	
CITY/PROVINCE: OTTAWA, ONTARIO	NORTHING (m): 5033052.33	EASTING (m): 453984.93 ELEV. (m) 67.46
CONTRACTOR: STRATA DRILLING	METHOD: HOLLOW STEM AUGER	
BOREHOLE DIAMETER (cm): 20	WELL DIAMETER (cm): 5	SCREEN SLOT #: 10 SAND TYPE: #2 SEALANT TYPE: BENTONITE

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

GWL (m)	SOIL SYMBOL	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	SHEAR STRENGTH (kPa) 40 80 120 160 / N-VALUE (Blows/300mm) 20 40 60 80	WATER CONTENT (%) PL W.C. LL 20 40 60 80	SAMPLE NO.	SAMPLE TYPE	RECOVERY (%)	SV/TOV (ppm or %LEL)	LABORATORY TESTING	WELL INSTALLATION	REMARKS
		ASPHALT (64 mm)	0										
		FILL compact, moist, brown sand and gravel trace clay	0.5	67	11		1		40	<5	M&I PAH		
		firm, moist, grey SILTY CLAY trace clay	1	66.5	4		2		100	<5			
			1.5	66									
			2	65.5	5		3		90	<5			
		soft, wet, grey SILTY CLAY	2.5	65	2	50.0	4		100	<5	M&I PAH BTEX PHC VOC		Remold - 12 kPa
			3	64.5	25								
			3.5	64									
		--- very soft	4	63.5	0	59.1	5		100	<5			
			4.5	63									
			5	62.5		64.6	6		100	<5			
		END OF BOREHOLE											

TERRAPEX

LOGGED BY: EB	DRILLING DATE: 7-FEB-24
INPUT BY: SW	MONITORING DATE: 27-FEB-2024
REVIEWED BY: CB	PAGE 1 OF 1

CLIENT: SUNCOR	PROJECT NO.: CO952.01	**RECORD OF: MW102**
ADDRESS: 2180 MONTREAL ROAD	STATION:	
CITY/PROVINCE: OTTAWA, ONTARIO	NORTHING (m): 5033031.67	EASTING (m): 454015.85 ELEV. (m) 67.28
CONTRACTOR: STRATA DRILLING	METHOD: HOLLOW STEM AUGER	
BOREHOLE DIAMETER (cm): 20	WELL DIAMETER (cm): 5	SCREEN SLOT #: 10 SAND TYPE: #2 SEALANT TYPE: BENTONITE

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)	LABORATORY TESTING	WELL INSTALLATION	REMARKS
		ASPHALT (80 mm)	0										
		FILL loose, moist, brown sand and gravel	0.5	67	6	3.9	1		30	<5	M&I PAH		
		firm, moist, brown SILT CLAY trace sand	1	66.5	5	39.7	2		40	<5			
			1.5	66									
			2	65.5	3		3		40	<5	M&I PAH BTEX PHC VOC		
		soft, wet, grey SILTY CLAY	2.5	65									
			3	64.5	2		4		100	<5			REMOLD - 7kPa
			3.5	64	29	56.8	5		100	<5			
		--- saturated	4	63.5	3	57.1	6		100	<5			REMOLD - 2 kPa
			4.5	63	12								
			5	62.5		68.3	7		100	<5			
		END OF BOREHOLE											

TERRAPEX

LOGGED BY: EB	DRILLING DATE: 8-FEB-24
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REVIEWED BY: CB	PAGE 1 OF 1

CLIENT: SUNCOR	PROJECT NO.: CO952.01	**RECORD OF: MW103**
ADDRESS: 2180 MONTREAL ROAD	STATION:	
CITY/PROVINCE: OTTAWA, ONTARIO	NORTHING (m): 5033005.35	EASTING (m): 453961.46 ELEV. (m) 67.90
CONTRACTOR: STRATA DRILLING	METHOD: HOLLOW STEM AUGER	
BOREHOLE DIAMETER (cm): 20	WELL DIAMETER (cm): 5	SCREEN SLOT #: 10 SAND TYPE: #2 SEALANT TYPE: BENTONITE

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

GWL (m)	SOIL SYMBOL	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	SHEAR STRENGTH (kPa) 40 80 120 160 / N-VALUE (Blows/300mm) 20 40 60 80	WATER CONTENT (%) PL W.C. LL 20 40 60 80	SAMPLE NO.	SAMPLE TYPE	RECOVERY (%)	SV/TOV (ppm or %LEL)	LABORATORY TESTING	WELL INSTALLATION	REMARKS
		ASPHALT (80 mm)	0										
		FILL moist, brown sand and gravel	0.5	67.5			1		40	<5			
		moist, brown SILTY CLAY trace sand	1	67		32.6	2		60	<5			
			1.5	66.5							M&I, PAH, BTEX, PHC, VOC		
			2	66		42.4	3		100	<5			
		--- wet	2.5	65.5		47.0	4		100	<5			
			3	65									
			3.5	64.5		54.1	5		100	<5			
		--- saturated	4	64		62.9	6		100	<5			
		--- grey	4.5	63.5	0	60.0	7		100	<5			
		--- very soft	5	63									
			5.5	62.5	25								REMOLD - 5 kPa
			6	62									
			6.5	61.5	0	77.5	8		100	<5			
			7	61	0	75.4	9		100	<5			
		END OF BOREHOLE											

TERRAPEX

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REVIEWED BY: CB	PAGE 1 OF 1

CLIENT: SUNCOR	PROJECT NO.: CO952.01	**RECORD OF: MW104**
ADDRESS: 2180 MONTREAL ROAD	STATION:	
CITY/PROVINCE: OTTAWA, ONTARIO	NORTHING (m): 5033019.42	EASTING (m): 453973.59 ELEV. (m) 67.54
CONTRACTOR: STRATA DRILLING	METHOD: HOLLOW STEM AUGER	
BOREHOLE DIAMETER (cm): 20	WELL DIAMETER (cm): 5	SCREEN SLOT #: 10 SAND TYPE: #2 SEALANT TYPE: BENTONITE

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

GWL (m)	SOIL SYMBOL	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	SHEAR STRENGTH (kPa) 40 80 120 160 / N-VALUE (Blows/300mm) 20 40 60 80	WATER CONTENT (%) PL W.C. LL 20 40 60 80	SAMPLE NO.	SAMPLE TYPE	RECOVERY (%)	SV/TOV (ppm or %LEL)	LABORATORY TESTING	WELL INSTALLATION	REMARKS
		ASPHALT (80 mm) FILL moist, brown sand and gravel	0	67.5	31		1		50	<5	M&I PAH		
		firm, moist, brown SILTY CLAY trace sand	0.5	67									
		--- very soft	1	66.5	5	38.0	2		100	<5			
			1.5	66		53.7	3		100	<5	M&I PAH BTEX PHC VOC		
		--- wet	2	65.5	1								
		--- wet, grey	2.5	65	1	65.3	4		100	<5			
			3	64.5									
			3.5	64	0	70.9	5		100	<5			
		--- saturated	4	63.5	0	63.5	6		100	<5			
			4.5	63									
			5	62.5	0	74.3	7		100	<5			
		END OF BOREHOLE											

TERRAPEX

LOGGED BY: EB	DRILLING DATE: 8-FEB-24
INPUT BY: SW	MONITORING DATE: 27-FEB-2024
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CLIENT: SUNCOR	PROJECT NO.: CO952.01	**RECORD OF: MW105**
ADDRESS: 2180 MONTREAL ROAD	STATION:	
CITY/PROVINCE: OTTAWA, ONTARIO	NORTHING (m): 5033034.44	EASTING (m): 453955.77 ELEV. (m) 67.69
CONTRACTOR: STRATA DRILLING	METHOD: HOLLOW STEM AUGER	
BOREHOLE DIAMETER (cm): 20	WELL DIAMETER (cm): 5	SCREEN SLOT #: 10 SAND TYPE: #2 SEALANT TYPE: BENTONITE

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

GWL (m)	SOIL SYMBOL	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	SHEAR STRENGTH (kPa) 40 80 120 160 / N-VALUE (Blows/300mm) 20 40 60 80	WATER CONTENT (%) PL W.C. LL 20 40 60 80	SAMPLE NO.	SAMPLE TYPE	RECOVERY (%)	SV/TOV (ppm or %LEL)	LABORATORY TESTING	WELL INSTALLATION	REMARKS
		ASPHALT (80 mm) FILL moist, brown sand and gravel	0	67.5			1		40	<5	M&I, PAH		
		moist, brown SILTY CLAY trace sand	0.5	67									
			1	66.5		39.6	2		100	<5			
			1.5	66									
		--- wet	2	65.5			3		100	<5	PAH BTEX PHC VOC		
			2.5	65			4		100	<5			
			3	64.5									
		--- grey	3.5	64			5		100	<5			
		--- saturated	4	63.5			6		100	<5			
		--- very soft	4.5	63	0	61.4	7		100	<5			
			5	62.5									
			5.5	62	0	71.4	8		100	<5			
			6	61.5									
			6.5	61	0		9		100	<5			
			7	60.5	0	70.7	10		100	<5			
		END OF BOREHOLE											

TERRAPEX

LOGGED BY: EB	DRILLING DATE: 8-FEB-24
INPUT BY: SW	MONITORING DATE: 27-FEB-2024
REVIEWED BY: CB	PAGE 1 OF 1

CLIENT: SUNCOR	PROJECT NO.: CO952.01	**RECORD OF: MW106**
ADDRESS: 2180 MONTREAL ROAD	STATION:	
CITY/PROVINCE: OTTAWA, ONTARIO	NORTHING (m): 5033043.94	EASTING (m): 454006.28 ELEV. (m) 67.07
CONTRACTOR: STRATA DRILLING	METHOD: HOLLOW STEM AUGER	
BOREHOLE DIAMETER (cm): 20	WELL DIAMETER (cm): 5	SCREEN SLOT #: 10 SAND TYPE: #2 SEALANT TYPE: BENTONITE

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

GWL (m)	SOIL SYMBOL	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	SHEAR STRENGTH (kPa) 40 80 120 160 / N-VALUE (Blows/300mm) 20 40 60 80	WATER CONTENT (%) PL W.C. LL 20 40 60 80	SAMPLE NO.	SAMPLE TYPE	RECOVERY (%)	SV/TOV (ppm or %LEL)	LABORATORY TESTING	WELL INSTALLATION	REMARKS
		ASPHALT (80 mm)	0	67	5								
		FILL moist, brown sand and gravel	0.5	66.5									
		firm, moist, brown/grey SILTY CLAY trace sand	1	66	5	38.7	2		70	<5			
		--- soft	1.5	65.5							M&I PAH BTEX PHC VOC		DUP MW106-13
			2	65	4	52.3	3		100	<5			
		--- wet	2.5	64.5	0	48.4	4		100	<5			
			3	64									
			3.5	63.5	0		5		100	<5			
		--- very soft --- saturated	4	63	0	65.4	6		100	<5			
			4.5	62.5									
			5	62	0	60.9	7		100	<5			
		END OF BOREHOLE											

TERRAPEX

LOGGED BY: EB	DRILLING DATE: 8-FEB-24
INPUT BY: SW	MONITORING DATE: 27-FEB-2024
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CLIENT: SUNCOR	PROJECT NO.: CO952.01	**RECORD OF: MW107**
ADDRESS: 2180 MONTREAL ROAD	STATION:	
CITY/PROVINCE: OTTAWA, ONTARIO	NORTHING (m): 5033076.59	EASTING (m): 454003.55 ELEV. (m) 67.41
CONTRACTOR: STRATA DRILLING	METHOD: HOLLOW STEM AUGER	
BOREHOLE DIAMETER (cm): 20	WELL DIAMETER (cm): 5	SCREEN SLOT #: 10 SAND TYPE: #2 SEALANT TYPE: BENTONITE

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)	LABORATORY TESTING	WELL INSTALLATION	REMARKS
		TOPSOIL (80 mm)	0	67	4		1		40	<5			
		coarse, moist, brown SAND trace clay and gravel	0.5										
		firm, moist, brown SILTY CLAY trace sand	1	66.5	5	32.2	2		100	<5			
			1.5	66									
			2	65.5	4	40.0	3		100	<5			
		--- soft	2.5	65	2	43.6	4		100	<5	PAH BTEX PHC VOC		
		--- wet	3	64.5									
		--- very soft	3.5	64	1	45.1	5		100	<5			
			4	63.5	45	47.7	6		100	<5			REMOLD - 15 kPa
			4.5	63									
		--- saturated	5	62.5	0	42.1	7		100	<5			
			5.5	62	35	45.5	8		100	<5			REMOLD - 10 kPa
			6	61.5									
			6.5	61	0	67.7	9		100	<5			
		END OF BOREHOLE	7	60.5	0		10		100	<5			

TERRAPEX	LOGGED BY: EB	DRILLING DATE: 9-FEB-24
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CLIENT: SUNCOR	PROJECT NO.: CO952.01	**RECORD OF: MW108**
ADDRESS: 2180 MONTREAL ROAD	STATION:	
CITY/PROVINCE: OTTAWA, ONTARIO	NORTHING (m): 5033076.70	EASTING (m): 454002.91 ELEV. (m) 67.44
CONTRACTOR: STRATA DRILLING	METHOD: HOLLOW STEM AUGER	
BOREHOLE DIAMETER (cm): 20	WELL DIAMETER (cm): 5	SCREEN SLOT #: 10 SAND TYPE: #2 SEALANT TYPE: BENTONITE

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

GWL (m)	SOIL SYMBOL	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	SHEAR STRENGTH (kPa) 40 80 120 160 / N-VALUE (Blows/300mm) 20 40 60 80	WATER CONTENT (%) PL W.C. LL 20 40 60 80	SAMPLE NO.	SAMPLE TYPE	RECOVERY (%)	SV/TOV (ppm or %LEL)	LABORATORY TESTING	WELL INSTALLATION	REMARKS
			0	67									AUGERED TO 4.6 mbg FOR MONITORING WELL INSTALLATION. STRATIGRAPHY SHOWN IN MW107
			0.5	66.5									
			1	66									
			1.5	65.5									
			2	65									
			2.5	64.5									
			3	64									
			3.5	63.5									
			4	63									
			4.5										
		END OF BOREHOLE											

TERRAPEX

LOGGED BY: EB	DRILLING DATE: 9-FEB-24
INPUT BY: SW	MONITORING DATE: 27-FEB-2024
REVIEWED BY: CB	PAGE 1 OF 1

CLIENT: SUNCOR	PROJECT NO.: CO952.01	**RECORD OF: MW109**
ADDRESS: 2180 MONTREAL ROAD	STATION:	
CITY/PROVINCE: OTTAWA, ONTARIO	NORTHING (m): 5033005.35	EASTING (m): 453961.46 ELEV. (m) 67.90
CONTRACTOR: STRATA DRILLING	METHOD: HOLLOW STEM AUGER	
BOREHOLE DIAMETER (cm): 20	WELL DIAMETER (cm): 5	SCREEN SLOT #: 10 SAND TYPE: #2 SEALANT TYPE: BENTONITE

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

GWL (m)	SOIL SYMBOL	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	SHEAR STRENGTH (kPa) 40 80 120 160 / N-VALUE (Blows/300mm) 20 40 60 80	WATER CONTENT (%) PL W.C. LL 20 40 60 80	SAMPLE NO.	SAMPLE TYPE	RECOVERY (%)	SV/TOV (ppm or %LEL)	LABORATORY TESTING	WELL INSTALLATION	REMARKS
			0	67.5									AUGERED TO 7.0 mbg FOR MONITORING WELL INSTALLATION. STRATIGRAPHY IS SHOWN ON MW103.
			0.5	67									
			1	66.5									
			1.5	66									
			2	65.5									
			2.5	65									
			3	64.5									
			3.5	64									
			4	63.5									
			4.5	63									
			5	62.5									
			5.5	62									
			6	61.5									
			6.5	61									
			7										
		END OF BOREHOLE											

TERRAPEX

LOGGED BY: EB	DRILLING DATE: 9-FEB-24
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REVIEWED BY: CB	PAGE 1 OF 1

CLIENT: SUNCOR	PROJECT NO.: CO952.01	**RECORD OF: MW110**
ADDRESS: 2180 MONTREAL ROAD	STATION:	
CITY/PROVINCE: OTTAWA, ONTARIO	NORTHING (m): 5032991.07	EASTING (m): 454009.57 ELEV. (m) 67.84
CONTRACTOR: STRATA DRILLING	METHOD: HOLLOW STEM AUGER	
BOREHOLE DIAMETER (cm): 20	WELL DIAMETER (cm): 5	SCREEN SLOT #: 10 SAND TYPE: #2 SEALANT TYPE: BENTONITE

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

GWL (m)	SOIL SYMBOL	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	SHEAR STRENGTH (kPa) 40 80 120 160 / N-VALUE (Blows/300mm) 20 40 60 80	WATER CONTENT (%) PL W.C. LL 20 40 60 80	SAMPLE NO.	SAMPLE TYPE	RECOVERY (%)	SV/TOV (ppm or %LEL)	LABORATORY TESTING	WELL INSTALLATION	REMARKS
		FILL moist, brown sand and gravel	0	67.5	6		1		20	<5	M&I		
		firm, moist SILTY CLAY trace sand	0.5	67	6	32.9	2		80	<5			
		--- soft	1	66.5									
			1.5	66	4	40.2	3		90	<5			
			2	65.5							PAH BTEX PHC VOC		
		--- wet	2.5	65	2	50.4	4		100	<5			
			3	64.5	30	56.3	5		100	<5			REMOLD - 12 kPa
		--- very soft	3.5	64									
		--- saturated	4	63.5	0	68.0	6		100	<5			
			4.5	63									
			5		3	68.3	7		100	<5			REMOLD - 5 kPa
		END OF BOREHOLE											

TERRAPEX

LOGGED BY: EB	DRILLING DATE: 16-FEB-24
INPUT BY: SW	MONITORING DATE: 27-FEB-2024
REVIEWED BY: CB	PAGE 1 OF 1

CLIENT: SUNCOR	PROJECT NO.: CO952.01	**RECORD OF: MW111**
ADDRESS: 2180 MONTREAL ROAD	STATION:	
CITY/PROVINCE: OTTAWA, ONTARIO	NORTHING (m): 5033006.91	EASTING (m): 454010.28 ELEV. (m) 67.82
CONTRACTOR: STRATA DRILLING	METHOD: HOLLOW STEM AUGER	
BOREHOLE DIAMETER (cm): 20	WELL DIAMETER (cm): 5	SCREEN SLOT #: 10 SAND TYPE: #2 SEALANT TYPE: BENTONITE

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)	LABORATORY TESTING	WELL INSTALLATION	REMARKS
		FILL moist, brown sand and gravel trace clay	0	67.5	6		1		40	<5	M&I		
		firm, moist, brown SILTY CLAY trace sand	0.5										
		--- soft	1	67	5	37.4	2		90	<5			
			1.5	66.5									
			2	66	6	41.1	3		100	<5			
			2.5	65.5	1.5 / 2	49.3	4		100	<5	PAH BTEX PHC VOC		
		--- wet	3	65									
			3.5	64.5	25	54.7	5		100	<5			REMOLD - 15 kPa
		--- very soft	4	64	0.5 / 0	64.9	6		100	<5			
		--- saturated	4.5	63.5									
			5	63	2	56.8	7		100	<5			REMOLD - 3 kPa
		END OF BOREHOLE											

LOGGED BY: EB	DRILLING DATE: 16-FEB-24
INPUT BY: SW	MONITORING DATE: 27-FEB-2024
REVIEWED BY: CB	PAGE 1 OF 1

CLIENT: SUNCOR	PROJECT NO.: CO952.01	**RECORD OF: MW112**
ADDRESS: 2180 MONTREAL ROAD	STATION:	
CITY/PROVINCE: OTTAWA, ONTARIO	NORTHING (m): 5033000.40	EASTING (m): 454037.21 ELEV. (m) 67.47
CONTRACTOR: STRATA DRILLING	METHOD: HOLLOW STEM AUGER	
BOREHOLE DIAMETER (cm): 20	WELL DIAMETER (cm): 5	SCREEN SLOT #: 10 SAND TYPE: #2 SEALANT TYPE: BENTONITE

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

GWL (m)	SOIL SYMBOL	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	SHEAR STRENGTH (kPa) 40 80 120 160 / N-VALUE (Blows/300mm) 20 40 60 80	WATER CONTENT (%) PL W.C. LL 20 40 60 80	SAMPLE NO.	SAMPLE TYPE	RECOVERY (%)	SV/TOV (ppm or %LEL)	LABORATORY TESTING	WELL INSTALLATION	REMARKS
		FILL moist, brown sand and gravel	0	67	4		1		30	<5	M&I		
		firm, moist, brown SILTY CLAY trace sand	0.5										
			1	66.5	2	34.0	2		80	<5			
			1.5	66									
			2	65.5	5	38.7	3		100	<5			
		wet											
			2.5	65	5	46.1	4		100	<5	PAH BTEX PHC VOC		
			3	64.5									
			3.5	64		55.9	5		100	<5			
		very soft	4	63.5	0		6		100	<5			
			4.5	63									
			5	62.5		53.4	7		100	<5			
		END OF BOREHOLE											

TERRAPEX

LOGGED BY: EB	DRILLING DATE: 16-FEB-24
INPUT BY: SW	MONITORING DATE: 27-FEB-2024
REVIEWED BY: CB	PAGE 1 OF 1

CLIENT: SUNCOR	PROJECT NO.: CO952.01	**RECORD OF: MW113**
ADDRESS: 2180 MONTREAL ROAD	STATION:	
CITY/PROVINCE: OTTAWA, ONTARIO	NORTHING (m):	EASTING (m): ELEV. (m) 67.64
CONTRACTOR: STRATA DRILLING	METHOD: DIRECT PUSH	
BOREHOLE DIAMETER (cm): 20	WELL DIAMETER (cm): 5	SCREEN SLOT #: 10 SAND TYPE: #2 SEALANT TYPE: BENTONITE

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

SOIL DESCRIPTION

ASPHALT (100 mm)

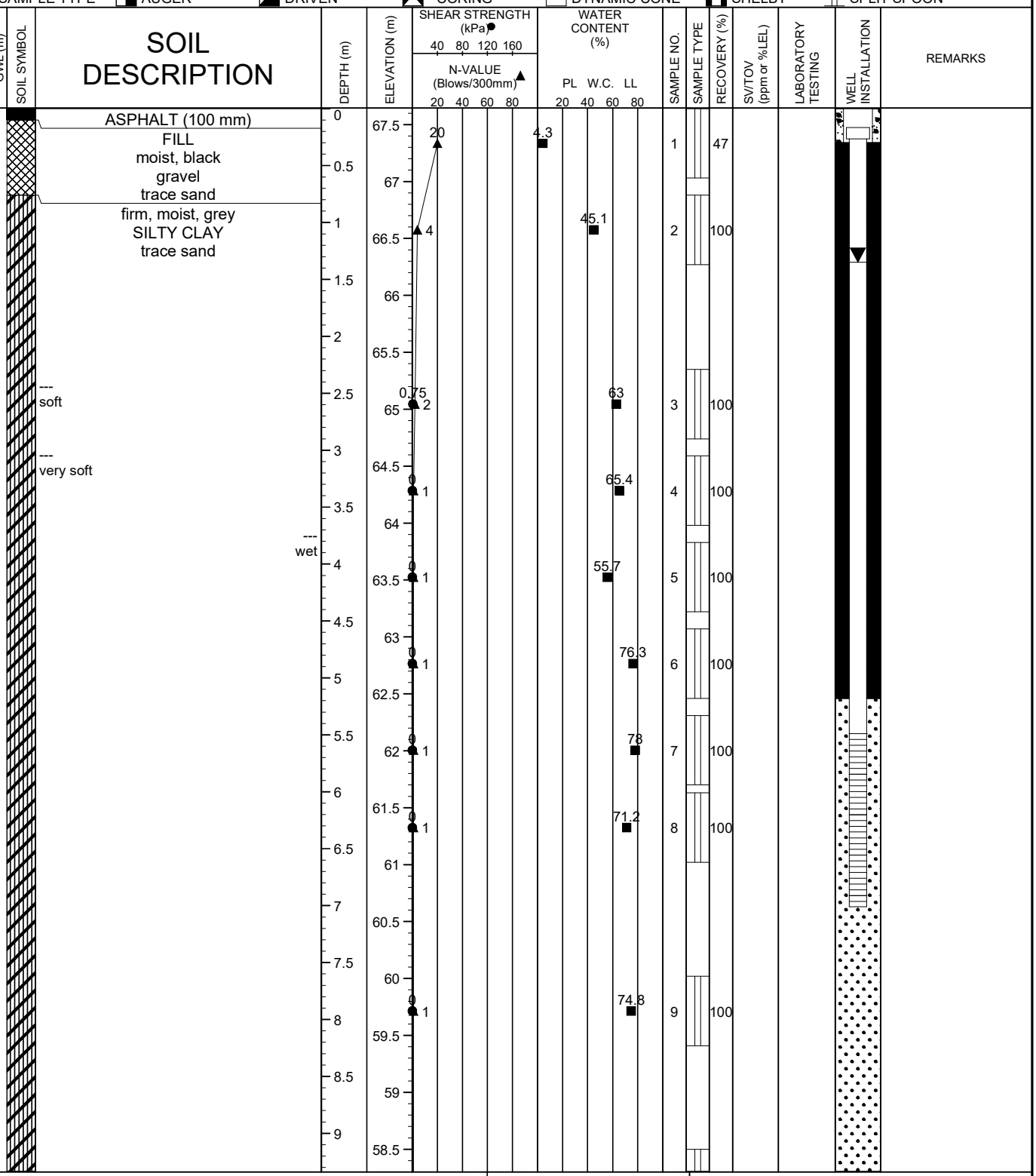
FILL
moist, black
gravel
trace sand

firm, moist, grey
SILTY CLAY
trace sand

---
soft

---
very soft

---
wet



LOGGED BY: HM	DRILLING DATE: 5-MAR-2024
INPUT BY: SAF	MONITORING DATE: 18-MAR-2024
REVIEWED BY: CB	PAGE 1 OF 3

TERRAPEX

CLIENT: SUNCOR	PROJECT NO.: CO952.01	**RECORD OF: MW113**
ADDRESS: 2180 MONTREAL ROAD	STATION:	
CITY/PROVINCE: OTTAWA, ONTARIO	NORTHING (m): / EASTING (m):	ELEV. (m) 67.64
CONTRACTOR: STRATA DRILLING	METHOD: DIRECT PUSH	
BOREHOLE DIAMETER (cm): 20	WELL DIAMETER (cm): 5 / SCREEN SLOT #: 10 / SAND TYPE: #2	SEALANT TYPE: BENTONITE

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

GWL (m)	SOIL SYMBOL	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	SHEAR STRENGTH (kPa) 40 80 120 160 / N-VALUE (Blows/300mm) 20 40 60 80	WATER CONTENT (%) PL W.C. LL 20 40 60 80	SAMPLE NO.	SAMPLE TYPE	RECOVERY (%)	SV/TOV (ppm or %LEL)	LABORATORY TESTING	WELL INSTALLATION	REMARKS
			9.5	58	1 / 0.5	78.2	10		100				
			10	57.5									
			10.5	57									
			11	56.5	0.25 / 1	75.7	11		100				
			11.5	56									
			12	55.5									
			12.5	55	0.25 / 1	71.6	12		100				
			13	54.5									
			13.5	54									
			14	53.5	0.25 / 1	66.3	13		100				
			14.5	53									
			15	52.5									
			15.5	52	0.25 / 1	69.2	14		100				
			16	51.5									
			16.5	51									
			17	50.5	0.5 / 1	66.4	15		100				
			17.5	50									
			18	49.5									
			18.5	49	0.25 / 1	65.6	16		100				

TERRAPEX

LOGGED BY: HM	DRILLING DATE: 5-MAR-2024
INPUT BY: SAF	MONITORING DATE: 18-MAR-2024
REVIEWED BY: CB	PAGE 2 OF 3

CLIENT: SUNCOR	PROJECT NO.: CO952.01	**RECORD OF: MW113**
ADDRESS: 2180 MONTREAL ROAD	STATION:	
CITY/PROVINCE: OTTAWA, ONTARIO	NORTHING (m):	EASTING (m): ELEV. (m) 67.64
CONTRACTOR: STRATA DRILLING	METHOD: DIRECT PUSH	
BOREHOLE DIAMETER (cm): 20	WELL DIAMETER (cm): 5	SCREEN SLOT #: 10 SAND TYPE: #2 SEALANT TYPE: BENTONITE

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

GWL (m)	SOIL SYMBOL	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	SHEAR STRENGTH (kPa) 40 80 120 160 / N-VALUE (Blows/300mm) 20 40 60 80	WATER CONTENT (%) PL W.C. LL 20 40 60 80	SAMPLE NO.	SAMPLE TYPE	RECOVERY (%)	SV/TOV (ppm or %LEL)	LABORATORY TESTING	WELL INSTALLATION	REMARKS
			19	48.5									
			19.5	48									
			20	47.5	0.25 1	67.4	17		100				
			20.5	47									
			21	46.5									
			21.5	46	0.25 1	64.0	18		100				
			22	45.5									
			22.5	45									
			23	44.5	0.5 1	67.2	19		100				
			23.5	44									
			24	43.5									
			24.5	43	0.5 1	68.7	20		100				
		END OF BOREHOLE											

TERRAPEX

LOGGED BY: HM	DRILLING DATE: 5-MAR-2024
INPUT BY: SAF	MONITORING DATE: 18-MAR-2024
REVIEWED BY: CB	PAGE 3 OF 3

CLIENT: SUNCOR	PROJECT NO.: CO952.01	**RECORD OF: MW114**
ADDRESS: 2180 MONTREAL ROAD	STATION:	
CITY/PROVINCE: OTTAWA, ONTARIO	NORTHING (m):	EASTING (m): / ELEV. (m) 67.80
CONTRACTOR: STRATA DRILLING	METHOD: DIRECT PUSH	
BOREHOLE DIAMETER (cm): 20	WELL DIAMETER (cm): 5	SCREEN SLOT #: 10 / SAND TYPE: #2 / SEALANT TYPE: BENTONITE

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)	LABORATORY TESTING	WELL INSTALLATION	REMARKS
		ASPHALT (100 mm)	0	67.5	8	5.6	1		42				
		FILL moist, black gravel trace sand	0.5										
		firm, moist, brown CLAYEY SILT trace sand	1	67	2 4	40.0	2		83				
			1.5	66.5									
			2	66	2.25 4	38.2	3		100				
			2.5	65.5									
			3	65									
		--- very soft	3.5	64.5	0.75 2	60.7	4		100				
		moist, grey SILTY CLAY	4	64	0.25 1	65.6	5		100				
		--- wet	4.5	63.5									
			5	63	0 1	72.6	6		100				
			5.5	62.5	0.25 1	74.2	7		100				
			6	62									
			6.5	61.5	0 1	72.8	8		100				
			7	61									
			7.5	60.5									
			8	60	0.5 1	77.9	9		100				
			8.5	59.5									
			9	59									
				58.5									

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LOGGED BY: HM	DRILLING DATE: 6-MAR-2024
INPUT BY: SAF	MONITORING DATE: 18-MAR-2024
REVIEWED BY: CB	PAGE 1 OF 3

CLIENT: SUNCOR	PROJECT NO.: CO952.01	**RECORD OF: MW114**
ADDRESS: 2180 MONTREAL ROAD	STATION:	
CITY/PROVINCE: OTTAWA, ONTARIO	NORTHING (m):	EASTING (m): ELEV. (m) 67.80
CONTRACTOR: STRATA DRILLING	METHOD: DIRECT PUSH	
BOREHOLE DIAMETER (cm): 20	WELL DIAMETER (cm): 5	SCREEN SLOT #: 10 SAND TYPE: #2 SEALANT TYPE: BENTONITE

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

GWL (m)	SOIL SYMBOL	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	SHEAR STRENGTH (kPa) 40 80 120 160 / N-VALUE (Blows/300mm) 20 40 60 80	WATER CONTENT (%) PL W.C. LL 20 40 60 80	SAMPLE NO.	SAMPLE TYPE	RECOVERY (%)	SV/TOV (ppm or %LEL)	LABORATORY TESTING	WELL INSTALLATION	REMARKS
			9.5	58	0 1	71.4	10		100				
			10	57.5									
			10.5	57	0.25 1	70.3	11		100				
			11	56.5									
			11.5	56									
			12	55.5	0.25 1	71.2	12		100				
			12.5	55									
			13	54.5									
			13.5	54									
			14	53.5	0 1	66.8	13		100				
			14.5	53									
			15	52.5									
			15.5	52	0.25 1	62.6	14		100				
			16	51.5									
			16.5	51									
			17	50.5	0 1	65.5	15		100				
			17.5	50									
			18	49.5									
			18.5		0 1	64.3	16		100				

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LOGGED BY: HM	DRILLING DATE: 6-MAR-2024
INPUT BY: SAF	MONITORING DATE: 18-MAR-2024
REVIEWED BY: CB	PAGE 2 OF 3

CLIENT: SUNCOR	PROJECT NO.: CO952.01	**RECORD OF: MW114**
ADDRESS: 2180 MONTREAL ROAD	STATION:	
CITY/PROVINCE: OTTAWA, ONTARIO	NORTHING (m):	EASTING (m): ELEV. (m) 67.80
CONTRACTOR: STRATA DRILLING	METHOD: DIRECT PUSH	
BOREHOLE DIAMETER (cm): 20	WELL DIAMETER (cm): 5	SCREEN SLOT #: 10 SAND TYPE: #2 SEALANT TYPE: BENTONITE

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

GWL (m)	SOIL SYMBOL	SOIL DESCRIPTION	DEPTH (m)	ELEVATION (m)	SHEAR STRENGTH (kPa) 40 80 120 160 / N-VALUE (Blows/300mm) 20 40 60 80	WATER CONTENT (%) PL W.C. LL 20 40 60 80	SAMPLE NO.	SAMPLE TYPE	RECOVERY (%)	SV/TOV (ppm or %LEL)	LABORATORY TESTING	WELL INSTALLATION	REMARKS
			19	49									
			19.5	48.5									
			20	48	0 1	66.0	17		100				
			20.5	47.5									
			21	47									
			21.5	46.5	0.25 1	67.3	18		100				
			22	46									
			22.5	45.5									
			23	45	0.25 1	65.8	19		100				
			23.5	44.5									
			24	44									
			24.5	43.5	0.25 1	66.0	20		100				
		END OF BOREHOLE		43									

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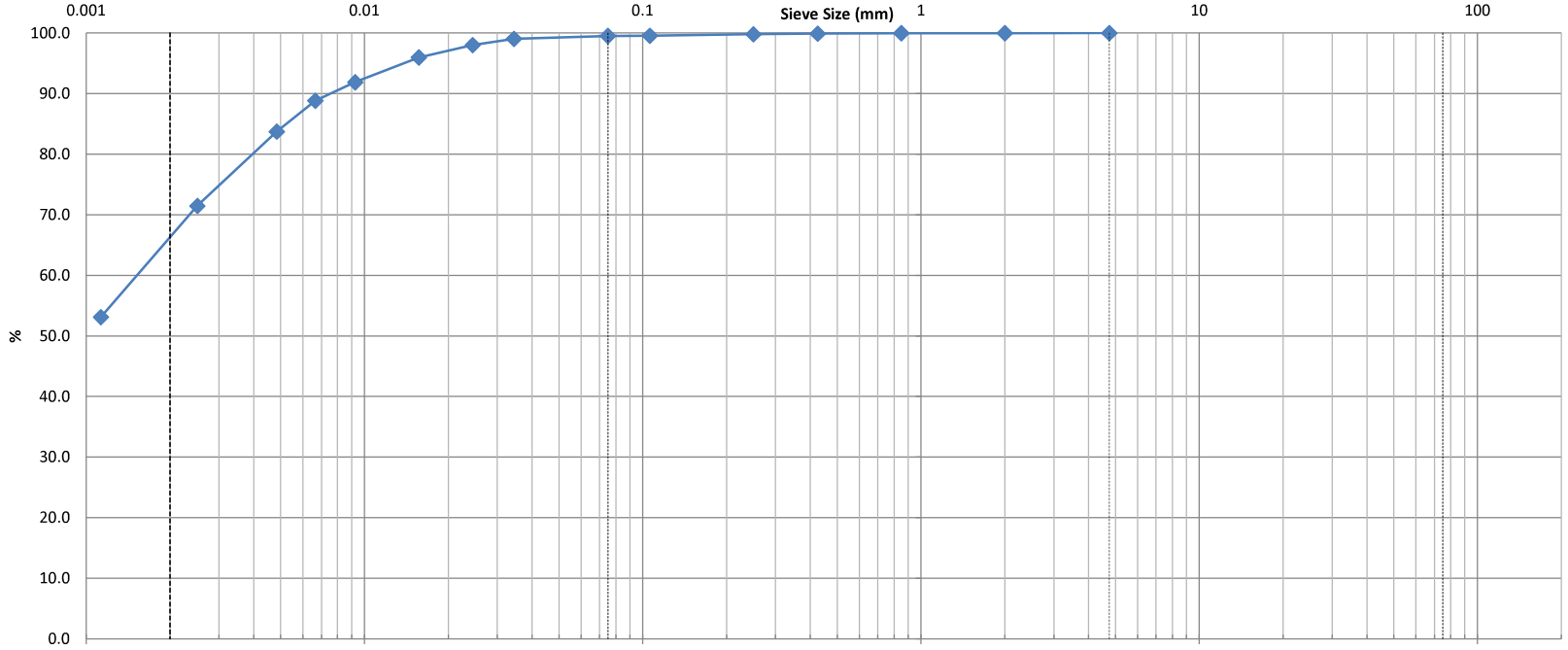
LOGGED BY: HM	DRILLING DATE: 6-MAR-2024
INPUT BY: SAF	MONITORING DATE: 18-MAR-2024
REVIEWED BY: CB	PAGE 3 OF 3

APPENDIX D
GEOTECHNICAL LABORATORY TEST RESULTS

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Terrapex	DEPTH:	12.5 - 14.5	FILE NO:	PM12708
CONTRACT NO.:		BH OR TP No.:	MW 101-5	LAB NO:	51148
PROJECT:	C0952.01			DATE RECEIVED:	1-Mar-24
				DATE TESTED:	4-Mar-24
DATE SAMPLED:	7-Feb-24			DATE REPORTED:	8-Mar-24
SAMPLED BY:	-			TESTED BY:	C.M



Clay	Silt	Sand			Gravel		Cobble
		Fine	Medium	Coarse	Fine	Coarse	

Identification	Soil Classification					MC(%)	LL	PL	PI	Cc	Cu
						58.0%					
	D100	D60	D30	D10	Gravel (%)	Sand (%)		Silt (%)		Clay (%)	
					0.0	0.5		32.5		67.0	

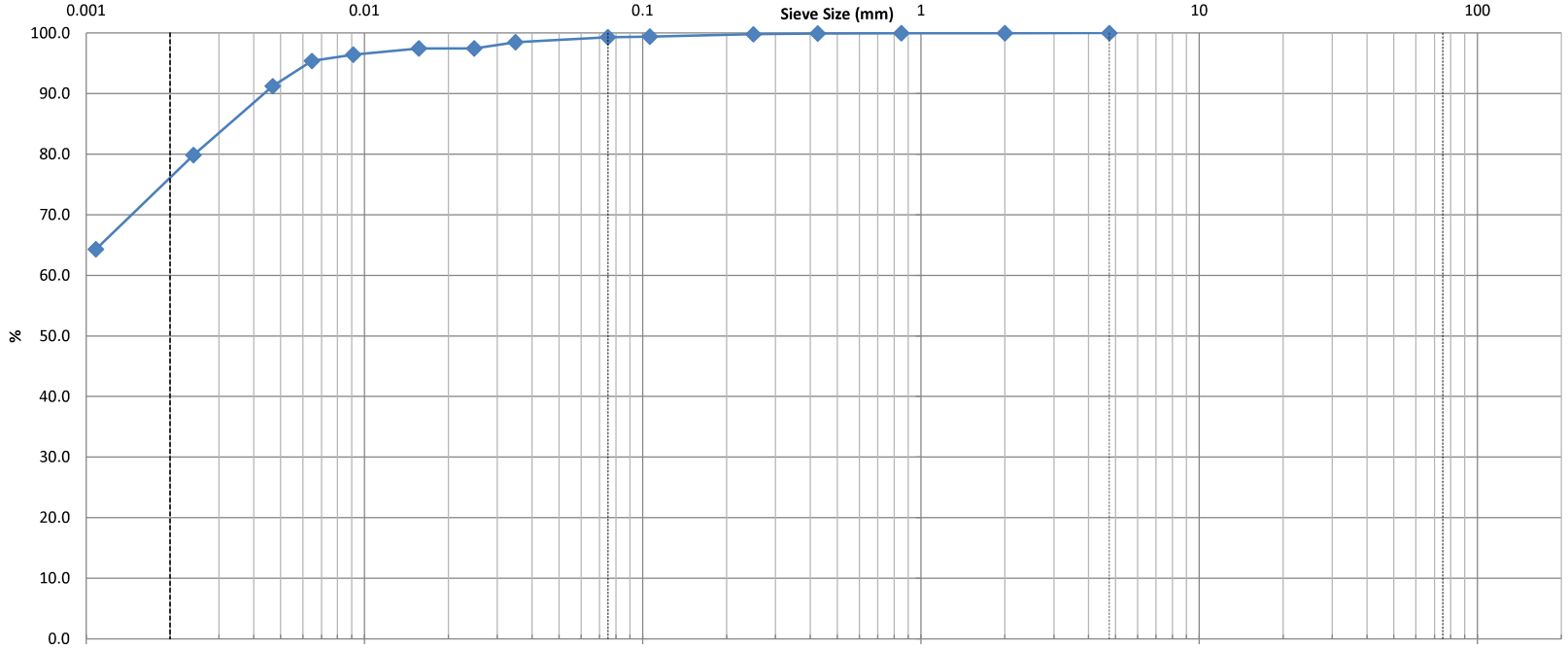
Comments:

REVIEWED BY:	Curtis Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Terrapex	DEPTH:	5 - 7	FILE NO:	PM12708
CONTRACT NO.:		BH OR TP No.:	MW 103-3	LAB NO:	51149
PROJECT:	C0952.01			DATE RECEIVED:	1-Mar-24
				DATE TESTED:	4-Mar-24
DATE SAMPLED:	3-Feb-24			DATE REPORTED:	8-Mar-24
SAMPLED BY:	-			TESTED BY:	C.M



Clay	Silt	Sand			Gravel		Cobble
		Fine	Medium	Coarse	Fine	Coarse	

Identification	Soil Classification					MC(%)	LL	PL	PI	Cc	Cu
						45.2%					
	D100	D60	D30	D10	Gravel (%)	Sand (%)		Silt (%)		Clay (%)	
					0.0	0.7		22.8		76.5	

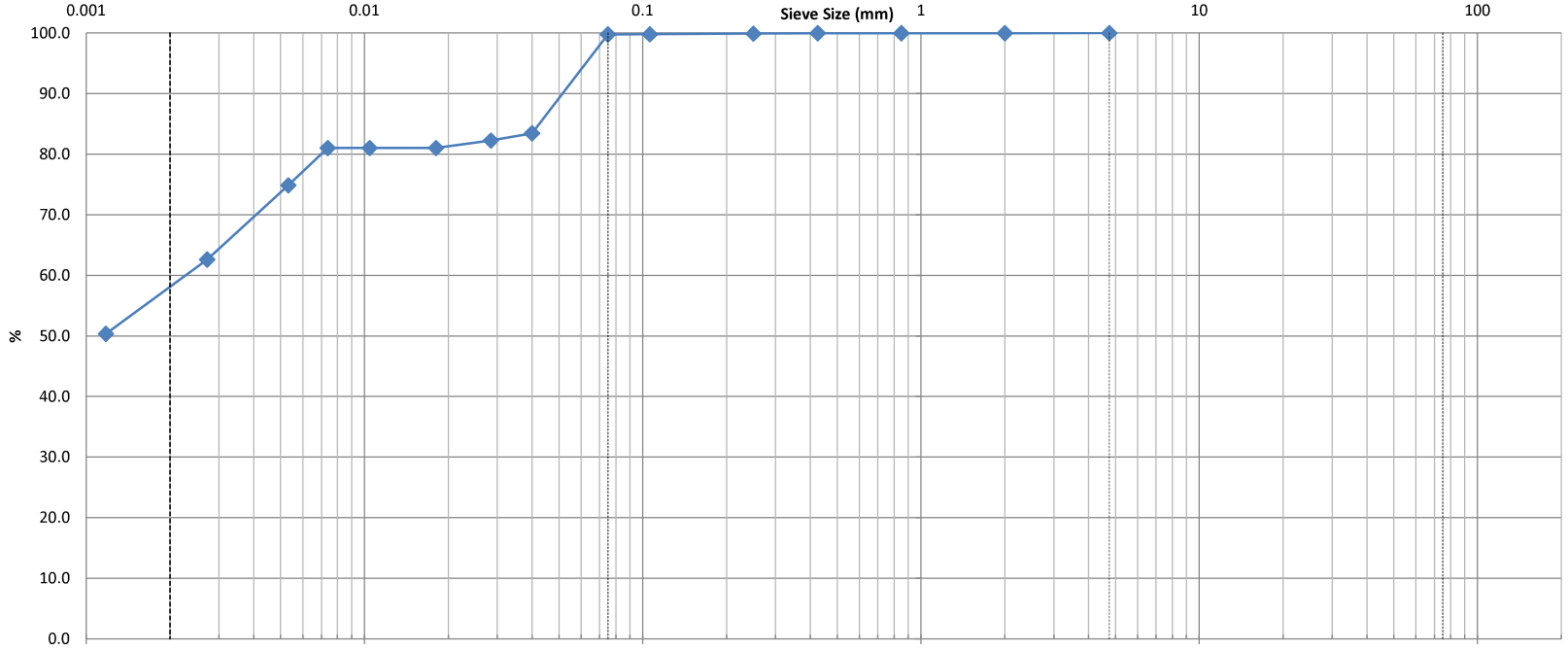
Comments:

REVIEWED BY:	Curtis Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Terrapex	DEPTH:	10 - 12.5	FILE NO:	PM12708
CONTRACT NO.:		BH OR TP No.:	MW 103-5	LAB NO:	51150
PROJECT:	C0952.01			DATE RECEIVED:	1-Mar-24
				DATE TESTED:	4-Mar-24
DATE SAMPLED:	8-Feb-24			DATE REPORTED:	8-Mar-24
SAMPLED BY:	-			TESTED BY:	C.M



Clay	Silt	Sand			Gravel		Cobble
		Fine	Medium	Coarse	Fine	Coarse	

Identification	Soil Classification					MC(%)	LL	PL	PI	Cc	Cu
						50.6%					
	D100	D60	D30	D10	Gravel (%)	Sand (%)		Silt (%)		Clay (%)	
					0.0	0.3		40.2		59.5	

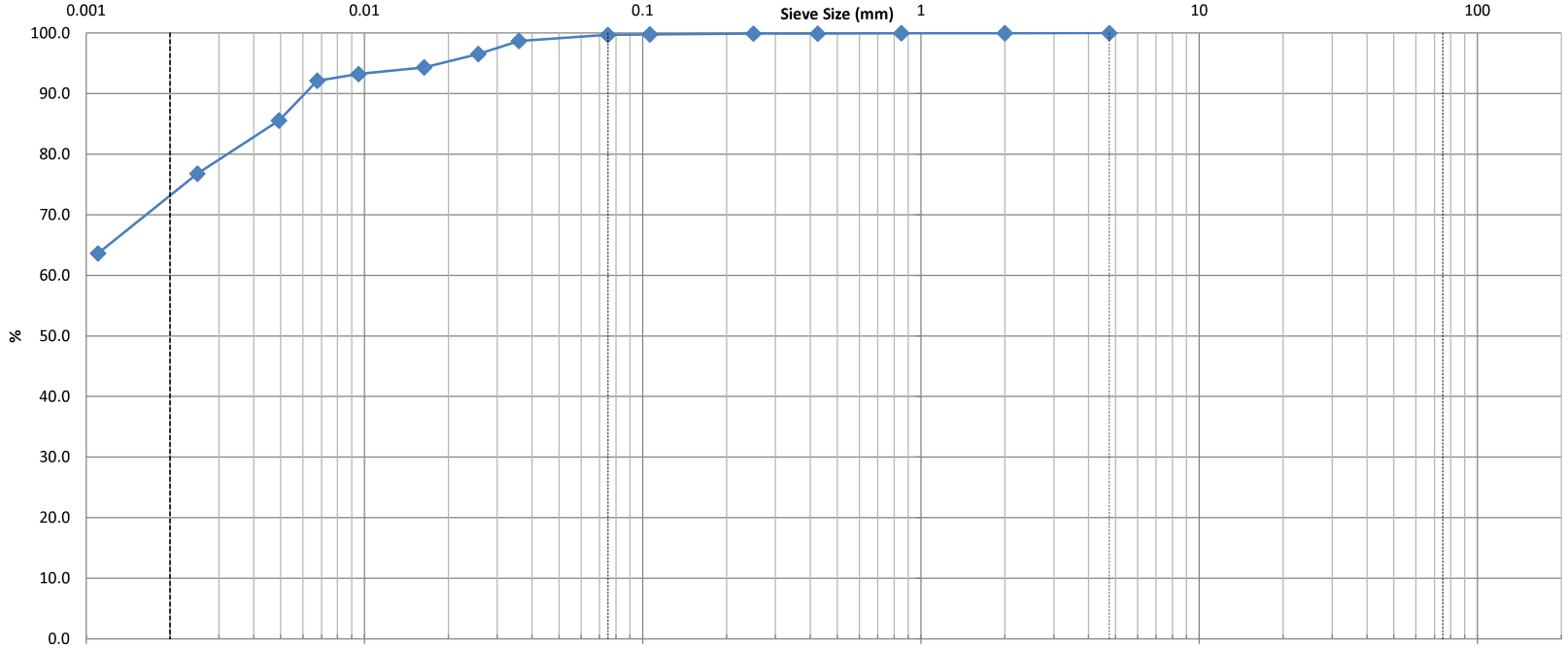
Comments:

REVIEWED BY:	Curtis Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Terrapex	DEPTH:	7.5 - 9.5	FILE NO:	PM12708
CONTRACT NO.:		BH OR TP No.:	MW 104-4	LAB NO:	51151
PROJECT:	C0952.01			DATE RECEIVED:	1-Mar-24
				DATE TESTED:	4-Mar-24
DATE SAMPLED:	8-Feb-24			DATE REPORTED:	8-Mar-24
SAMPLED BY:	-			TESTED BY:	C.M



Clay	Silt	Sand			Gravel		Cobble
		Fine	Medium	Coarse	Fine	Coarse	

Identification	Soil Classification					MC(%)	LL	PL	PI	Cc	Cu
						60.4%					
	D100	D60	D30	D10	Gravel (%)	Sand (%)		Silt (%)		Clay (%)	
					0.0	0.3		27.2		72.5	

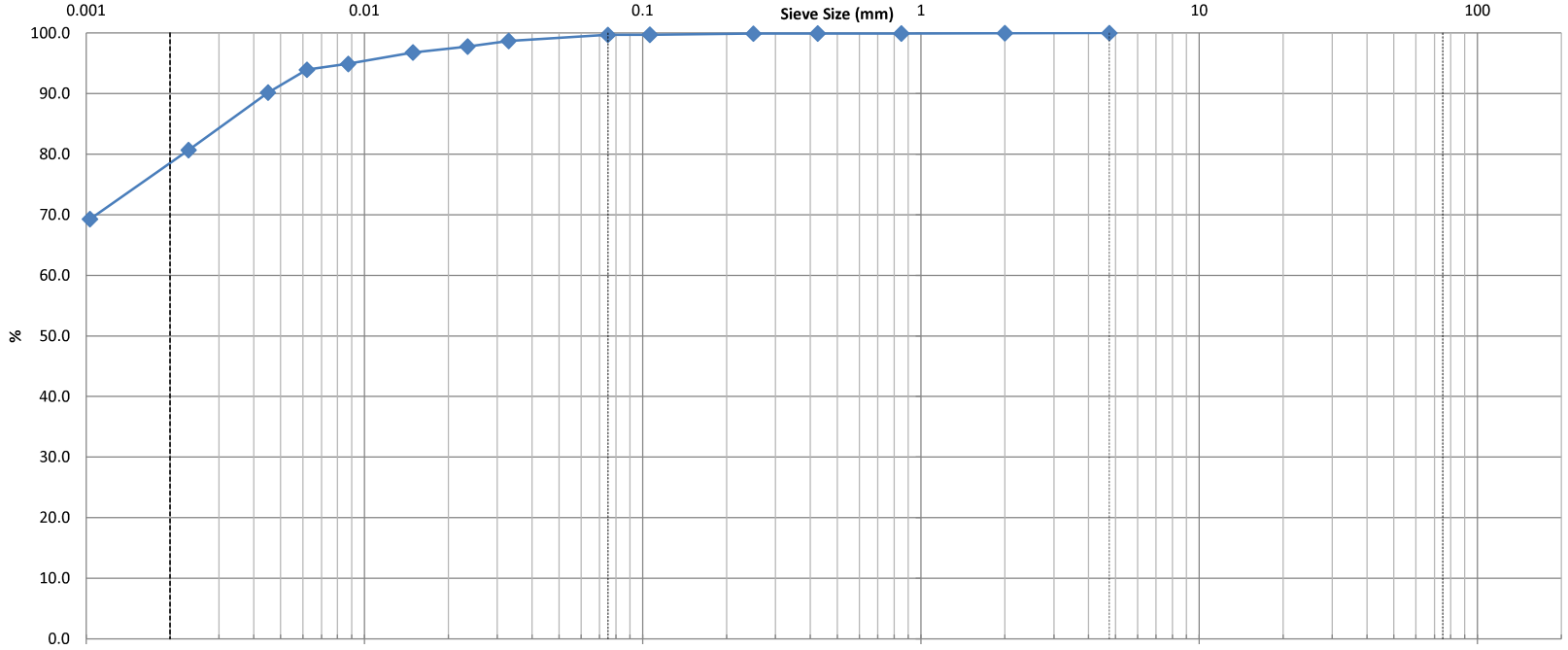
Comments:

REVIEWED BY:	Curtis Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Terrapex	DEPTH:	5 - 7	FILE NO:	PM12708
CONTRACT NO.:		BH OR TP No.:	MW 106-3	LAB NO:	51152
PROJECT:	C0952.01			DATE RECEIVED:	1-Mar-24
				DATE TESTED:	4-Mar-24
DATE SAMPLED:	9-Feb-24			DATE REPORTED:	8-Mar-24
SAMPLED BY:	-			TESTED BY:	C.M



Clay	Silt	Sand			Gravel		Cobble
		Fine	Medium	Coarse	Fine	Coarse	

Identification	Soil Classification					MC(%)	LL	PL	PI	Cc	Cu
						52.6%					
	D100	D60	D30	D10	Gravel (%)	Sand (%)		Silt (%)		Clay (%)	
					0.0	0.3		20.2		79.5	

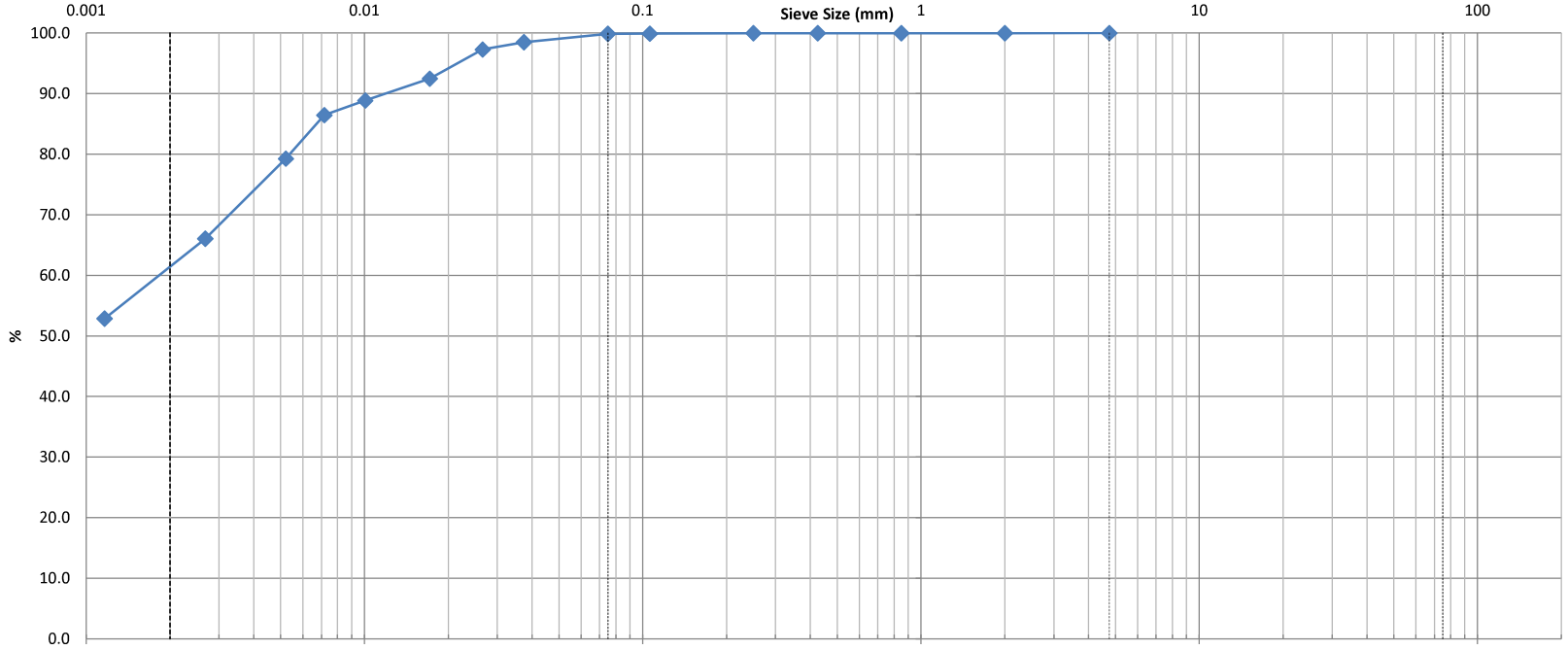
Comments:

REVIEWED BY:	Curtis Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Terrapex	DEPTH:	12.5 - 14.5	FILE NO:	PM12708
CONTRACT NO.:		BH OR TP No.:	MW 110-6	LAB NO:	51153
PROJECT:	C0952.01			DATE RECEIVED:	1-Mar-24
				DATE TESTED:	4-Mar-24
DATE SAMPLED:	16-Feb-24			DATE REPORTED:	8-Mar-24
SAMPLED BY:	-			TESTED BY:	C.M



Clay	Silt	Sand			Gravel		Cobble
		Fine	Medium	Coarse	Fine	Coarse	

Identification	Soil Classification					MC(%)	LL	PL	PI	Cc	Cu
						57.3%					
	D100	D60	D30	D10	Gravel (%)	Sand (%)		Silt (%)		Clay (%)	
					0.0	0.1		38.9		61.0	

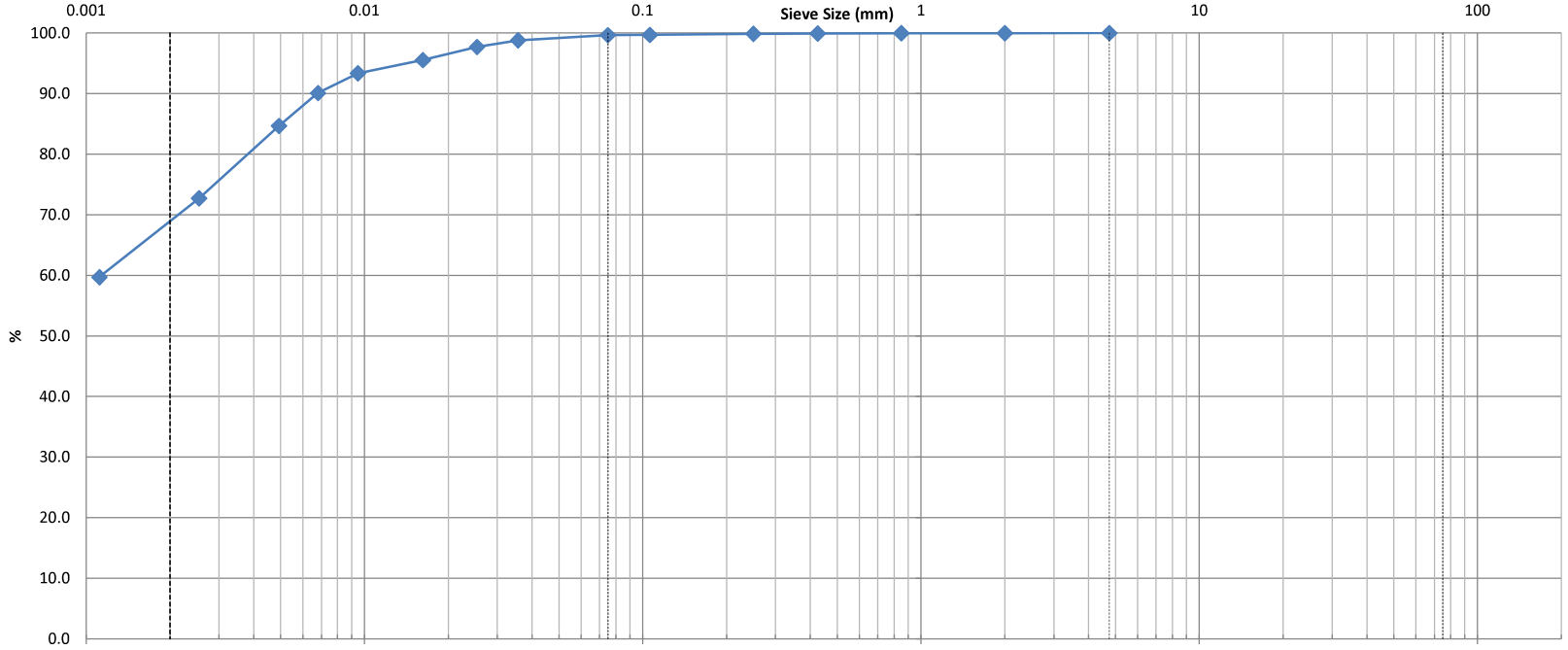
Comments:

REVIEWED BY:	Curtis Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Terrapex	DEPTH:	7.5 - 9.5	FILE NO:	PM12708
CONTRACT NO.:		BH OR TP No.:	MW 110-4	LAB NO:	51154
PROJECT:	C0952.01			DATE RECEIVED:	1-Mar-24
				DATE TESTED:	4-Mar-24
DATE SAMPLED:	16-Feb-24			DATE REPORTED:	8-Mar-24
SAMPLED BY:	-			TESTED BY:	C.M



Clay	Silt	Sand			Gravel		Cobble
		Fine	Medium	Coarse	Fine	Coarse	

Identification	Soil Classification					MC(%)	LL	PL	PI	Cc	Cu
						49.7%					
	D100	D60	D30	D10	Gravel (%)	Sand (%)		Silt (%)		Clay (%)	
					0.0	0.4		30.1		69.5	

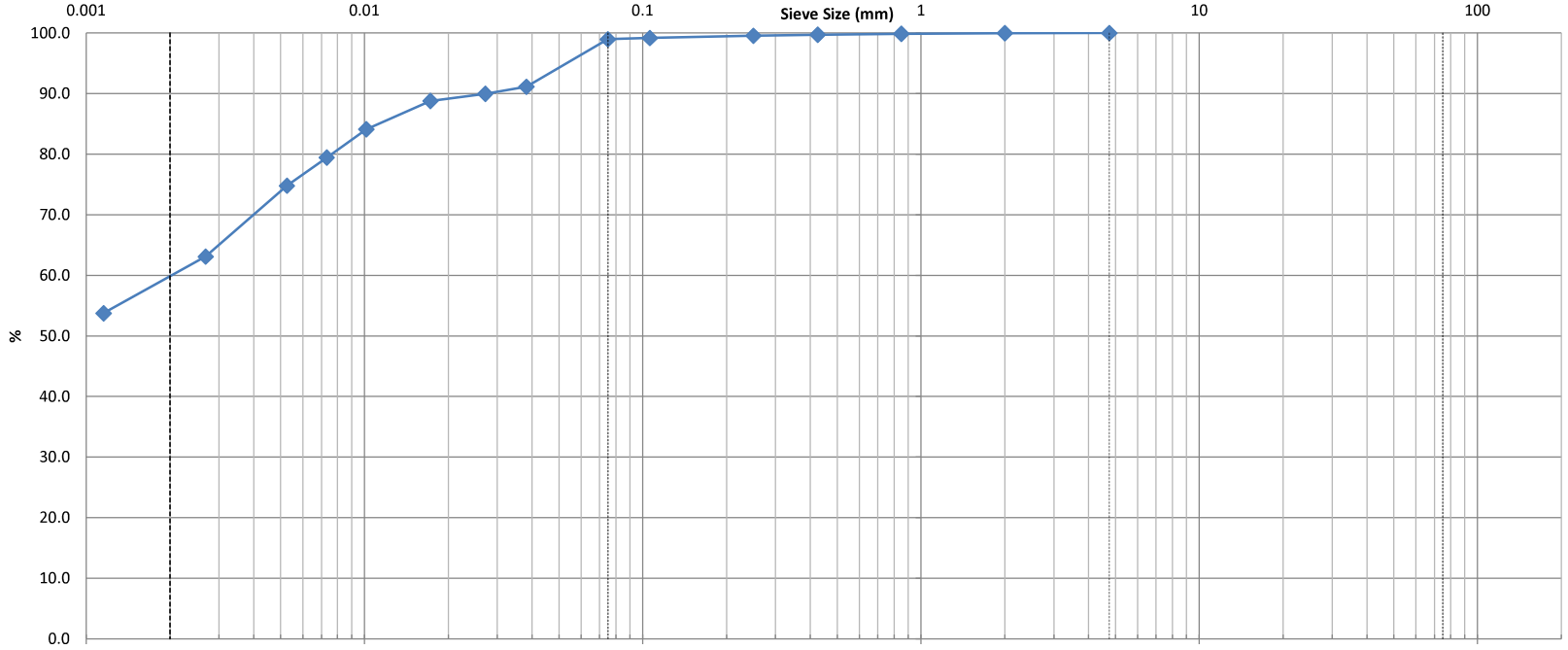
Comments:

REVIEWED BY:	Curtis Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Terrapex	DEPTH:	5- 7	FILE NO:	PM12708
CONTRACT NO.:		BH OR TP No.:	MW 111-3	LAB NO:	51155
PROJECT:	C0952.01			DATE RECEIVED:	1-Mar-24
				DATE TESTED:	4-Mar-24
DATE SAMPLED:	16-Feb-24			DATE REPORTED:	8-Mar-24
SAMPLED BY:	-			TESTED BY:	C.M



Clay	Silt	Sand			Gravel		Cobble
		Fine	Medium	Coarse	Fine	Coarse	

Identification	Soil Classification					MC(%)	LL	PL	PI	Cc	Cu
						40.0%					
	D100	D60	D30	D10	Gravel (%)	Sand (%)		Silt (%)		Clay (%)	
					0.0	1.0		39.0		60.0	

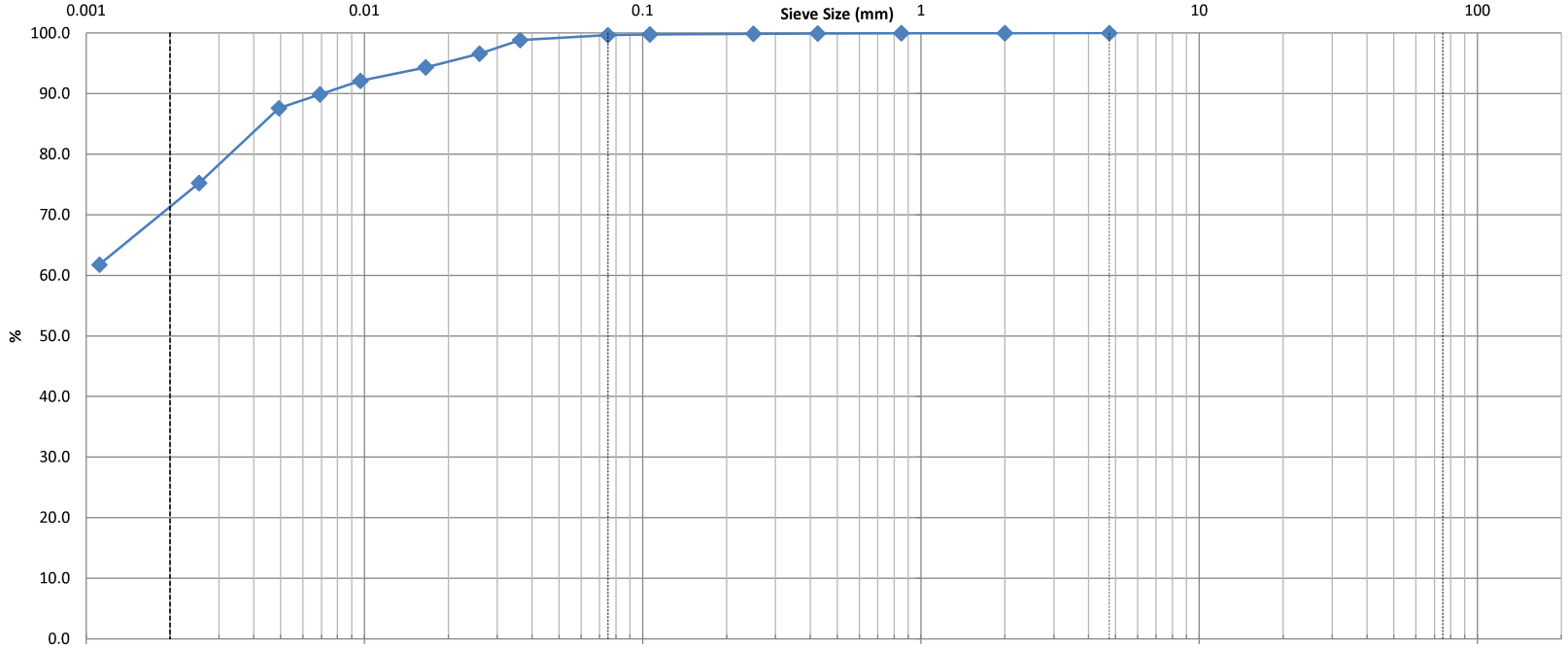
Comments:

REVIEWED BY:	Curtis Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Terrapex	DEPTH:	7.5 - 9.5	FILE NO:	PM12708
CONTRACT NO.:		BH OR TP No.:	MW 111-4	LAB NO:	51156
PROJECT:	C0952.01			DATE RECEIVED:	1-Mar-24
				DATE TESTED:	4-Mar-24
DATE SAMPLED:	16-Feb-24			DATE REPORTED:	8-Mar-24
SAMPLED BY:	-			TESTED BY:	C.M



Clay	Silt	Sand			Gravel		Cobble
		Fine	Medium	Coarse	Fine	Coarse	

Identification	Soil Classification					MC(%)	LL	PL	PI	Cc	Cu
						48.1%					
	D100	D60	D30	D10	Gravel (%)	Sand (%)		Silt (%)		Clay (%)	
					0.0	0.3		29.2		70.5	

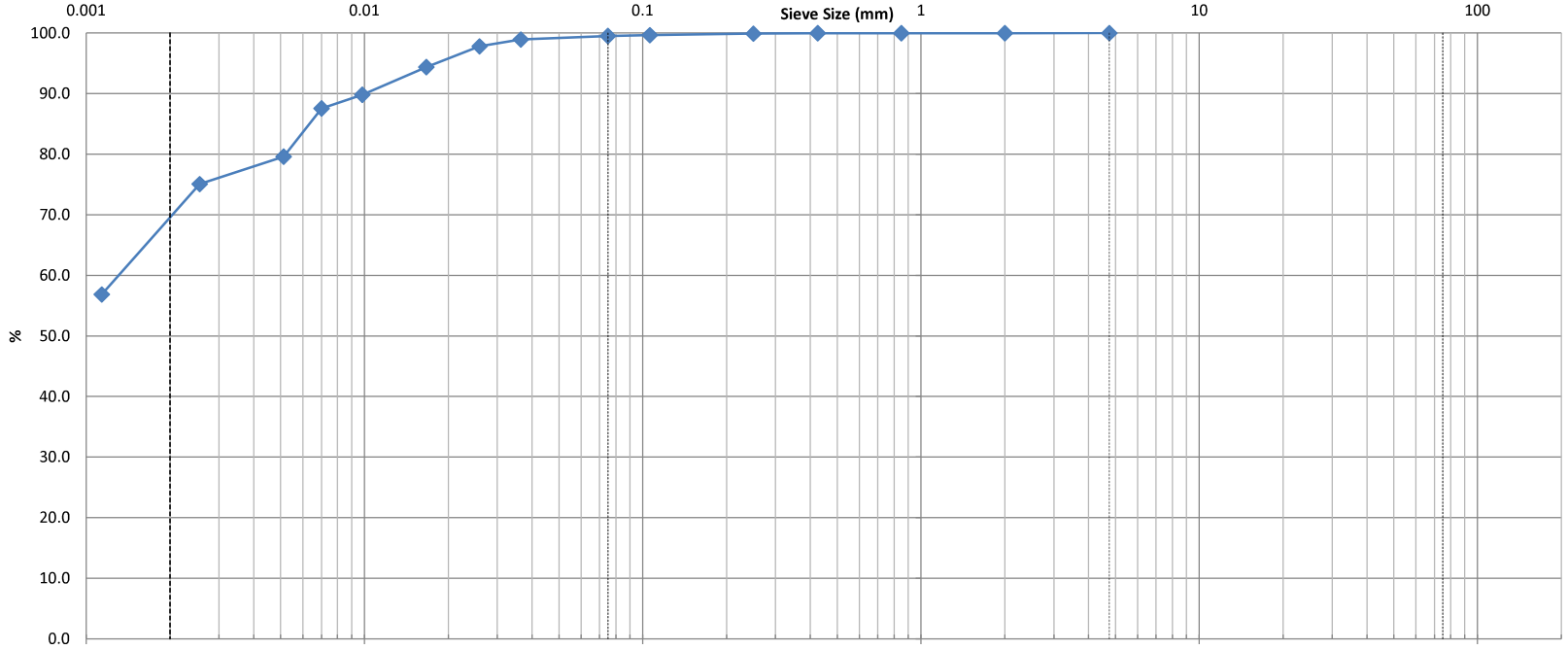
Comments:

REVIEWED BY:	Curtis Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Terrapex	DEPTH:	7.5 - 9.5	FILE NO:	PM12708
CONTRACT NO.:		BH OR TP No.:	MW 112-4	LAB NO:	51157
PROJECT:	C0952.01			DATE RECEIVED:	1-Mar-24
				DATE TESTED:	4-Mar-24
DATE SAMPLED:	16-Feb-24			DATE REPORTED:	8-Mar-24
SAMPLED BY:	-			TESTED BY:	C.M



Clay	Silt	Sand			Gravel		Cobble
		Fine	Medium	Coarse	Fine	Coarse	

Identification	Soil Classification					MC(%)	LL	PL	PI	Cc	Cu
						42.6%					
	D100	D60	D30	D10	Gravel (%)	Sand (%)		Silt (%)		Clay (%)	
					0.0	0.5		30.0		69.5	

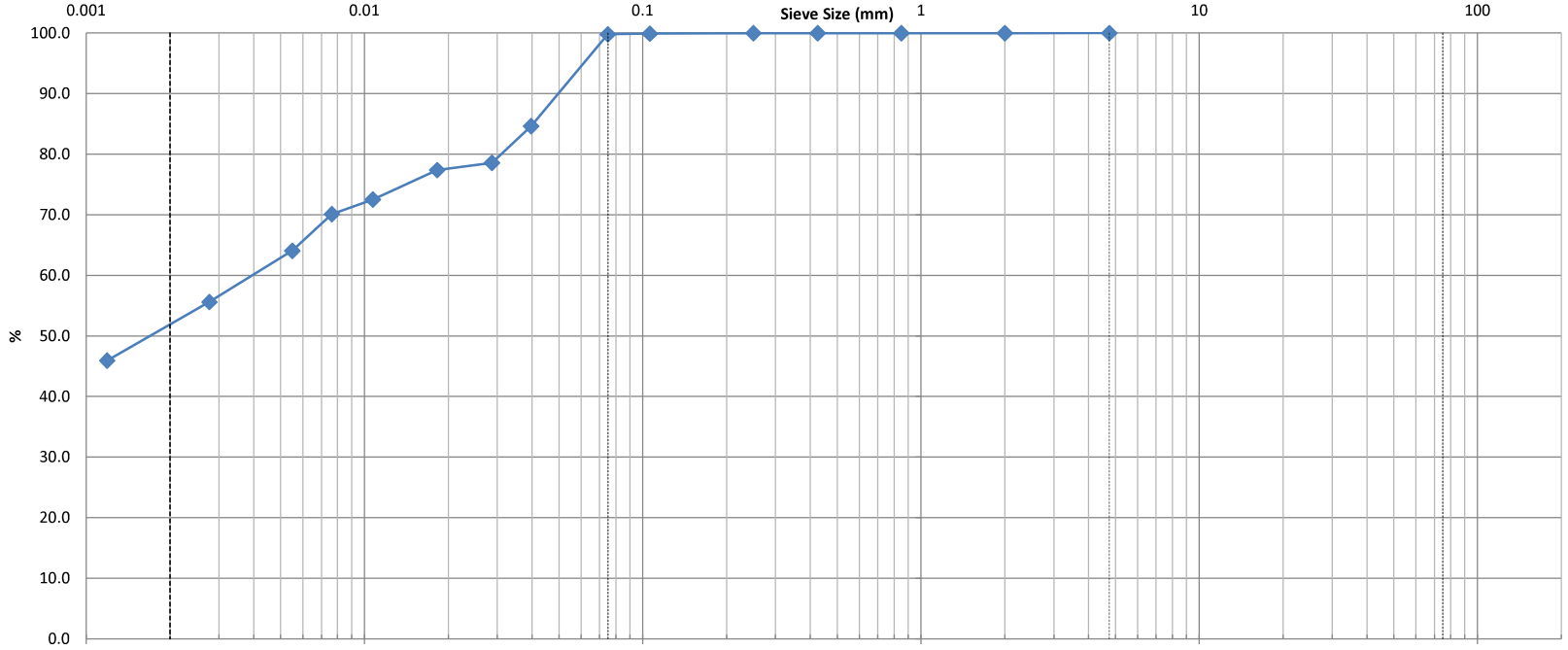
Comments:

REVIEWED BY:	Curtis Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Terrapex	DEPTH:	11 - 12	FILE NO:	PM12708
CONTRACT NO.:		BH OR TP No.:	MW 112-5	LAB NO:	51158
PROJECT:	C0952.01			DATE RECEIVED:	1-Mar-24
				DATE TESTED:	4-Mar-24
DATE SAMPLED:	16-Feb-24			DATE REPORTED:	8-Mar-24
SAMPLED BY:	-			TESTED BY:	C.M



Clay	Silt	Sand			Gravel		Cobble
		Fine	Medium	Coarse	Fine	Coarse	

Identification	Soil Classification					MC(%)	LL	PL	PI	Cc	Cu
						49.4%					
	D100	D60	D30	D10	Gravel (%)	Sand (%)		Silt (%)		Clay (%)	
					0.0	0.2		48.8		51.0	

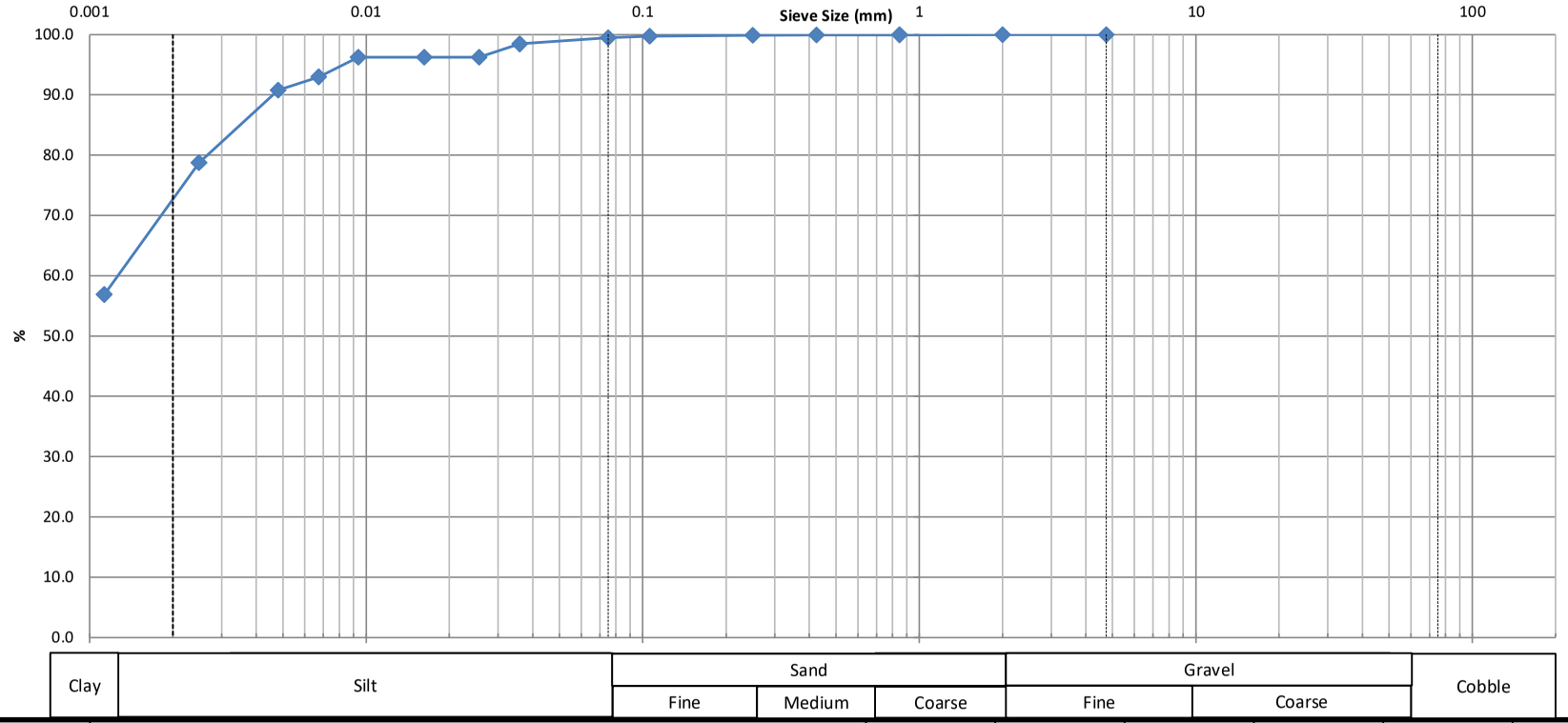
Comments:

REVIEWED BY:	Curtis Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Terrapex	DEPTH:	-	FILE NO:	PM12708
CONTRACT NO.:		BH OR TP No.:	MW 113-2	LAB NO:	51323
PROJECT:	C0952.01			DATE RECEIVED:	22-Mar-24
				DATE TESTED:	25-Mar-24
DATE SAMPLED:	5-Mar-24			DATE REPORTED:	1-Apr-24
SAMPLED BY:	-			TESTED BY:	C.M



Identification	Soil Classification	MC(%)	LL	PL	PI	Cc	Cu
	MH - Elastic Silt	42.7%	86	29	27		

D100	D60	D30	D10	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
				0.0	0.5	28.3	71.2

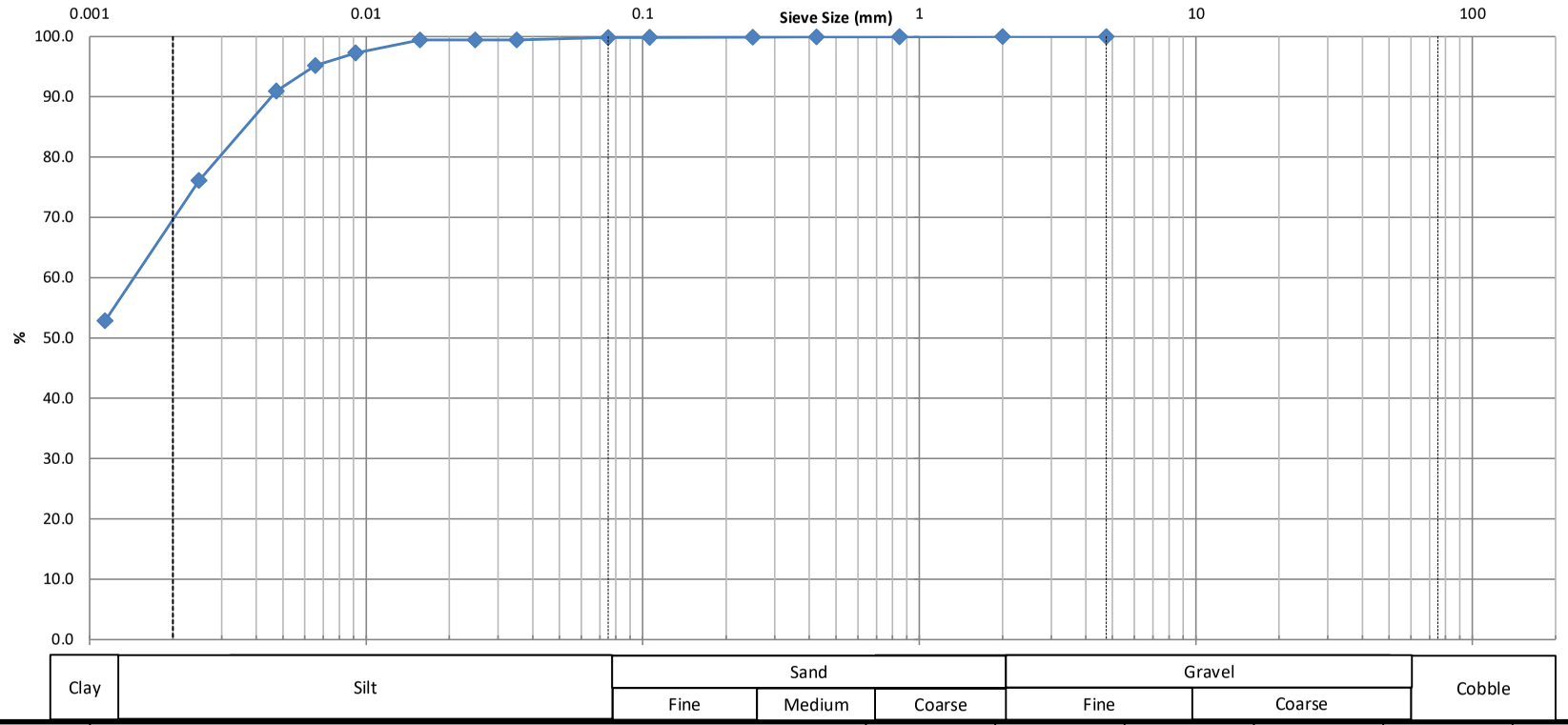
Comments: Brown - Grey Clay

REVIEWED BY:	Curtis Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Terrapex	DEPTH:	-	FILE NO:	PM12708
CONTRACT NO.:		BH OR TP No.:	MW 113-4	LAB NO:	51324
PROJECT:	C0952.01			DATE RECEIVED:	22-Mar-24
				DATE TESTED:	25-Mar-24
DATE SAMPLED:	5-Mar-24			DATE REPORTED:	1-Apr-24
SAMPLED BY:	-			TESTED BY:	C.M



Identification	Soil Classification	MC(%)	LL	PL	PI	Cc	Cu
	CH - Fat Clay	63.4%	81	27	53		

D100	D60	D30	D10	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
				0.0	0.2	29.8	70.0

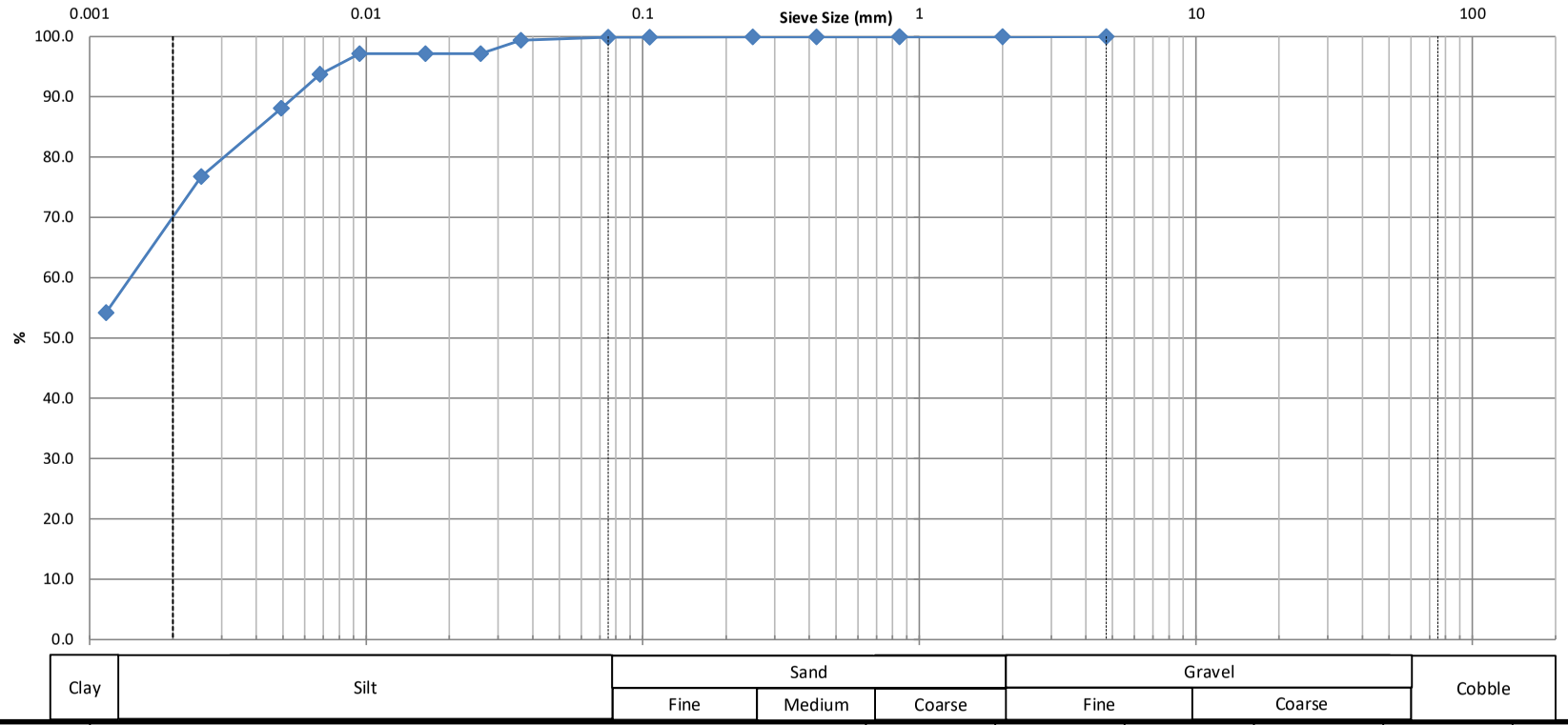
Comments: Grey Clay

REVIEWED BY:	Curtis Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Terrapex	DEPTH:	-	FILE NO:	PM12708
CONTRACT NO.:		BH OR TP No.:	MW 113-10	LAB NO:	51325
PROJECT:	C0952.01			DATE RECEIVED:	22-Mar-24
				DATE TESTED:	25-Mar-24
DATE SAMPLED:	5-Mar-24			DATE REPORTED:	1-Apr-24
SAMPLED BY:	-			TESTED BY:	C.M



Identification	Soil Classification	MC(%)	LL	PL	PI	Cc	Cu
	CH - Fat Clay	74.2%	85	30	56		

D100	D60	D30	D10	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
				0.0	0.1	29.9	70.0

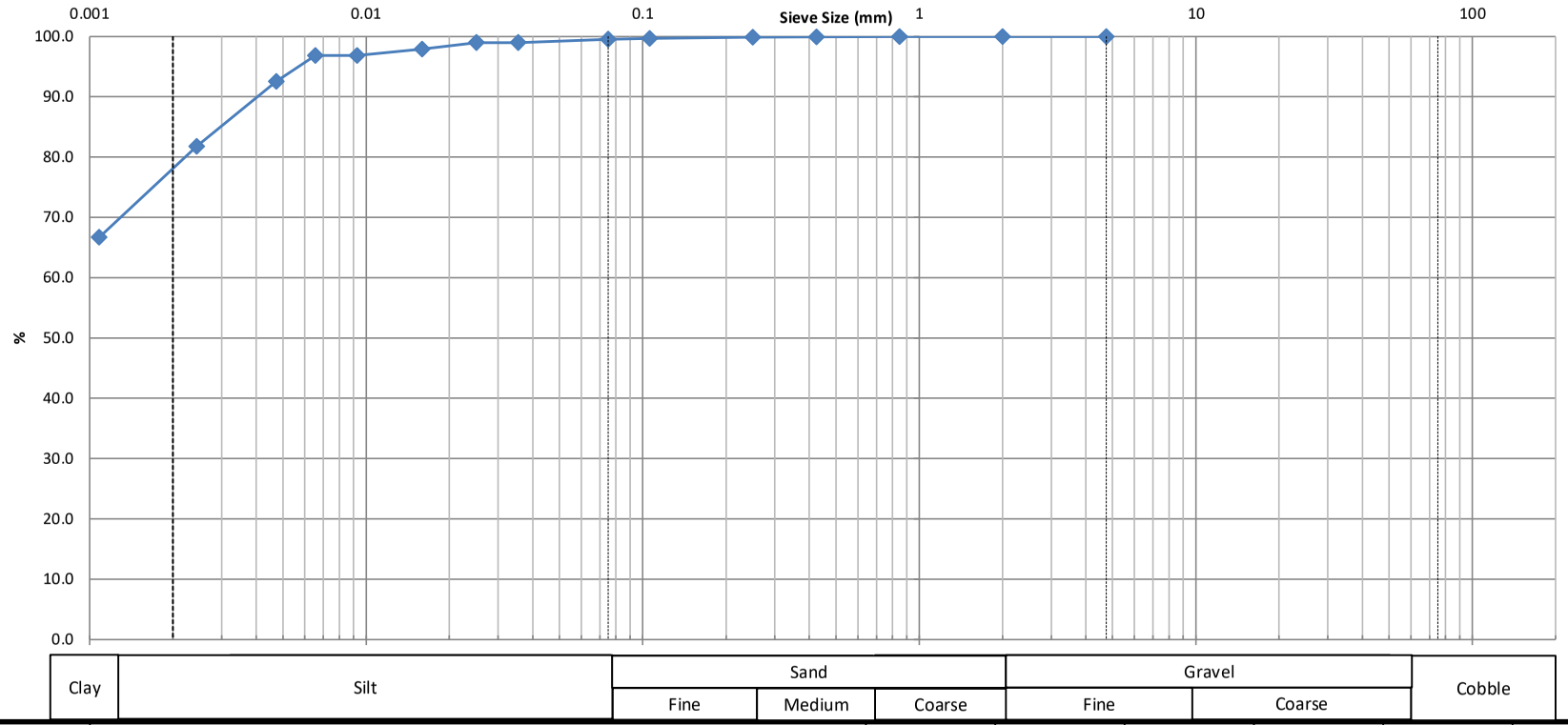
Comments: Grey Clay

REVIEWED BY:	Curtis Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Terrapex	DEPTH:	-	FILE NO:	PM12708
CONTRACT NO.:		BH OR TP No.:	MW 114-3	LAB NO:	51326
PROJECT:	C0952.01			DATE RECEIVED:	22-Mar-24
				DATE TESTED:	25-Mar-24
DATE SAMPLED:	6-Mar-24			DATE REPORTED:	1-Apr-24
SAMPLED BY:	-			TESTED BY:	C.M



Identification	Soil Classification	MC(%)	LL	PL	PI	Cc	Cu
	CH - Fat Clay	28.8%	76	30	48		

D100	D60	D30	D10	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
				0.0	0.4	20.6	79.0

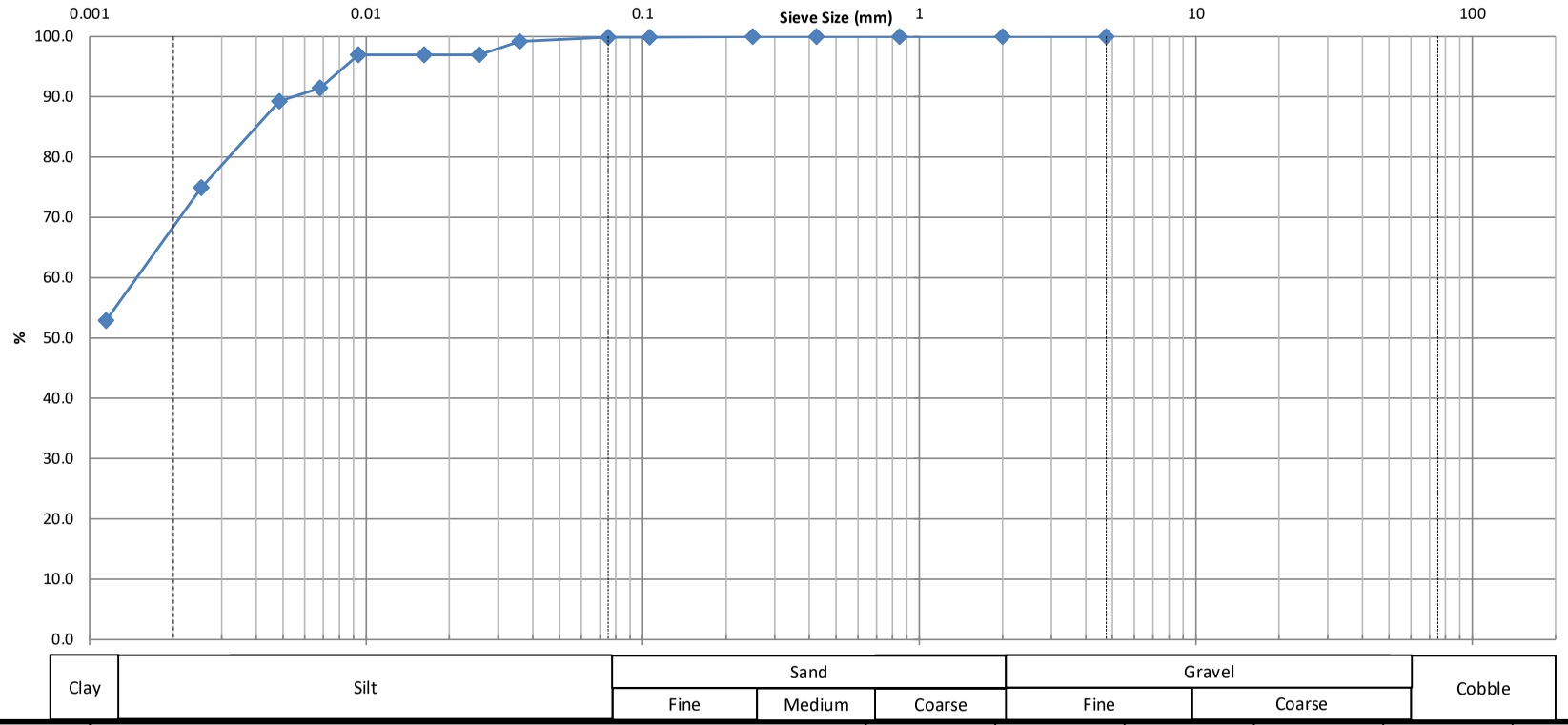
Comments: Brown - Grey Clay

REVIEWED BY:	Curtis Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Terrapex	DEPTH:	-	FILE NO:	PM12708
CONTRACT NO.:		BH OR TP No.:	MW 114-9	LAB NO:	51327
PROJECT:	C0952.01			DATE RECEIVED:	22-Mar-24
				DATE TESTED:	25-Mar-24
DATE SAMPLED:	6-Mar-24			DATE REPORTED:	1-Apr-24
SAMPLED BY:	-			TESTED BY:	C.M



Identification	Soil Classification	MC(%)	LL	PL	PI	Cc	Cu
	CH - Fat Clay	71.9%	83	30	53		

D100	D60	D30	D10	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
				0.0	0.1	30.4	69.5

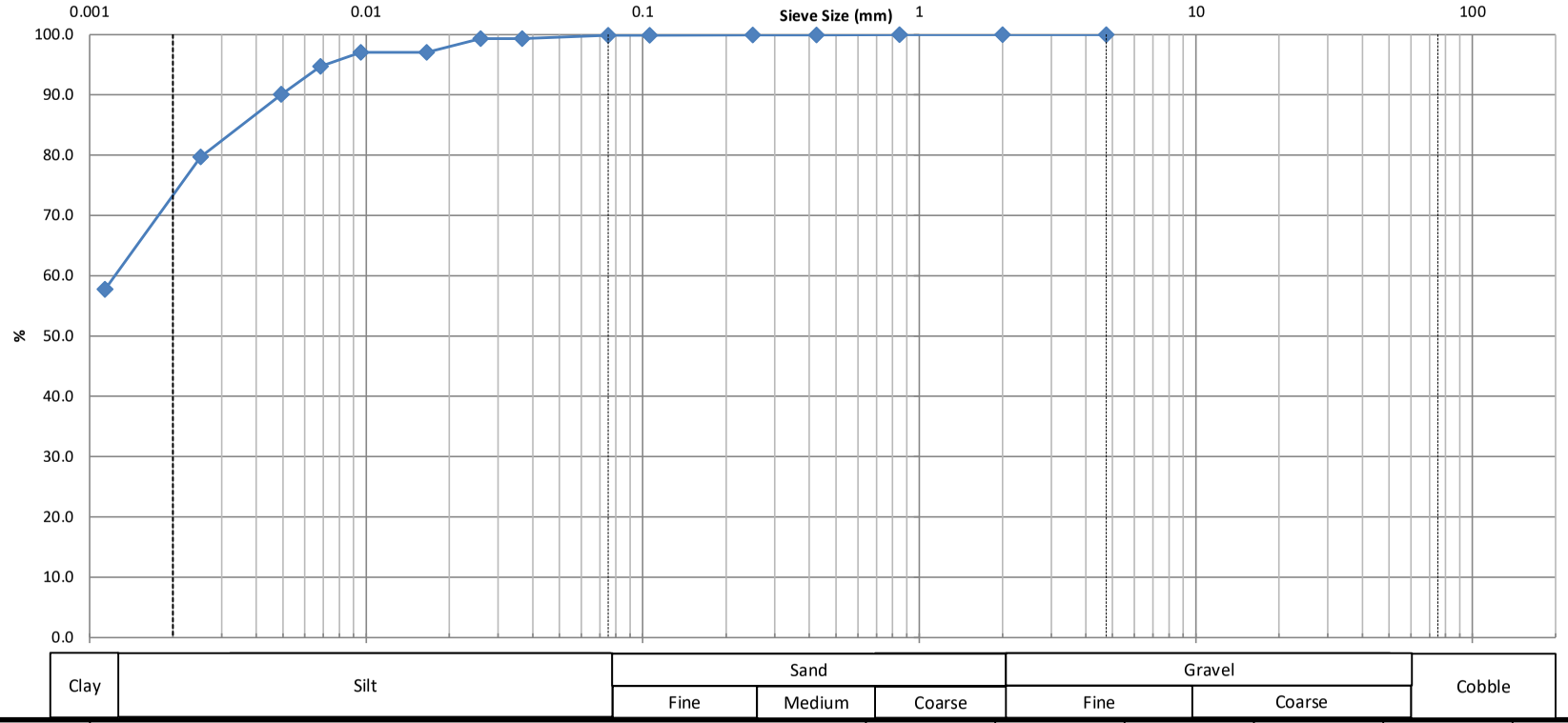
Comments: Grey Clay

REVIEWED BY:	Curtis Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Terrapex	DEPTH:	-	FILE NO:	PM12708
CONTRACT NO.:		BH OR TP No.:	MW 114-15	LAB NO:	51328
PROJECT:	C0952.01			DATE RECEIVED:	22-Mar-24
				DATE TESTED:	25-Mar-24
DATE SAMPLED:	6-Mar-24			DATE REPORTED:	1-Apr-24
SAMPLED BY:	-			TESTED BY:	C.M



Identification	Soil Classification	MC(%)	LL	PL	PI	Cc	Cu
	CL - Lean Clay	64.9%	42	26	17		

D100	D60	D30	D10	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
				0.0	0.1	27.4	72.5

Comments: Grey Clay

REVIEWED BY:	Curtis Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

HYDROMETER
LS-702 ASTM-422

CLIENT:	Terrapex	DEPTH:	-	FILE NO.:	PM12708
PROJECT:	C0952.01	BH OR TP No.:	MW 114-15	DATE SAMPLED:	6-Mar-24
LAB No. :	51328	TESTED BY:	C.M	DATE RECEIVED:	22-Mar-24
SAMPLED BY:	-	DATE REPT'D:	1-Apr-24	DATE TESTED:	25-Mar-24

SAMPLE INFORMATION

SAMPLE MASS	SPECIFIC GRAVITY
108.1	2.700

		HYGROSCOPIC MOISTURE		
INITIAL WEIGHT	50.00			
WEIGHT CORRECTED	39.17	TARE WEIGHT	0.00	ACTUAL WEIGHT
WT. AFTER WASH BACK SIEVE	0.05	AIR DRY	138.00	138.00
SOLUTION CONCENTRATION	40 g/L	OVEN DRY	108.10	108.10
		CORRECTED	0.783	

GRAIN SIZE ANALYSIS

SIEVE DIAMETER (mm)	WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT PASSING
26.5			
19			
13.2			
9.5			
4.75	**0.0**	0.0	**100.0**
2.0	**0.0**	0.0	**100.0**
Pan	**108.1**		
0.850	**0.00**	0.0	**100.0**
0.425	**0.02**	0.1	**99.9**
0.250	**0.03**	0.1	**99.9**
0.106	**0.04**	0.1	**99.9**
0.075	**0.05**	0.1	**99.9**
Pan	**0.05**		
SIEVE CHECK 0.0	MAX = 0.3%		

HYDROMETER DATA

ELAPSED	TIME (24 hours)	Hs	Hc	Temp. (°C)	DIAMETER	(P)	TOTAL PERCENT PASSING
1	9:40	49.0	6.0	23.0	0.0367	99.4	**99.3**
2	9:41	49.0	6.0	23.0	0.0259	99.4	**99.3**
5	9:44	48.0	6.0	23.0	0.0166	97.0	**97.0**
15	9:54	48.0	6.0	23.0	0.0096	97.0	**97.0**
30	10:09	47.0	6.0	23.0	0.0068	94.7	**94.7**
60	10:39	45.0	6.0	23.0	0.0049	90.1	**90.1**
250	1:49	40.5	6.0	23.0	0.0025	79.7	**79.7**
1440	9:39	31.0	6.0	23.0	0.0011	57.8	**57.7**

Moisture = 64.9%

REVIEWED BY:	C. Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

HYDROMETER
LS-702 ASTM-422

CLIENT:	Terrapex	DEPTH:	-	FILE NO.:	PM12708
PROJECT:	C0952.01	BH OR TP No.:	MW 114-9	DATE SAMPLED:	6-Mar-24
LAB No. :	51327	TESTED BY:	C.M	DATE RECEIVED:	22-Mar-24
SAMPLED BY:	-	DATE REPT'D:	1-Apr-24	DATE TESTED:	25-Mar-24

SAMPLE INFORMATION

SAMPLE MASS	SPECIFIC GRAVITY
103.3	2.700

INITIAL WEIGHT	50.00	**HYGROSCOPIC MOISTURE**		
WEIGHT CORRECTED	37.54	TARE WEIGHT	0.00	ACTUAL WEIGHT
WT. AFTER WASH BACK SIEVE	0.07	AIR DRY	137.60	137.60
SOLUTION CONCENTRATION	40 g/L	OVEN DRY	103.30	103.30
		CORRECTED	0.751	

GRAIN SIZE ANALYSIS

SIEVE DIAMETER (mm)	WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT PASSING
26.5			
19			
13.2			
9.5			
4.75	**0.0**	0.0	**100.0**
2.0	**0.0**	0.0	**100.0**
Pan	**103.3**		
0.850	**0.00**	0.0	**100.0**
0.425	**0.00**	0.0	**100.0**
0.250	**0.00**	0.0	**100.0**
0.106	**0.04**	0.1	**99.9**
0.075	**0.05**	0.1	**99.9**
Pan	**0.07**		
SIEVE CHECK 0.0	MAX = 0.3%		

HYDROMETER DATA

ELAPSED	TIME (24 hours)	Hs	Hc	Temp. (°C)	DIAMETER	(P)	TOTAL PERCENT PASSING
1	9:36	51.0	6.0	23.0	0.0359	99.2	**99.2**
2	9:37	50.0	6.0	23.0	0.0256	97.0	**97.0**
5	9:40	50.0	6.0	23.0	0.0162	97.0	**97.0**
15	9:50	50.0	6.0	23.0	0.0094	97.0	**97.0**
30	10:05	47.5	6.0	23.0	0.0068	91.5	**91.5**
60	10:35	46.5	6.0	23.0	0.0049	89.3	**89.3**
250	1:45	40.0	6.0	23.0	0.0025	75.0	**74.9**
1440	9:35	30.0	6.0	23.0	0.0011	52.9	**52.9**

Moisture = 71.9%

REVIEWED BY:	C. Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

HYDROMETER
LS-702 ASTM-422

CLIENT:	Terrapex	DEPTH:	-	FILE NO.:	PM12708
PROJECT:	C0952.01	BH OR TP No.:	MW 114-3	DATE SAMPLED:	6-Mar-24
LAB No. :	51326	TESTED BY:	C.M	DATE RECEIVED:	22-Mar-24
SAMPLED BY:	-	DATE REPT'D:	1-Apr-24	DATE TESTED:	25-Mar-24

SAMPLE INFORMATION

SAMPLE MASS	SPECIFIC GRAVITY
111.5	2.700

INITIAL WEIGHT	50.00	**HYGROSCOPIC MOISTURE**		
WEIGHT CORRECTED	45.07	TARE WEIGHT	0.00	ACTUAL WEIGHT
WT. AFTER WASH BACK SIEVE	0.25	AIR DRY	123.70	123.70
SOLUTION CONCENTRATION	40 g/L	OVEN DRY	111.50	111.50
		CORRECTED	0.901	

GRAIN SIZE ANALYSIS

SIEVE DIAMETER (mm)	WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT PASSING
26.5			
19			
13.2			
9.5			
4.75	**0.0**	0.0	**100.0**
2.0	**0.0**	0.0	**100.0**
Pan	**111.5**		
0.850	**0.00**	0.0	**100.0**
0.425	**0.02**	0.1	**99.9**
0.250	**0.04**	0.1	**99.9**
0.106	**0.14**	0.3	**99.7**
0.075	**0.21**	0.4	**99.6**
Pan	**0.25**		
SIEVE CHECK 0.0	MAX = 0.3%		

HYDROMETER DATA

ELAPSED	TIME (24 hours)	Hs	Hc	Temp. (°C)	DIAMETER	(P)	TOTAL PERCENT PASSING
1	9:10	52.0	6.0	23.0	0.0355	99.0	**99.0**
2	9:11	52.0	6.0	23.0	0.0251	99.0	**99.0**
5	9:14	51.5	6.0	23.0	0.0160	97.9	**97.9**
15	9:24	51.0	6.0	23.0	0.0093	96.9	**96.8**
30	9:39	51.0	6.0	23.0	0.0065	96.9	**96.8**
60	10:09	49.0	6.0	23.0	0.0047	92.5	**92.5**
250	1:19	44.0	6.0	23.0	0.0024	81.8	**81.8**
1440	9:09	37.0	6.0	23.0	0.0011	66.7	**66.7**

Moisture = 28.8%

REVIEWED BY:	C. Beadow	Joe Forsyth, P. Eng.
		

PATERSON GROUP

HYDROMETER
LS-702 ASTM-422

CLIENT:	Terrapex	DEPTH:	-	FILE NO.:	PM12708
PROJECT:	C0952.01	BH OR TP No.:	MW 113-10	DATE SAMPLED:	5-Mar-24
LAB No. :	51325	TESTED BY:	C.M	DATE RECEIVED:	22-Mar-24
SAMPLED BY:	-	DATE REPT'D:	1-Apr-24	DATE TESTED:	25-Mar-24

SAMPLE INFORMATION

SAMPLE MASS	SPECIFIC GRAVITY
96.0	2.700

INITIAL WEIGHT	50.00	**HYGROSCOPIC MOISTURE**		
WEIGHT CORRECTED	37.18	TARE WEIGHT	0.00	ACTUAL WEIGHT
WT. AFTER WASH BACK SIEVE	0.04	AIR DRY	129.10	129.10
SOLUTION CONCENTRATION	40 g/L	OVEN DRY	96.00	96.00
		CORRECTED	0.744	

GRAIN SIZE ANALYSIS

SIEVE DIAMETER (mm)	WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT PASSING
26.5			
19			
13.2			
9.5			
4.75	**0.0**	0.0	**100.0**
2.0	**0.0**	0.0	**100.0**
Pan	**96.0**		
0.850	**0.00**	0.0	**100.0**
0.425	**0.02**	0.1	**99.9**
0.250	**0.03**	0.1	**99.9**
0.106	**0.04**	0.1	**99.9**
0.075	**0.04**	0.1	**99.9**
Pan	**0.04**		
SIEVE CHECK 0.0	MAX = 0.3%		

HYDROMETER DATA

ELAPSED	TIME (24 hours)	Hs	Hc	Temp. (°C)	DIAMETER	(P)	TOTAL PERCENT PASSING
1	9:06	50.0	6.0	23.0	0.0363	99.4	**99.4**
2	9:07	49.0	6.0	23.0	0.0259	97.1	**97.1**
5	9:10	49.0	6.0	23.0	0.0164	97.1	**97.1**
15	9:20	49.0	6.0	23.0	0.0095	97.1	**97.1**
30	9:35	47.5	6.0	23.0	0.0068	93.8	**93.7**
60	10:05	45.0	6.0	23.0	0.0049	88.1	**88.1**
250	1:15	40.0	6.0	23.0	0.0025	76.8	**76.8**
1440	9:05	30.0	6.0	23.0	0.0011	54.2	**54.2**

Moisture = 74.2%

REVIEWED BY:	C. Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

HYDROMETER
LS-702 ASTM-422

CLIENT:	Terrapex	DEPTH:	-	FILE NO.:	PM12708
PROJECT:	C0952.01	BH OR TP No.:	MW 113-4	DATE SAMPLED:	5-Mar-24
LAB No. :	51324	TESTED BY:	C.M	DATE RECEIVED:	22-Mar-24
SAMPLED BY:	-	DATE REPT'D:	1-Apr-24	DATE TESTED:	25-Mar-24

SAMPLE INFORMATION

SAMPLE MASS	SPECIFIC GRAVITY
110.9	2.700

INITIAL WEIGHT	50.00	**HYGROSCOPIC MOISTURE**		
WEIGHT CORRECTED	38.06	TARE WEIGHT	0.00	ACTUAL WEIGHT
WT. AFTER WASH BACK SIEVE	0.09	AIR DRY	145.70	145.70
SOLUTION CONCENTRATION	40 g/L	OVEN DRY	110.90	110.90
		CORRECTED	0.761	

GRAIN SIZE ANALYSIS

SIEVE DIAMETER (mm)	WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT PASSING
26.5			
19			
13.2			
9.5			
4.75	**0.0**	0.0	**100.0**
2.0	**0.0**	0.0	**100.0**
Pan	**110.9**		
0.850	**0.01**	0.0	**100.0**
0.425	**0.03**	0.1	**99.9**
0.250	**0.05**	0.1	**99.9**
0.106	**0.07**	0.2	**99.8**
0.075	**0.08**	0.2	**99.8**
Pan	**0.09**		
SIEVE CHECK 0.0	MAX = 0.3%		

HYDROMETER DATA

ELAPSED	TIME (24 hours)	Hs	Hc	Temp. (°C)	DIAMETER	(P)	TOTAL PERCENT PASSING
1	8:48	53.0	6.0	23.0	0.0351	99.4	**99.4**
2	8:49	53.0	6.0	23.0	0.0248	99.4	**99.4**
5	8:52	53.0	6.0	23.0	0.0157	99.4	**99.4**
15	9:02	52.0	6.0	23.0	0.0092	97.3	**97.3**
30	9:17	51.0	6.0	23.0	0.0065	95.2	**95.2**
60	9:47	49.0	6.0	23.0	0.0047	91.0	**90.9**
250	0:57	42.0	6.0	23.0	0.0025	76.1	**76.1**
1440	8:47	31.0	6.0	23.0	0.0011	52.9	**52.9**

Moisture = 63.4%

REVIEWED BY:	C. Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

HYDROMETER
LS-702 ASTM-422

CLIENT:	Terrapex	DEPTH:	-	FILE NO.:	PM12708
PROJECT:	C0952.01	BH OR TP No.:	MW 113-2	DATE SAMPLED:	5-Mar-24
LAB No. :	51323	TESTED BY:	C.M	DATE RECEIVED:	22-Mar-24
SAMPLED BY:	-	DATE REPT'D:	1-Apr-24	DATE TESTED:	25-Mar-24

SAMPLE INFORMATION

SAMPLE MASS	SPECIFIC GRAVITY
120.3	2.700

INITIAL WEIGHT	50.00	**HYGROSCOPIC MOISTURE**		
WEIGHT CORRECTED	42.96	TARE WEIGHT	0.00	ACTUAL WEIGHT
WT. AFTER WASH BACK SIEVE	0.27	AIR DRY	140.00	140.00
SOLUTION CONCENTRATION	40 g/L	OVEN DRY	120.30	120.30
		CORRECTED	0.859	

GRAIN SIZE ANALYSIS

SIEVE DIAMETER (mm)	WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT PASSING
26.5			
19			
13.2			
9.5			
4.75	**0.0**	0.0	**100.0**
2.0	**0.0**	0.0	**100.0**
Pan	**120.3**		
0.850	**0.01**	0.0	**100.0**
0.425	**0.02**	0.1	**99.9**
0.250	**0.04**	0.1	**99.9**
0.106	**0.13**	0.3	**99.7**
0.075	**0.25**	0.5	**99.5**
Pan	**0.27**		
SIEVE CHECK 0.0	MAX = 0.3%		

HYDROMETER DATA

ELAPSED	TIME (24 hours)	Hs	Hc	Temp. (°C)	DIAMETER	(P)	TOTAL PERCENT PASSING
1	8:44	51.0	6.0	23.0	0.0359	98.5	**98.4**
2	8:45	50.0	6.0	23.0	0.0256	96.3	**96.2**
5	8:48	50.0	6.0	23.0	0.0162	96.3	**96.2**
15	8:58	50.0	6.0	23.0	0.0094	96.3	**96.2**
30	9:13	48.5	6.0	23.0	0.0067	93.0	**93.0**
60	9:43	47.5	6.0	23.0	0.0048	90.8	**90.8**
250	0:53	42.0	6.0	23.0	0.0025	78.8	**78.7**
1440	8:43	32.0	6.0	23.0	0.0011	56.9	**56.9**

Moisture = 42.7%

REVIEWED BY:	C. Beadow	Joe Forsyth, P. Eng.
		

PATERSON GROUP

HYDROMETER
LS-702 ASTM-422

CLIENT:	Terrapex	DEPTH:	11 - 12	FILE NO.:	PM12708
PROJECT:	C0952.01	BH OR TP No.:	MW 112-5	DATE SAMPLED:	16-Feb-24
LAB No. :	51158	TESTED BY:	C.M	DATE RECEIVED:	1-Mar-24
SAMPLED BY:	-	DATE REPT'D:	8-Mar-24	DATE TESTED:	4-Mar-24

SAMPLE INFORMATION

SAMPLE MASS	SPECIFIC GRAVITY
96.4	2.700

		HYGROSCOPIC MOISTURE		
INITIAL WEIGHT	50.00			
WEIGHT CORRECTED	40.88	TARE WEIGHT	0.00	ACTUAL WEIGHT
WT. AFTER WASH BACK SIEVE	0.10	AIR DRY	117.90	117.90
SOLUTION CONCENTRATION	40 g/L	OVEN DRY	96.40	96.40
		CORRECTED	0.818	

GRAIN SIZE ANALYSIS

SIEVE DIAMETER (mm)	WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT PASSING
26.5			
19			
13.2			
9.5			
4.75	**0.0**	0.0	**100.0**
2.0	**0.0**	0.0	**100.0**
Pan	**96.4**		
0.850	**0.00**	0.0	**100.0**
0.425	**0.00**	0.0	**100.0**
0.250	**0.00**	0.0	**100.0**
0.106	**0.04**	0.1	**99.9**
0.075	**0.08**	0.2	**99.8**
Pan	**0.10**		
SIEVE CHECK 0.0	MAX = 0.3%		

HYDROMETER DATA

ELAPSED	TIME (24 hours)	Hs	Hc	Temp. (°C)	DIAMETER	(P)	TOTAL PERCENT PASSING
1	9:45	41.0	6.0	23.0	0.0397	84.7	**84.6**
2	9:46	38.5	6.0	23.0	0.0287	78.6	**78.6**
5	9:49	38.0	6.0	23.0	0.0182	77.4	**77.4**
15	9:59	36.0	6.0	23.0	0.0107	72.6	**72.5**
30	10:14	35.0	6.0	23.0	0.0076	70.1	**70.1**
60	10:44	32.5	6.0	23.0	0.0055	64.1	**64.1**
250	1:54	29.0	6.0	23.0	0.0028	55.6	**55.6**
1440	9:44	25.0	6.0	23.0	0.0012	46.0	**45.9**

Moisture = 49.4%

REVIEWED BY:	C. Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

HYDROMETER
LS-702 ASTM-422

CLIENT:	Terrapex	DEPTH:	7.5 - 9.5	FILE NO.:	PM12708
PROJECT:	C0952.01	BH OR TP No.:	MW 112-4	DATE SAMPLED:	16-Feb-24
LAB No. :	51157	TESTED BY:	C.M	DATE RECEIVED:	1-Mar-24
SAMPLED BY:	-	DATE REPT'D:	8-Mar-24	DATE TESTED:	4-Mar-24

SAMPLE INFORMATION

SAMPLE MASS	SPECIFIC GRAVITY
103.1	2.700

		HYGROSCOPIC MOISTURE		
INITIAL WEIGHT	50.00			
WEIGHT CORRECTED	41.98	TARE WEIGHT	0.00	ACTUAL WEIGHT
WT. AFTER WASH BACK SIEVE	0.26	AIR DRY	122.80	122.80
SOLUTION CONCENTRATION	40 g/L	OVEN DRY	103.10	103.10
		CORRECTED	0.840	

GRAIN SIZE ANALYSIS

SIEVE DIAMETER (mm)	WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT PASSING
26.5			
19			
13.2			
9.5			
4.75	**0.0**	0.0	**100.0**
2.0	**0.0**	0.0	**100.0**
Pan	**103.1**		
0.850	**0.00**	0.0	**100.0**
0.425	**0.00**	0.0	**100.0**
0.250	**0.04**	0.1	**99.9**
0.106	**0.15**	0.3	**99.7**
0.075	**0.22**	0.5	**99.5**
Pan	**0.26**		
SIEVE CHECK 0.0	MAX = 0.3%		

HYDROMETER DATA

ELAPSED	TIME (24 hours)	Hs	Hc	Temp. (°C)	DIAMETER	(P)	TOTAL PERCENT PASSING
1	9:59	49.5	6.0	23.0	0.0365	99.0	**98.9**
2	10:00	49.0	6.0	23.0	0.0259	97.8	**97.8**
5	10:03	47.5	6.0	23.0	0.0167	94.4	**94.4**
15	10:13	45.5	6.0	23.0	0.0098	89.9	**89.8**
30	10:28	44.5	6.0	23.0	0.0070	87.6	**87.6**
60	10:58	41.0	6.0	23.0	0.0051	79.6	**79.6**
250	2:08	39.0	6.0	23.0	0.0026	75.1	**75.1**
1440	9:58	31.0	6.0	23.0	0.0011	56.9	**56.9**

Moisture = 42.6%

REVIEWED BY:	C. Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

HYDROMETER
LS-702 ASTM-422

CLIENT:	Terrapex	DEPTH:	7.5 - 9.5	FILE NO.:	PM12708
PROJECT:	C0952.01	BH OR TP No.:	MW 111-4	DATE SAMPLED:	16-Feb-24
LAB No. :	51156	TESTED BY:	C.M	DATE RECEIVED:	1-Mar-24
SAMPLED BY:	-	DATE REPT'D:	8-Mar-24	DATE TESTED:	4-Mar-24

SAMPLE INFORMATION

SAMPLE MASS	SPECIFIC GRAVITY
97.9	2.700

		HYGROSCOPIC MOISTURE		
INITIAL WEIGHT	50.00			
WEIGHT CORRECTED	40.06	TARE WEIGHT	0.00	ACTUAL WEIGHT
WT. AFTER WASH BACK SIEVE	0.17	AIR DRY	122.20	122.20
SOLUTION CONCENTRATION	40 g/L	OVEN DRY	97.90	97.90
		CORRECTED	0.801	

GRAIN SIZE ANALYSIS

SIEVE DIAMETER (mm)	WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT PASSING
26.5			
19			
13.2			
9.5			
4.75	**0.0**	0.0	**100.0**
2.0	**0.0**	0.0	**100.0**
Pan	**97.9**		
0.850	**0.00**	0.0	**100.0**
0.425	**0.02**	0.1	**99.9**
0.250	**0.05**	0.1	**99.9**
0.106	**0.10**	0.2	**99.8**
0.075	**0.15**	0.3	**99.7**
Pan	**0.17**		
SIEVE CHECK 0.0	MAX = 0.3%		

HYDROMETER DATA

ELAPSED	TIME (24 hours)	Hs	Hc	Temp. (°C)	DIAMETER	(P)	TOTAL PERCENT PASSING
1	7:51	50.0	6.0	23.0	0.0363	98.9	**98.8**
2	7:52	49.0	6.0	23.0	0.0259	96.6	**96.6**
5	7:55	48.0	6.0	23.0	0.0166	94.4	**94.3**
15	8:05	47.0	6.0	23.0	0.0097	92.1	**92.1**
30	8:20	46.0	6.0	23.0	0.0069	89.9	**89.8**
60	8:50	45.0	6.0	23.0	0.0049	87.6	**87.6**
250	12:00	39.5	6.0	23.0	0.0025	75.3	**75.2**
1440	7:50	33.5	6.0	23.0	0.0011	61.8	**61.8**

Moisture = 48.1%

REVIEWED BY:	C. Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

HYDROMETER
LS-702 ASTM-422

CLIENT:	Terrapex	DEPTH:	5- 7	FILE NO.:	PM12708
PROJECT:	C0952.01	BH OR TP No.:	MW 111-3	DATE SAMPLED:	16-Feb-24
LAB No. :	51155	TESTED BY:	C.M	DATE RECEIVED:	1-Mar-24
SAMPLED BY:	-	DATE REPT'D:	8-Mar-24	DATE TESTED:	4-Mar-24

SAMPLE INFORMATION

SAMPLE MASS	SPECIFIC GRAVITY
102.2	2.700

		HYGROSCOPIC MOISTURE		
INITIAL WEIGHT	50.00			
WEIGHT CORRECTED	42.30	TARE WEIGHT	0.00	ACTUAL WEIGHT
WT. AFTER WASH BACK SIEVE	0.53	AIR DRY	120.80	120.80
SOLUTION CONCENTRATION	40 g/L	OVEN DRY	102.20	102.20
		CORRECTED	0.846	

GRAIN SIZE ANALYSIS

SIEVE DIAMETER (mm)	WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT PASSING
26.5			
19			
13.2			
9.5			
4.75	**0.0**	0.0	**100.0**
2.0	**0.0**	0.0	**100.0**
Pan	**102.2**		
0.850	**0.05**	0.1	**99.9**
0.425	**0.12**	0.3	**99.7**
0.250	**0.21**	0.4	**99.6**
0.106	**0.40**	0.8	**99.2**
0.075	**0.50**	1.0	**99.0**
Pan	**0.53**		
SIEVE CHECK 0.0	MAX = 0.3%		

HYDROMETER DATA

ELAPSED	TIME (24 hours)	Hs	Hc	Temp. (°C)	DIAMETER	(P)	TOTAL PERCENT PASSING
1	9:38	45.0	6.0	23.0	0.0382	91.2	**91.1**
2	9:39	44.5	6.0	23.0	0.0271	90.0	**90.0**
5	9:42	44.0	6.0	23.0	0.0173	88.8	**88.8**
15	9:52	42.0	6.0	23.0	0.0102	84.2	**84.1**
30	10:07	40.0	6.0	23.0	0.0073	79.5	**79.5**
60	10:37	38.0	6.0	23.0	0.0053	74.8	**74.8**
250	1:47	33.0	6.0	23.0	0.0027	63.1	**63.1**
1440	9:37	29.0	6.0	23.0	0.0012	53.8	**53.7**

Moisture = 40.0%

REVIEWED BY:	C. Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

HYDROMETER
LS-702 ASTM-422

CLIENT:	Terrapex	DEPTH:	7.5 - 9.5	FILE NO.:	PM12708
PROJECT:	C0952.01	BH OR TP No.:	MW 110-4	DATE SAMPLED:	16-Feb-24
LAB No. :	51154	TESTED BY:	C.M	DATE RECEIVED:	1-Mar-24
SAMPLED BY:	-	DATE REPT'D:	8-Mar-24	DATE TESTED:	4-Mar-24

SAMPLE INFORMATION

SAMPLE MASS	SPECIFIC GRAVITY
97.5	2.700

		HYGROSCOPIC MOISTURE		
INITIAL WEIGHT	50.00			
WEIGHT CORRECTED	40.06	TARE WEIGHT	0.00	ACTUAL WEIGHT
WT. AFTER WASH BACK SIEVE	0.18	AIR DRY	121.70	121.70
SOLUTION CONCENTRATION	40 g/L	OVEN DRY	97.50	97.50
		CORRECTED	0.801	

GRAIN SIZE ANALYSIS

SIEVE DIAMETER (mm)	WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT PASSING
26.5			
19			
13.2			
9.5			
4.75	**0.0**	0.0	**100.0**
2.0	**0.0**	0.0	**100.0**
Pan	**97.5**		
0.850	**0.00**	0.0	**100.0**
0.425	**0.02**	0.1	**99.9**
0.250	**0.06**	0.2	**99.8**
0.106	**0.13**	0.3	**99.7**
0.075	**0.16**	0.4	**99.6**
Pan	**0.18**		
SIEVE CHECK 0.0	MAX = 0.3%		

HYDROMETER DATA

ELAPSED	TIME (24 hours)	Hs	Hc	Temp. (°C)	DIAMETER	(P)	TOTAL PERCENT PASSING
1	9:22	51.5	6.0	23.0	0.0357	98.8	**98.8**
2	9:23	51.0	6.0	23.0	0.0254	97.7	**97.7**
5	9:26	50.0	6.0	23.0	0.0162	95.6	**95.5**
15	9:36	49.0	6.0	23.0	0.0095	93.4	**93.4**
30	9:51	47.5	6.0	23.0	0.0068	90.1	**90.1**
60	10:21	45.0	6.0	23.0	0.0049	84.7	**84.7**
250	1:31	39.5	6.0	23.0	0.0025	72.8	**72.7**
1440	9:21	33.5	6.0	23.0	0.0011	59.7	**59.7**

Moisture = 49.7%

REVIEWED BY:	C. Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

HYDROMETER
LS-702 ASTM-422

CLIENT:	Terrapex	DEPTH:	12.5 - 14.5	FILE NO.:	PM12708
PROJECT:	C0952.01	BH OR TP No.:	MW 110-6	DATE SAMPLED:	16-Feb-24
LAB No. :	51153	TESTED BY:	C.M	DATE RECEIVED:	1-Mar-24
SAMPLED BY:	-	DATE REPT'D:	8-Mar-24	DATE TESTED:	4-Mar-24

SAMPLE INFORMATION

SAMPLE MASS	SPECIFIC GRAVITY
63.7	2.700

INITIAL WEIGHT	50.00	**HYGROSCOPIC MOISTURE**		
WEIGHT CORRECTED	41.15	TARE WEIGHT	0.00	ACTUAL WEIGHT
WT. AFTER WASH BACK SIEVE	0.07	AIR DRY	77.40	77.40
SOLUTION CONCENTRATION	40 g/L	OVEN DRY	63.70	63.70
		CORRECTED	0.823	

GRAIN SIZE ANALYSIS

SIEVE DIAMETER (mm)	WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT PASSING
26.5			
19			
13.2			
9.5			
4.75	**0.0**	0.0	**100.0**
2.0	**0.0**	0.0	**100.0**
Pan	**63.7**		
0.850	**0.00**	0.0	**100.0**
0.425	**0.00**	0.0	**100.0**
0.250	**0.00**	0.0	**100.0**
0.106	**0.03**	0.1	**99.9**
0.075	**0.05**	0.1	**99.9**
Pan	**0.07**		
SIEVE CHECK 0.0	MAX = 0.3%		

HYDROMETER DATA

ELAPSED	TIME (24 hours)	Hs	Hc	Temp. (°C)	DIAMETER	(P)	TOTAL PERCENT PASSING
1	9:15	47.0	6.0	23.0	0.0374	98.5	**98.5**
2	9:16	46.5	6.0	23.0	0.0266	97.3	**97.3**
5	9:19	44.5	6.0	23.0	0.0172	92.5	**92.5**
15	9:29	43.0	6.0	23.0	0.0101	88.9	**88.9**
30	9:44	42.0	6.0	23.0	0.0072	86.5	**86.5**
60	10:14	39.0	6.0	23.0	0.0052	79.3	**79.3**
250	1:24	33.5	6.0	23.0	0.0027	66.1	**66.0**
1440	9:14	28.0	6.0	23.0	0.0012	52.9	**52.8**

Moisture = 57.3%

REVIEWED BY:	C. Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

HYDROMETER
LS-702 ASTM-422

CLIENT:	Terrapex	DEPTH:	5 - 7	FILE NO.:	PM12708
PROJECT:	C0952.01	BH OR TP No.:	MW 106-3	DATE SAMPLED:	9-Feb-24
LAB No. :	51152	TESTED BY:	C.M	DATE RECEIVED:	1-Mar-24
SAMPLED BY:	-	DATE REPT'D:	8-Mar-24	DATE TESTED:	4-Mar-24

SAMPLE INFORMATION

SAMPLE MASS	SPECIFIC GRAVITY
96.3	2.700

		HYGROSCOPIC MOISTURE		
INITIAL WEIGHT	50.00			
WEIGHT CORRECTED	38.18	TARE WEIGHT	0.00	ACTUAL WEIGHT
WT. AFTER WASH BACK SIEVE	0.17	AIR DRY	126.10	126.10
SOLUTION CONCENTRATION	40 g/L	OVEN DRY	96.30	96.30
		CORRECTED	0.764	

GRAIN SIZE ANALYSIS

SIEVE DIAMETER (mm)	WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT PASSING
26.5			
19			
13.2			
9.5			
4.75	**0.0**	0.0	**100.0**
2.0	**0.0**	0.0	**100.0**
Pan	**96.3**		
0.850	**0.01**	0.1	**99.9**
0.425	**0.02**	0.1	**99.9**
0.250	**0.04**	0.1	**99.9**
0.106	**0.12**	0.3	**99.7**
0.075	**0.14**	0.3	**99.7**
Pan	**0.17**		
SIEVE CHECK 0.0	MAX = 0.3%		

HYDROMETER DATA

ELAPSED	TIME (24 hours)	Hs	Hc	Temp. (°C)	DIAMETER	(P)	TOTAL PERCENT PASSING
1	8:55	58.0	6.0	23.0	0.0329	98.7	**98.7**
2	8:56	57.5	6.0	23.0	0.0235	97.8	**97.8**
5	8:59	57.0	6.0	23.0	0.0149	96.8	**96.8**
15	9:09	56.0	6.0	23.0	0.0087	94.9	**94.9**
30	9:24	55.5	6.0	23.0	0.0062	94.0	**94.0**
60	9:54	53.5	6.0	23.0	0.0045	90.2	**90.2**
250	1:04	48.5	6.0	23.0	0.0023	80.7	**80.7**
1440	8:54	42.5	6.0	23.0	0.0010	69.3	**69.3**

Moisture = 52.6%

REVIEWED BY:	C. Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

HYDROMETER
LS-702 ASTM-422

CLIENT:	Terrapex	DEPTH:	7.5 - 9.5	FILE NO.:	PM12708
PROJECT:	C0952.01	BH OR TP No.:	MW 104-4	DATE SAMPLED:	8-Feb-24
LAB No. :	51151	TESTED BY:	C.M	DATE RECEIVED:	1-Mar-24
SAMPLED BY:	-	DATE REPT'D:	8-Mar-24	DATE TESTED:	4-Mar-24

SAMPLE INFORMATION

SAMPLE MASS	SPECIFIC GRAVITY
89.8	2.700

		HYGROSCOPIC MOISTURE		
INITIAL WEIGHT	50.00			
WEIGHT CORRECTED	38.51	TARE WEIGHT	0.00	ACTUAL WEIGHT
WT. AFTER WASH BACK SIEVE	0.14	AIR DRY	116.60	116.60
SOLUTION CONCENTRATION	40 g/L	OVEN DRY	89.80	89.80
		CORRECTED	0.770	

GRAIN SIZE ANALYSIS

SIEVE DIAMETER (mm)		WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT PASSING
26.5				
19				
13.2				
9.5				
4.75		**0.0**	0.0	**100.0**
2.0		**0.0**	0.0	**100.0**
Pan		**89.8**		
0.850		**0.00**	0.0	**100.0**
0.425		**0.03**	0.1	**99.9**
0.250		**0.04**	0.1	**99.9**
0.106		**0.10**	0.2	**99.8**
0.075		**0.13**	0.3	**99.7**
Pan		**0.14**		
SIEVE CHECK	0.0	MAX = 0.3%		

HYDROMETER DATA

ELAPSED	TIME (24 hours)	Hs	Hc	Temp. (°C)	DIAMETER	(P)	TOTAL PERCENT PASSING
1	8:20	51.0	6.0	23.0	0.0359	98.7	**98.7**
2	8:21	50.0	6.0	23.0	0.0256	96.6	**96.5**
5	8:24	49.0	6.0	23.0	0.0164	94.4	**94.3**
15	8:34	48.5	6.0	23.0	0.0095	93.3	**93.2**
30	8:49	48.0	6.0	23.0	0.0068	92.2	**92.1**
60	9:19	45.0	6.0	23.0	0.0049	85.6	**85.6**
250	12:29	41.0	6.0	23.0	0.0025	76.8	**76.8**
1440	8:19	35.0	6.0	23.0	0.0011	63.6	**63.6**

Moisture = 60.4%

REVIEWED BY:	C. Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

HYDROMETER
LS-702 ASTM-422

CLIENT:	Terrapex	DEPTH:	10 - 12.5	FILE NO.:	PM12708
PROJECT:	C0952.01	BH OR TP No.:	MW 103-5	DATE SAMPLED:	8-Feb-24
LAB No. :	51150	TESTED BY:	C.M	DATE RECEIVED:	1-Mar-24
SAMPLED BY:	-	DATE REPT'D:	8-Mar-24	DATE TESTED:	4-Mar-24

SAMPLE INFORMATION

SAMPLE MASS	SPECIFIC GRAVITY
97.6	2.700

		HYGROSCOPIC MOISTURE		
INITIAL WEIGHT	50.00			
WEIGHT CORRECTED	40.26	TARE WEIGHT	0.00	ACTUAL WEIGHT
WT. AFTER WASH BACK SIEVE	0.12	AIR DRY	121.20	121.20
SOLUTION CONCENTRATION	40 g/L	OVEN DRY	97.60	97.60
		CORRECTED	0.805	

GRAIN SIZE ANALYSIS

SIEVE DIAMETER (mm)	WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT PASSING
26.5			
19			
13.2			
9.5			
4.75	**0.0**	0.0	**100.0**
2.0	**0.0**	0.0	**100.0**
Pan	**97.6**		
0.850	**0.00**	0.0	**100.0**
0.425	**0.00**	0.0	**100.0**
0.250	**0.03**	0.1	**99.9**
0.106	**0.08**	0.2	**99.8**
0.075	**0.11**	0.3	**99.7**
Pan	**0.12**		
SIEVE CHECK 0.0	MAX = 0.3%		

HYDROMETER DATA

ELAPSED	TIME (24 hours)	Hs	Hc	Temp. (°C)	DIAMETER	(P)	TOTAL PERCENT PASSING
1	8:48	40.0	6.0	23.0	0.0400	83.5	**83.5**
2	8:49	39.5	6.0	23.0	0.0284	82.3	**82.2**
5	8:52	39.0	6.0	23.0	0.0181	81.0	**81.0**
15	9:02	39.0	6.0	23.0	0.0104	81.0	**81.0**
30	9:17	39.0	6.0	23.0	0.0074	81.0	**81.0**
60	9:47	36.5	6.0	23.0	0.0053	74.9	**74.9**
250	0:57	31.5	6.0	23.0	0.0027	62.6	**62.6**
1440	8:47	26.5	6.0	23.0	0.0012	50.3	**50.3**

Moisture = 50.6%

REVIEWED BY:	C. Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

HYDROMETER
LS-702 ASTM-422

CLIENT:	Terrapex	DEPTH:	5 - 7	FILE NO.:	PM12708
PROJECT:	C0952.01	BH OR TP No.:	MW 103-3	DATE SAMPLED:	3-Feb-24
LAB No. :	51149	TESTED BY:	C.M	DATE RECEIVED:	1-Mar-24
SAMPLED BY:	-	DATE REPT'D:	8-Mar-24	DATE TESTED:	4-Mar-24

SAMPLE INFORMATION

SAMPLE MASS	SPECIFIC GRAVITY
103.3	2.700

		HYGROSCOPIC MOISTURE		
INITIAL WEIGHT	50.00			
WEIGHT CORRECTED	40.13	TARE WEIGHT	0.00	ACTUAL WEIGHT
WT. AFTER WASH BACK SIEVE	0.36	AIR DRY	128.70	128.70
SOLUTION CONCENTRATION	40 g/L	OVEN DRY	103.30	103.30
		CORRECTED	0.803	

GRAIN SIZE ANALYSIS

SIEVE DIAMETER (mm)	WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT PASSING
26.5			
19			
13.2			
9.5			
4.75	**0.0**	0.0	**100.0**
2.0	**0.0**	0.0	**100.0**
Pan	**103.3**		
0.850	**0.00**	0.0	**100.0**
0.425	**0.02**	0.1	**99.9**
0.250	**0.08**	0.2	**99.8**
0.106	**0.27**	0.6	**99.4**
0.075	**0.33**	0.7	**99.3**
Pan	**0.36**		
SIEVE CHECK 0.0	MAX = 0.3%		

HYDROMETER DATA

ELAPSED	TIME (24 hours)	Hs	Hc	Temp. (°C)	DIAMETER	(P)	TOTAL PERCENT PASSING
1	7:59	53.5	6.0	23.0	0.0349	98.5	**98.5**
2	8:00	53.0	6.0	23.0	0.0248	97.5	**97.5**
5	8:03	53.0	6.0	23.0	0.0157	97.5	**97.5**
15	8:13	52.5	6.0	23.0	0.0091	96.5	**96.4**
30	8:28	52.0	6.0	23.0	0.0065	95.4	**95.4**
60	8:58	50.0	6.0	23.0	0.0047	91.3	**91.2**
250	12:08	44.5	6.0	23.0	0.0024	79.9	**79.8**
1440	7:58	37.0	6.0	23.0	0.0011	64.3	**64.3**

Moisture = 45.2%

REVIEWED BY:	C. Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

HYDROMETER
LS-702 ASTM-422

CLIENT:	Terrapex	DEPTH:	12.5 - 14.5	FILE NO.:	PM12708
PROJECT:	C0952.01	BH OR TP No.:	MW 101-5	DATE SAMPLED:	7-Feb-24
LAB No. :	51148	TESTED BY:	C.M	DATE RECEIVED:	1-Mar-24
SAMPLED BY:	-	DATE REPT'D:	8-Mar-24	DATE TESTED:	4-Mar-24

SAMPLE INFORMATION

SAMPLE MASS	SPECIFIC GRAVITY
90.5	2.700

		HYGROSCOPIC MOISTURE		
INITIAL WEIGHT	50.00			
WEIGHT CORRECTED	38.19	TARE WEIGHT	0.00	ACTUAL WEIGHT
WT. AFTER WASH BACK SIEVE	0.26	AIR DRY	118.50	118.50
SOLUTION CONCENTRATION	40 g/L	OVEN DRY	90.50	90.50
		CORRECTED	0.764	

GRAIN SIZE ANALYSIS

SIEVE DIAMETER (mm)	WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT PASSING
26.5			
19			
13.2			
9.5			
4.75	**0.0**	0.0	**100.0**
2.0	**0.0**	0.0	**100.0**
Pan	**90.5**		
0.850	**0.00**	0.0	**100.0**
0.425	**0.04**	0.1	**99.9**
0.250	**0.09**	0.2	**99.8**
0.106	**0.20**	0.4	**99.6**
0.075	**0.23**	0.5	**99.5**
Pan	**0.26**		
SIEVE CHECK 0.0	MAX = 0.3%		

HYDROMETER DATA

ELAPSED	TIME (24 hours)	Hs	Hc	Temp. (°C)	DIAMETER	(P)	TOTAL PERCENT PASSING
1	8:26	54.5	6.0	23.0	0.0344	99.1	**99.0**
2	8:27	54.0	6.0	23.0	0.0245	98.0	**98.0**
5	8:30	53.0	6.0	23.0	0.0157	96.0	**96.0**
15	8:40	51.0	6.0	23.0	0.0093	91.9	**91.9**
30	8:55	49.5	6.0	23.0	0.0067	88.9	**88.8**
60	9:25	47.0	6.0	23.0	0.0048	83.7	**83.7**
250	12:35	41.0	6.0	23.0	0.0025	71.5	**71.5**
1440	8:25	32.0	6.0	23.0	0.0011	53.1	**53.1**

Moisture = 58.0%

REVIEWED BY:	C. Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

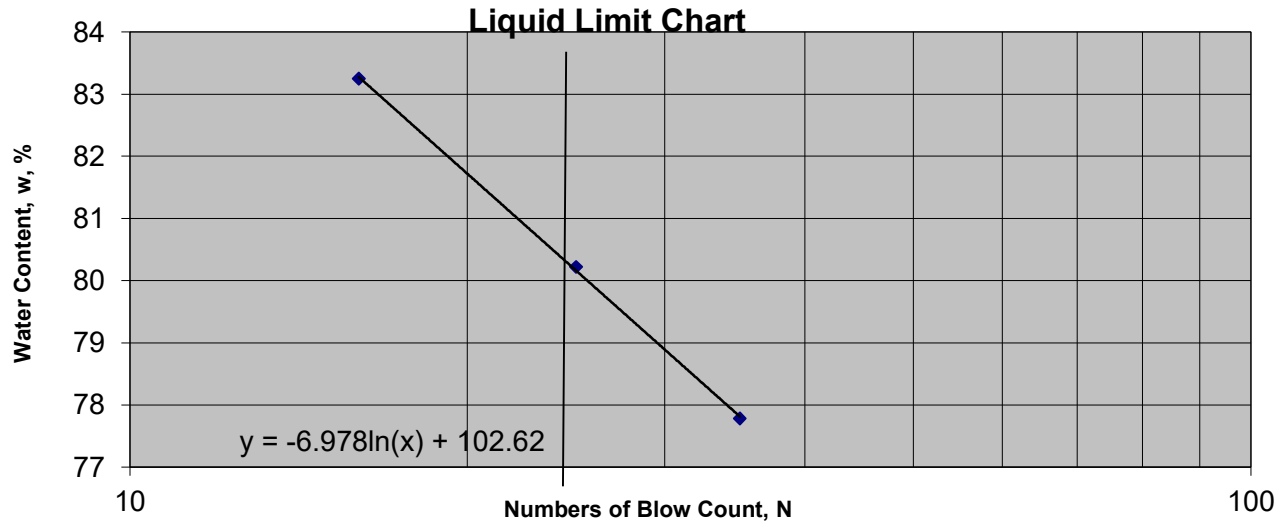
ATTERBERG LIMITS
LS-703/704

CLIENT:	Terrapex	FILE NO.:	PM12708
PROJECT:	C0952.01	DATE SAMPLED:	7-Feb
LOCATION:	MW 101-5 @ 12.5 - 14.5	DATE REPORTED:	6-Mar

CAN NO.	30	35	128				
WT. OF CAN	4.35	4.38	6.39				
WT. OF SOIL & CAN	15.62	13.49	17.27				
WT. OF DRY SOIL & CAN	10.50	9.44	12.51				
WT. OF MOISTURE	5.12	4.055	4.76				
WT. OF DRY SOIL & CAN	6.15	5.055	6.12				
WATER CONTENT, w, %	**83.25**	**80.22**	**77.78**				
NO. OF BLOWS, N	16	25	35				

CAN NO.	3	13
WT. OF CAN	19.39	19.29
WT. OF SOIL & CAN	27.70	27.26
WT. OF DRY SOIL & CAN	25.48	25.10
WT. OF MOISTURE	2.22	2.16
WT. OF DRY SOIL & CAN	6.09	5.81
WATER CONTENT, w, %	**36.45**	**37.18**

RESULTS	
LIQUID LIMIT	**80**
PLASTIC LIMIT	**37**
PLASTICITY INDEX	**43**



TECHNICIAN: CP	REVIEWED BY:	C. Beadow	J. Forsyth, P. Eng.

PATERSON GROUP

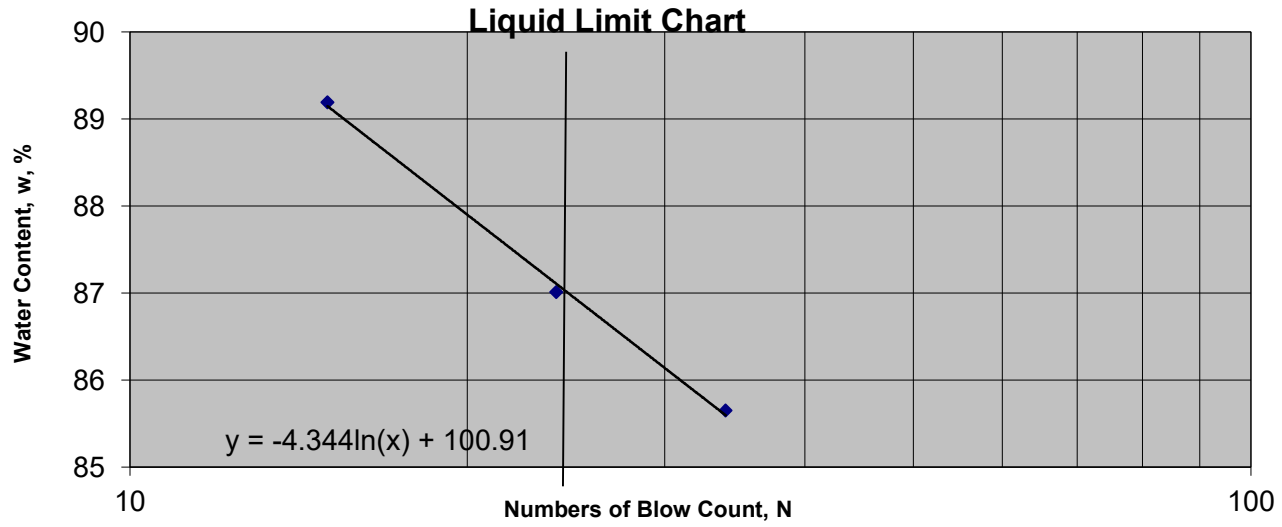
ATTERBERG LIMITS
LS-703/704

CLIENT:	Terrapex	FILE NO.:	PM12708
PROJECT:	C0952.01	DATE SAMPLED:	3-Feb
LOCATION:	MW 103-3 @ 5 - 7	DATE REPORTED:	1-Mar

CAN NO.	31	32	34				
WT. OF CAN	4.34	4.38	4.35				
WT. OF SOIL & CAN	14.67	15.75	17.29				
WT. OF DRY SOIL & CAN	9.80	10.46	11.32				
WT. OF MOISTURE	4.87	5.29	5.97				
WT. OF DRY SOIL & CAN	5.46	6.08	6.97				
WATER CONTENT, w, %	**89.19**	**87.01**	**85.65**				
NO. OF BLOWS, N	15	24	34				

CAN NO.	11	18
WT. OF CAN	19.99	20.02
WT. OF SOIL & CAN	28.29	27.13
WT. OF DRY SOIL & CAN	25.90	25.04
WT. OF MOISTURE	2.39	2.09
WT. OF DRY SOIL & CAN	5.91	5.02
WATER CONTENT, w, %	**40.44**	**41.63**

RESULTS	
LIQUID LIMIT	**87**
PLASTIC LIMIT	**41**
PLASTICITY INDEX	**46**



TECHNICIAN: CP	REVIEWED BY:	C. Beadow	J. Forsyth, P. Eng.

PATERSON GROUP

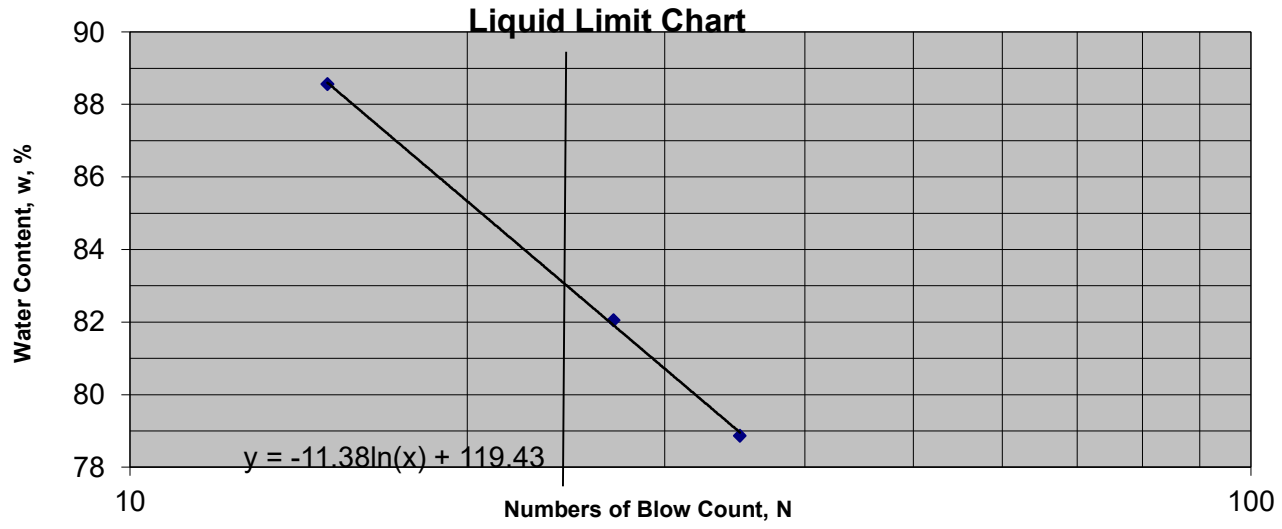
ATTERBERG LIMITS
LS-703/704

CLIENT:	Terrapex	FILE NO.:	PM12708
PROJECT:	C0952.01	DATE SAMPLED:	8-Feb
LOCATION:	MW 103-5 @ 10 - 12.5	DATE REPORTED:	1-Mar

CAN NO.	30	35	128				
WT. OF CAN	4.33	4.37	6.39				
WT. OF SOIL & CAN	12.57	14.51	13.92				
WT. OF DRY SOIL & CAN	8.70	9.94	10.60				
WT. OF MOISTURE	3.87	4.57	3.32				
WT. OF DRY SOIL & CAN	4.37	5.57	4.21				
WATER CONTENT, w, %	**88.56**	**82.05**	**78.86**				
NO. OF BLOWS, N	15	27	35				

CAN NO.	3	13
WT. OF CAN	19.39	19.29
WT. OF SOIL & CAN	27.74	27.68
WT. OF DRY SOIL & CAN	25.42	25.32
WT. OF MOISTURE	2.32	2.36
WT. OF DRY SOIL & CAN	6.03	6.03
WATER CONTENT, w, %	**38.47**	**39.14**

RESULTS	
LIQUID LIMIT	**83**
PLASTIC LIMIT	**39**
PLASTICITY INDEX	**44**



TECHNICIAN: CP	REVIEWED BY:	C. Beadow	J. Forsyth, P. Eng.

PATERSON GROUP

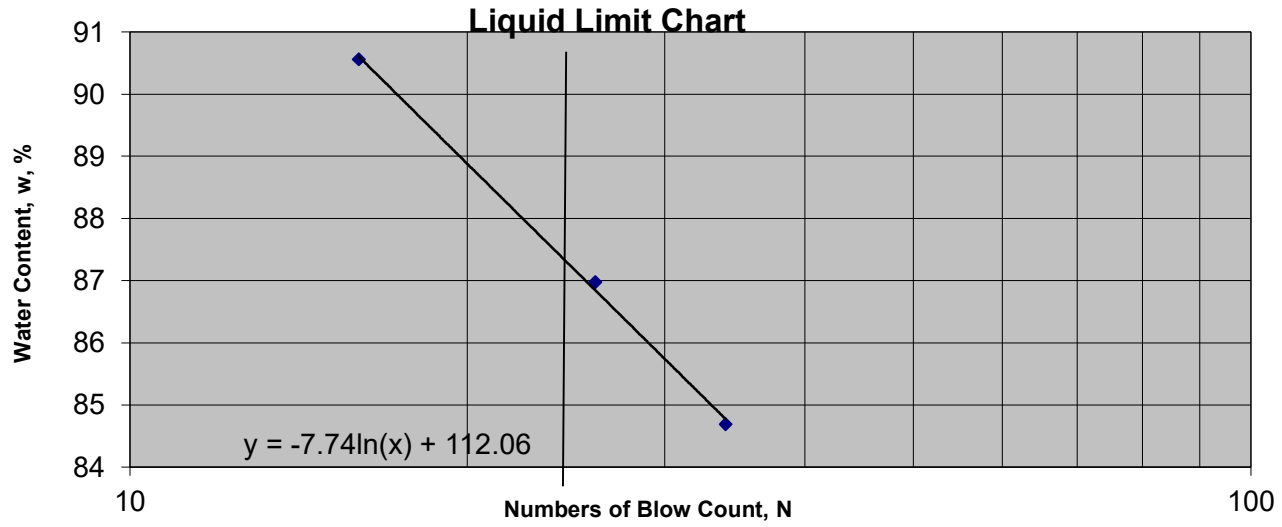
ATTERBERG LIMITS
LS-703/704

CLIENT:	Terrapex	FILE NO.:	PM12708
PROJECT:	C0952.01	DATE SAMPLED:	8-Feb
LOCATION:	MW 104-4 @ 7.5- 9.5	DATE REPORTED:	1-Mar

CAN NO.	31	32	34				
WT. OF CAN	4.32	4.36	4.33				
WT. OF SOIL & CAN	13.81	13.69	13.62				
WT. OF DRY SOIL & CAN	9.30	9.35	9.36				
WT. OF MOISTURE	4.51	4.34	4.26				
WT. OF DRY SOIL & CAN	4.98	4.99	5.03				
WATER CONTENT, w, %	**90.56**	**86.97**	**84.69**				
NO. OF BLOWS, N	16	26	34				

CAN NO.	11	14
WT. OF CAN	19.99	19.95
WT. OF SOIL & CAN	28.65	27.99
WT. OF DRY SOIL & CAN	26.15	25.65
WT. OF MOISTURE	2.5	2.34
WT. OF DRY SOIL & CAN	6.16	5.7
WATER CONTENT, w, %	**40.58**	**41.05**

RESULTS	
LIQUID LIMIT	**87**
PLASTIC LIMIT	**41**
PLASTICITY INDEX	**46**



TECHNICIAN: CP	REVIEWED BY:	C. Beadow	J. Forsyth, P. Eng.

PATERSON GROUP

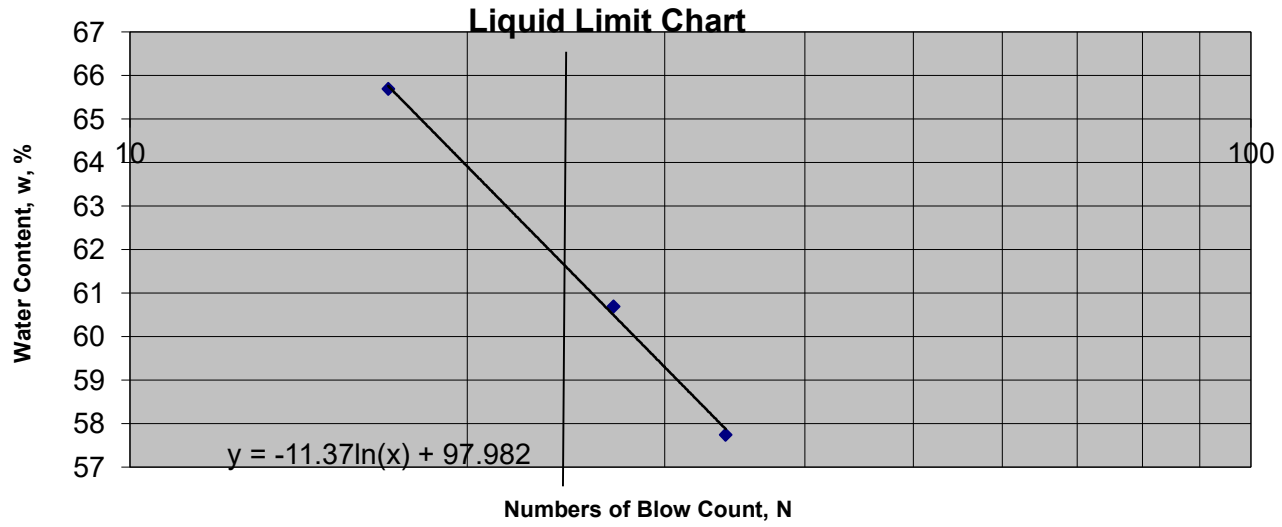
ATTERBERG LIMITS
LS-703/704

CLIENT:	Terrapex	FILE NO.:	PM12708
PROJECT:	C0952.01	DATE SAMPLED:	9-Feb
LOCATION:	MW 106-3 @ 5 - 7	DATE REPORTED:	1-Mar

CAN NO.	2	11	12				
WT. OF CAN	8.69	8.71	8.72				
WT. OF SOIL & CAN	19.41	18.56	19.32				
WT. OF DRY SOIL & CAN	15.16	14.84	15.44				
WT. OF MOISTURE	4.25	3.72	3.88				
WT. OF DRY SOIL & CAN	6.47	6.13	6.72				
WATER CONTENT, w, %	**65.69**	**60.69**	**57.74**				
NO. OF BLOWS, N	17	27	34				

CAN NO.	1	12
WT. OF CAN	19.87	16.76
WT. OF SOIL & CAN	29.67	26.88
WT. OF DRY SOIL & CAN	27.41	24.55
WT. OF MOISTURE	2.26	2.33
WT. OF DRY SOIL & CAN	7.54	7.79
WATER CONTENT, w, %	**29.97**	**29.91**

RESULTS	
LIQUID LIMIT	**61**
PLASTIC LIMIT	**30**
PLASTICITY INDEX	**31**



TECHNICIAN: CP	REVIEWED BY:	C. Beadow	J. Forsyth, P. Eng.

PATERSON GROUP

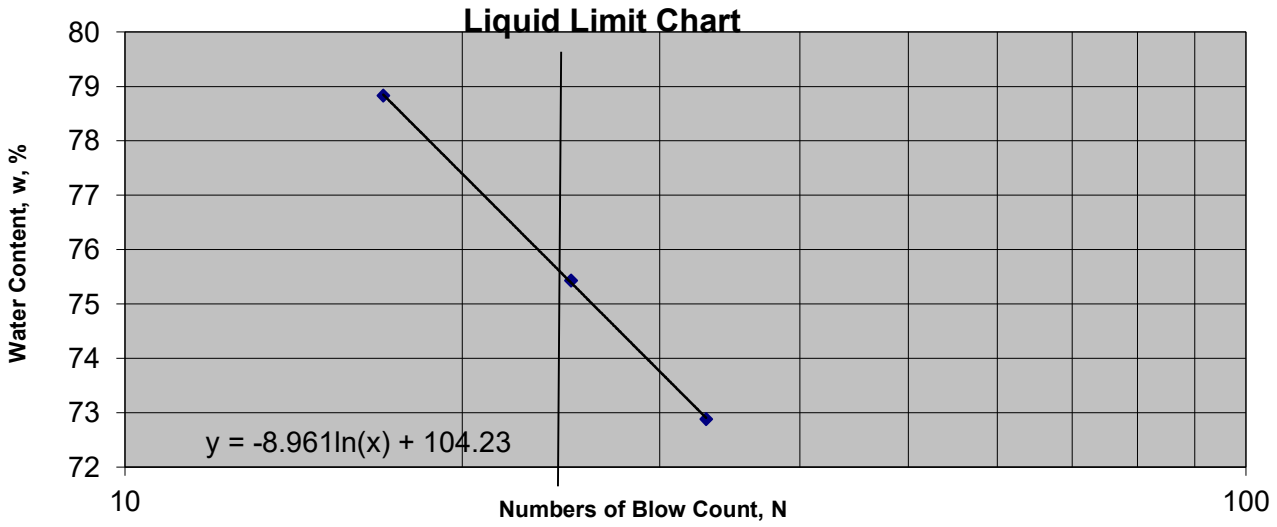
ATTERBERG LIMITS
LS-703/704

CLIENT:	Terrapex	FILE NO.:	PM12708
PROJECT:	C0952.01	DATE SAMPLED:	16-Feb
LOCATION:	MW 110-6 @ 12.5 - 14.5	DATE REPORTED:	1-Mar

CAN NO.	14	16	18				
WT. OF CAN	8.63	8.75	8.70				
WT. OF SOIL & CAN	19.02	18.03	17.88				
WT. OF DRY SOIL & CAN	14.44	14.04	14.01				
WT. OF MOISTURE	4.58	3.99	3.87				
WT. OF DRY SOIL & CAN	5.81	5.29	5.31				
WATER CONTENT, w, %	**78.83**	**75.43**	**72.88**				
NO. OF BLOWS, N	17	25	33				

CAN NO.	9	15
WT. OF CAN	19.35	19.91
WT. OF SOIL & CAN	28.47	28.76
WT. OF DRY SOIL & CAN	26.13	26.50
WT. OF MOISTURE	2.34	2.26
WT. OF DRY SOIL & CAN	6.78	6.59
WATER CONTENT, w, %	**34.51**	**34.29**

RESULTS	
LIQUID LIMIT	**76**
PLASTIC LIMIT	**34**
PLASTICITY INDEX	**42**



TECHNICIAN: CP	REVIEWED BY:	C. Beadow	J. Forsyth, P. Eng.

PATERSON GROUP

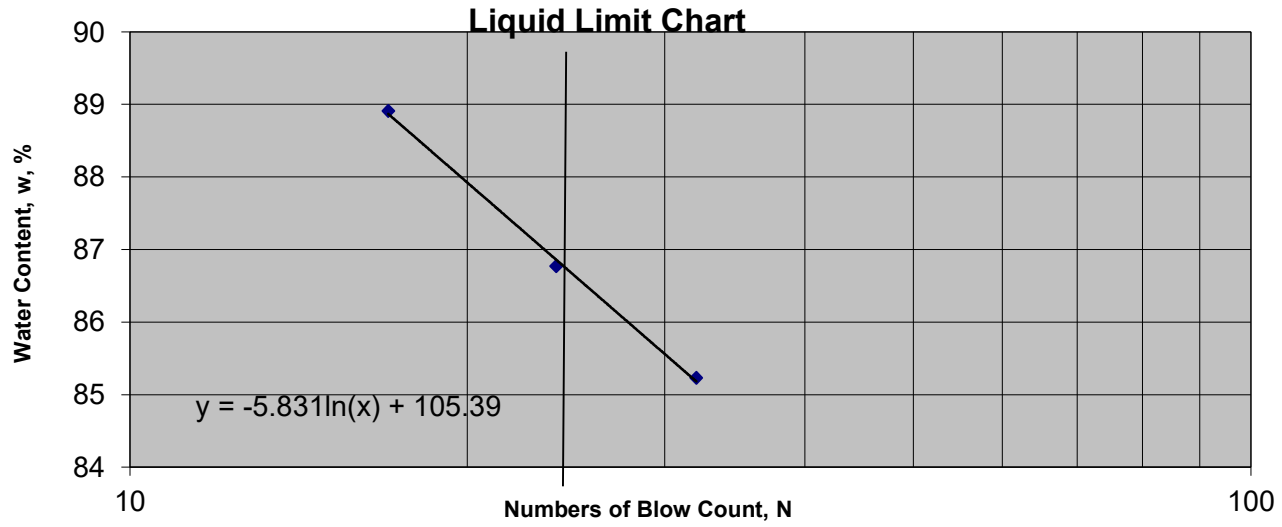
ATTERBERG LIMITS
LS-703/704

CLIENT:	Terrapex	FILE NO.:	PM12708
PROJECT:	C0952.01	DATE SAMPLED:	16-Feb
LOCATION:	MW 110-4 @ 7.5 - 9.5	DATE REPORTED:	1-Mar

CAN NO.	**14**	**16**	**18**				
WT. OF CAN	8.62	8.75	8.70				
WT. OF SOIL & CAN	20.2	16.09	16.98				
WT. OF DRY SOIL & CAN	14.75	12.68	13.17				
WT. OF MOISTURE	5.45	3.41	3.81				
WT. OF DRY SOIL & CAN	6.13	3.93	4.47				
WATER CONTENT, w, %	**88.91**	**86.77**	**85.23**				
NO. OF BLOWS, N	17	24	32				

CAN NO.	**9**	**15**
WT. OF CAN	19.36	19.91
WT. OF SOIL & CAN	27.87	28.53
WT. OF DRY SOIL & CAN	25.34	26.01
WT. OF MOISTURE	2.53	2.52
WT. OF DRY SOIL & CAN	5.98	6.1
WATER CONTENT, w, %	**42.31**	**41.31**

RESULTS	
LIQUID LIMIT	**87**
PLASTIC LIMIT	**42**
PLASTICITY INDEX	**45**



TECHNICIAN: CP	**REVIEWED BY:**	**C. Beadow**	**J. Forsyth, P. Eng.**

PATERSON GROUP

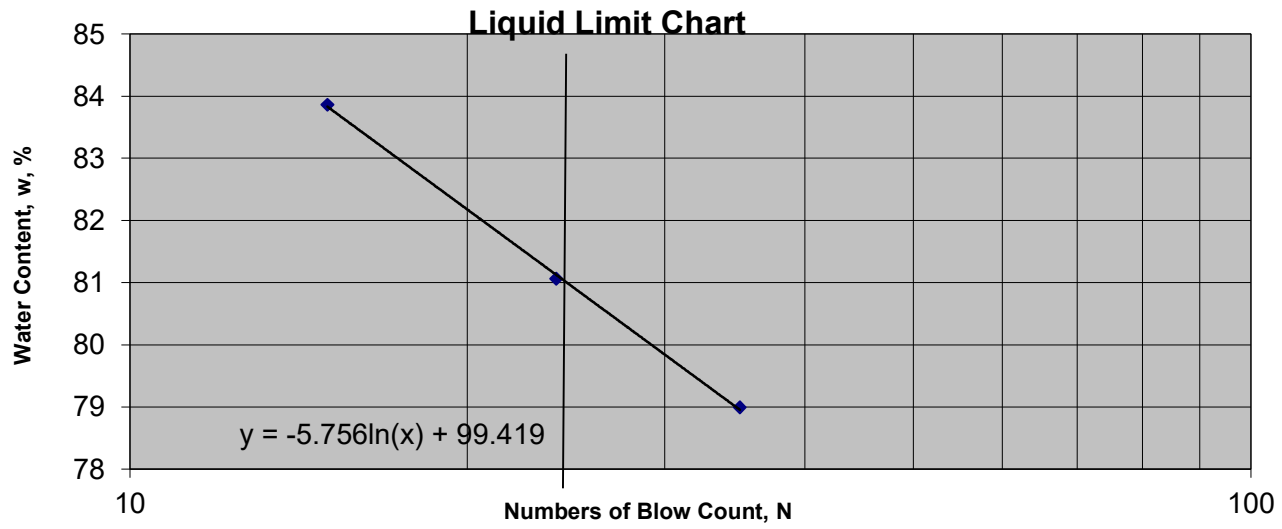
ATTERBERG LIMITS
LS-703/704

CLIENT:	Terrapex	FILE NO.:	PM12708
PROJECT:	C0952.01	DATE SAMPLED:	16-Feb
LOCATION:	MW 111-3 @ 5 - 7	DATE REPORTED:	1-Mar

CAN NO.	11	12	2				
WT. OF CAN	8.71	8.72	8.69				
WT. OF SOIL & CAN	19.19	20.00	19.00				
WT. OF DRY SOIL & CAN	14.41	14.95	14.45				
WT. OF MOISTURE	4.78	5.05	4.55				
WT. OF DRY SOIL & CAN	5.7	6.23	5.76				
WATER CONTENT, w, %	**83.86**	**81.06**	**78.99**				
NO. OF BLOWS, N	15	24	35				

CAN NO.	2	4
WT. OF CAN	19.92	19.94
WT. OF SOIL & CAN	28.86	29.18
WT. OF DRY SOIL & CAN	26.35	26.55
WT. OF MOISTURE	2.51	2.63
WT. OF DRY SOIL & CAN	6.43	6.61
WATER CONTENT, w, %	**39.04**	**39.79**

RESULTS	
LIQUID LIMIT	**81**
PLASTIC LIMIT	**39**
PLASTICITY INDEX	**42**



TECHNICIAN: CP	REVIEWED BY:	C. Beadow	J. Forsyth, P. Eng.

PATERSON GROUP

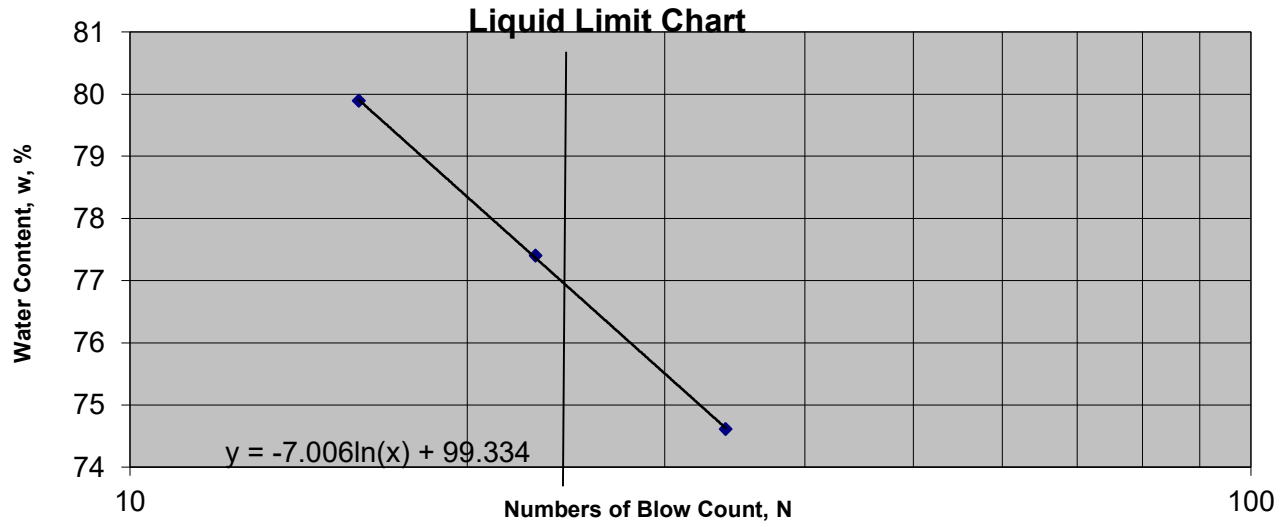
ATTERBERG LIMITS
LS-703/704

CLIENT:	Terrapex	FILE NO.:	PM12708
PROJECT:	C0952.01	DATE SAMPLED:	16-Feb
LOCATION:	MW 111-4 @ 7.5 - 9.5	DATE REPORTED:	1-Mar

CAN NO.	**30**	**128**	**35**				
WT. OF CAN	4.32	6.36	4.37				
WT. OF SOIL & CAN	14.25	15.23	15.51				
WT. OF DRY SOIL & CAN	9.84	11.36	10.75				
WT. OF MOISTURE	4.41	3.87	4.76				
WT. OF DRY SOIL & CAN	5.52	5	6.38				
WATER CONTENT, w, %	**79.89**	**77.4**	**74.61**				
NO. OF BLOWS, N	16	23	34				

CAN NO.	**3**	**13**
WT. OF CAN	19.4	19.30
WT. OF SOIL & CAN	28.93	28.71
WT. OF DRY SOIL & CAN	26.25	26.09
WT. OF MOISTURE	2.68	2.62
WT. OF DRY SOIL & CAN	6.85	6.79
WATER CONTENT, w, %	**39.12**	**38.59**

RESULTS	
LIQUID LIMIT	**77**
PLASTIC LIMIT	**39**
PLASTICITY INDEX	**38**



TECHNICIAN: CP	**REVIEWED BY:**	**C. Beadow**	**J. Forsyth, P. Eng.**

PATERSON GROUP

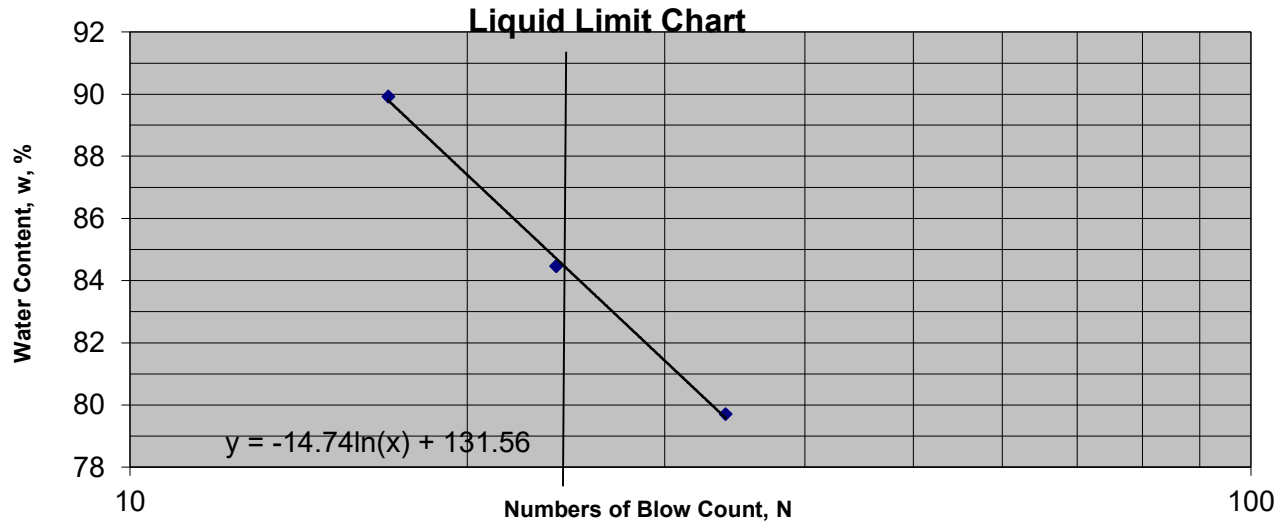
ATTERBERG LIMITS
LS-703/704

CLIENT:	Terrapex	FILE NO.:	PM12708
PROJECT:	C0952.01	DATE SAMPLED:	16-Feb
LOCATION:	MW 112-4 @ 7.5 - 9.5	DATE REPORTED:	1-Mar

CAN NO.	31	32	34				
WT. OF CAN	4.32	4.36	4.32				
WT. OF SOIL & CAN	13.93	14.45	13.79				
WT. OF DRY SOIL & CAN	9.38	9.83	9.59				
WT. OF MOISTURE	4.55	4.62	4.20				
WT. OF DRY SOIL & CAN	5.06	5.47	5.27				
WATER CONTENT, w, %	**89.92**	**84.46**	**79.7**				
NO. OF BLOWS, N	17	24	34				

CAN NO.	11	14
WT. OF CAN	19.99	19.95
WT. OF SOIL & CAN	28.79	29.89
WT. OF DRY SOIL & CAN	26.19	27.00
WT. OF MOISTURE	2.6	2.89
WT. OF DRY SOIL & CAN	6.2	7.05
WATER CONTENT, w, %	**41.94**	**40.99**

RESULTS	
LIQUID LIMIT	**85**
PLASTIC LIMIT	**41**
PLASTICITY INDEX	**44**



TECHNICIAN: CP	REVIEWED BY:	C. Beadow	J. Forsyth, P. Eng.

PATERSON GROUP

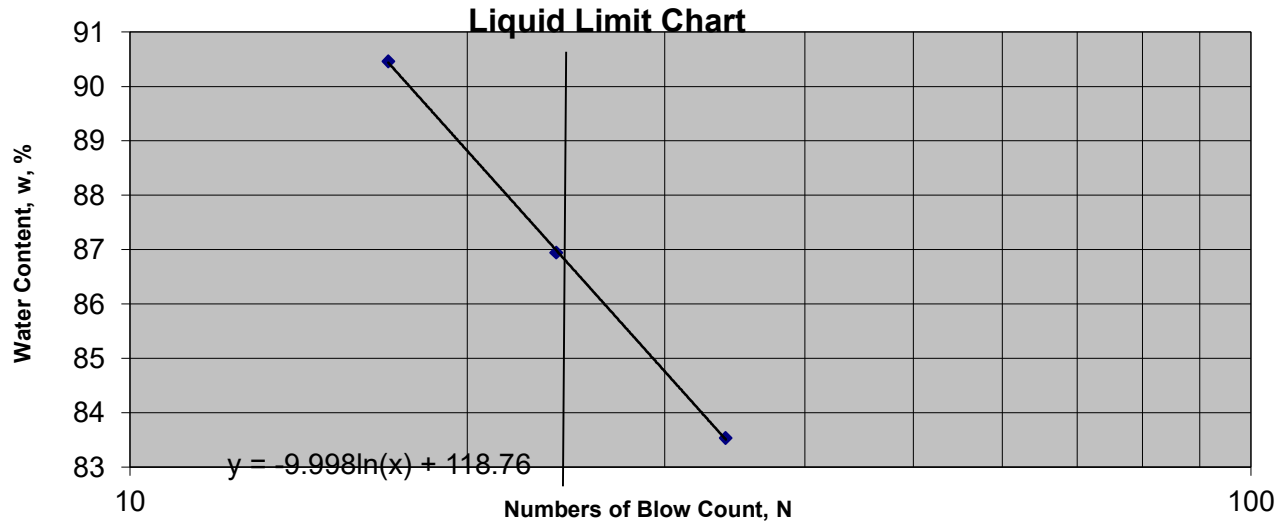
ATTERBERG LIMITS
LS-703/704

CLIENT:	Terrapex	FILE NO.:	PM12708
PROJECT:	C0952.01	DATE SAMPLED:	16-Feb
LOCATION:	MW 112-5 @ 11 - 12	DATE REPORTED:	1-Mar

CAN NO.	67	70	87				
WT. OF CAN	7.22	7.13	7.24				
WT. OF SOIL & CAN	18	17.15	16.60				
WT. OF DRY SOIL & CAN	12.88	12.49	12.34				
WT. OF MOISTURE	5.12	4.66	4.26				
WT. OF DRY SOIL & CAN	5.66	5.36	5.1				
WATER CONTENT, w, %	**90.46**	**86.94**	**83.53**				
NO. OF BLOWS, N	17	24	34				

CAN NO.	1	2
WT. OF CAN	19.87	19.93
WT. OF SOIL & CAN	27.95	28.11
WT. OF DRY SOIL & CAN	25.47	25.64
WT. OF MOISTURE	2.48	2.47
WT. OF DRY SOIL & CAN	5.6	5.71
WATER CONTENT, w, %	**44.29**	**43.26**

RESULTS	
LIQUID LIMIT	**87**
PLASTIC LIMIT	**44**
PLASTICITY INDEX	**43**



TECHNICIAN: CP	REVIEWED BY:	C. Beadow	J. Forsyth, P. Eng.

PATERSON GROUP

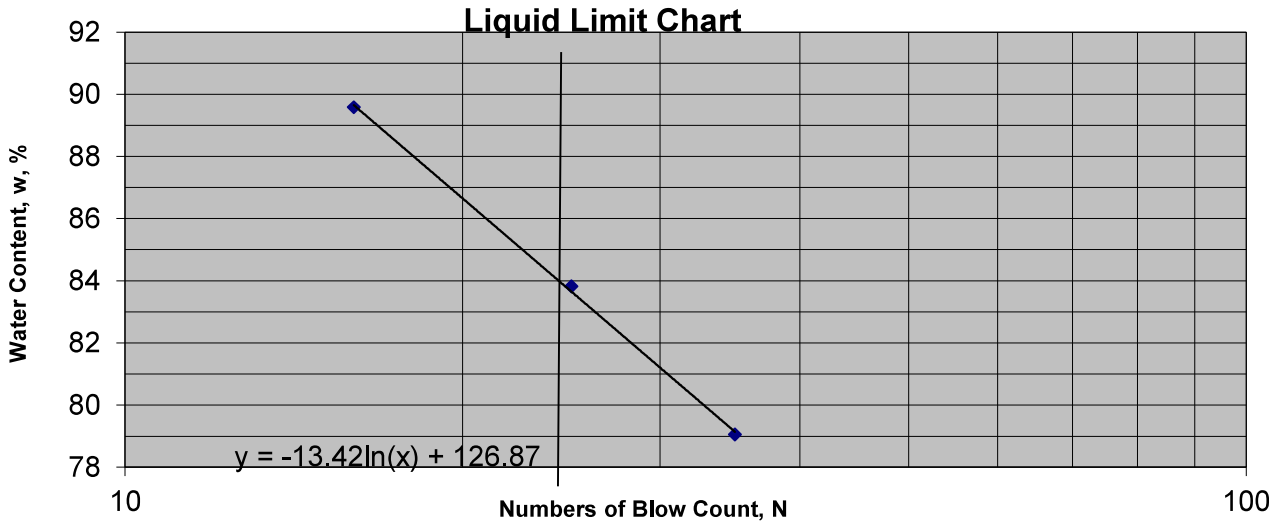
ATTERBERG LIMITS
LS-703/704

CLIENT:	Terrapex	FILE NO.:	PM12708
PROJECT:	C0952.01	DATE SAMPLED:	5-Mar
LOCATION:	MW 113-2	DATE REPORTED:	1-Apr

CAN NO.	33	34	35				
WT. OF CAN	4.30	4.32	4.37				
WT. OF SOIL & CAN	15.03	12.61	11.55				
WT. OF DRY SOIL & CAN	9.96	8.83	8.38				
WT. OF MOISTURE	5.07	3.78	3.17				
WT. OF DRY SOIL & CAN	5.66	4.51	4.01				
WATER CONTENT, w, %	**89.58**	**83.81**	**79.05**				
NO. OF BLOWS, N	16	25	35				

CAN NO.	11	3
WT. OF CAN	19.98	19.39
WT. OF SOIL & CAN	30.32	28.89
WT. OF DRY SOIL & CAN	27.51	26.35
WT. OF MOISTURE	2.81	2.54
WT. OF DRY SOIL & CAN	7.53	6.96
WATER CONTENT, w, %	**37.32**	**36.49**

RESULTS	
LIQUID LIMIT	**84**
PLASTIC LIMIT	**37**
PLASTICITY INDEX	**47**



TECHNICIAN: CP	REVIEWED BY:	C. Beadow	J. Forsyth, P. Eng.

PATERSON GROUP

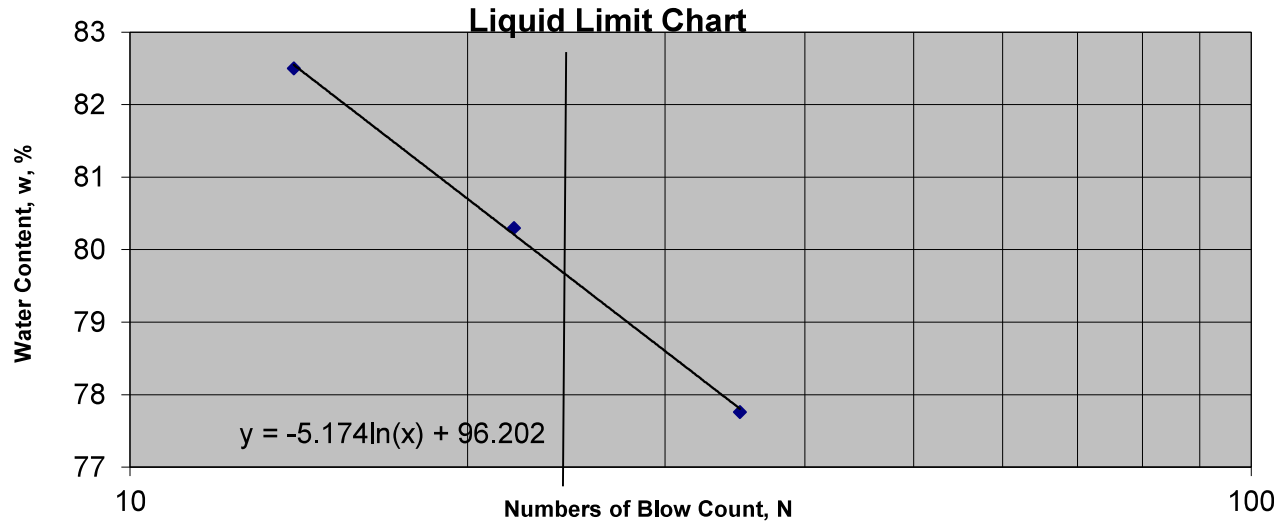
ATTERBERG LIMITS
LS-703/704

CLIENT:	Terrapex	FILE NO.:	PM12708
PROJECT:	C0952.01	DATE SAMPLED:	5-Mar
LOCATION:	MW 113-4	DATE REPORTED:	1-Apr

CAN NO.	17	30	31				
WT. OF CAN	4.36	4.37	4.31				
WT. OF SOIL & CAN	13.54	13.56	12.82				
WT. OF DRY SOIL & CAN	9.39	9.54	9.03				
WT. OF MOISTURE	4.15	4.02	3.79				
WT. OF DRY SOIL & CAN	5.03	5.17	4.72				
WATER CONTENT, w, %	**82.5**	**77.76**	**80.3**				
NO. OF BLOWS, N	14	35	22				

CAN NO.	10	18
WT. OF CAN	19.78	20.01
WT. OF SOIL & CAN	28.21	28.39
WT. OF DRY SOIL & CAN	26.06	26.29
WT. OF MOISTURE	2.15	2.1
WT. OF DRY SOIL & CAN	6.28	6.28
WATER CONTENT, w, %	**34.24**	**33.44**

RESULTS	
LIQUID LIMIT	**80**
PLASTIC LIMIT	**34**
PLASTICITY INDEX	**46**



TECHNICIAN: CP	REVIEWED BY:	C. Beadow	J. Forsyth, P. Eng.

PATERSON GROUP

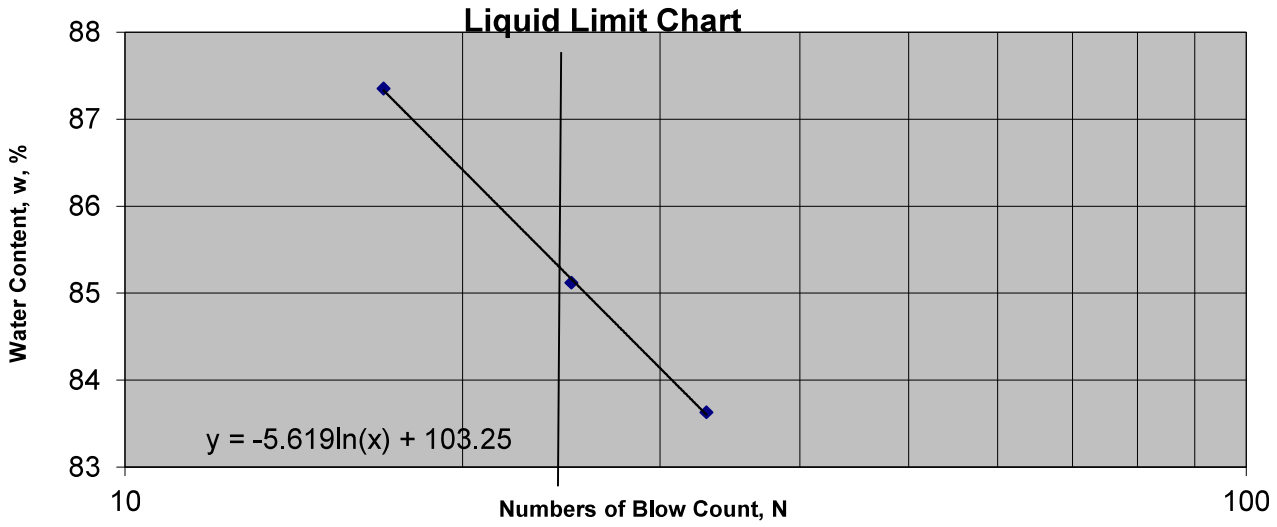
ATTERBERG LIMITS
LS-703/704

CLIENT:	Terrapex	FILE NO.:	PM12708
PROJECT:	C0952.01	DATE SAMPLED:	5-Mar
LOCATION:	MW 113-10	DATE REPORTED:	1-Apr

CAN NO.	2	3	13				
WT. OF CAN	8.70	8.68	8.64				
WT. OF SOIL & CAN	16.7	17.64	18.06				
WT. OF DRY SOIL & CAN	12.97	13.52	13.77				
WT. OF MOISTURE	3.73	4.12	4.29				
WT. OF DRY SOIL & CAN	4.27	4.84	5.13				
WATER CONTENT, w, %	**87.35**	**85.12**	**83.63**				
NO. OF BLOWS, N	17	25	33				

CAN NO.	1	15
WT. OF CAN	19.85	19.90
WT. OF SOIL & CAN	27.66	26.94
WT. OF DRY SOIL & CAN	25.36	24.90
WT. OF MOISTURE	2.3	2.04
WT. OF DRY SOIL & CAN	5.51	5
WATER CONTENT, w, %	**41.74**	**40.8**

RESULTS	
LIQUID LIMIT	**85**
PLASTIC LIMIT	**41**
PLASTICITY INDEX	**44**



TECHNICIAN: CP	REVIEWED BY:	C. Beadow	J. Forsyth, P. Eng.

PATERSON GROUP

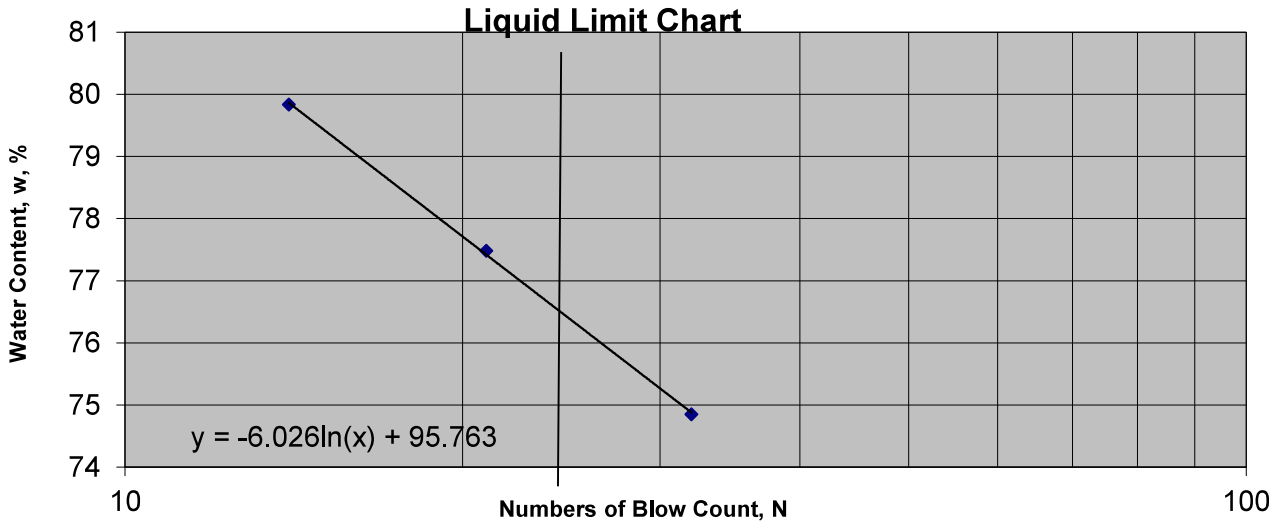
ATTERBERG LIMITS
LS-703/704

CLIENT:	Terrapex	FILE NO.:	PM12708
PROJECT:	C0952.01	DATE SAMPLED:	6-Mar
LOCATION:	MW 114-3	DATE REPORTED:	1-Apr

CAN NO.	32	33	35				
WT. OF CAN	4.35	4.33	4.37				
WT. OF SOIL & CAN	19.06	13.02	19.58				
WT. OF DRY SOIL & CAN	12.53	9.30	12.94				
WT. OF MOISTURE	6.53	3.72	6.64				
WT. OF DRY SOIL & CAN	8.18	4.97	8.57				
WATER CONTENT, w, %	**79.83**	**74.85**	**77.48**				
NO. OF BLOWS, N	14	32	21				

CAN NO.	4	13
WT. OF CAN	19.93	19.29
WT. OF SOIL & CAN	29.36	28.84
WT. OF DRY SOIL & CAN	26.81	26.27
WT. OF MOISTURE	2.55	2.57
WT. OF DRY SOIL & CAN	6.88	6.98
WATER CONTENT, w, %	**37.06**	**36.82**

RESULTS	
LIQUID LIMIT	**77**
PLASTIC LIMIT	**37**
PLASTICITY INDEX	**40**



TECHNICIAN: CP	REVIEWED BY:	C. Beadow	J. Forsyth, P. Eng.

PATERSON GROUP

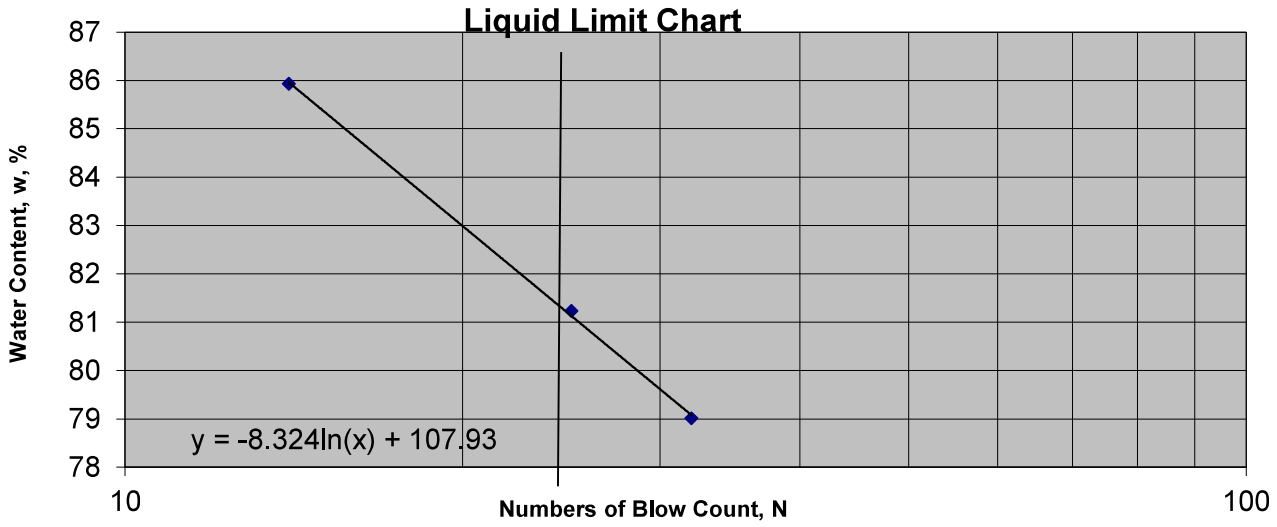
ATTERBERG LIMITS
LS-703/704

CLIENT:	Terrapex	FILE NO.:	PM12708
PROJECT:	C0952.01	DATE SAMPLED:	6-Mar
LOCATION:	MW 114-9	DATE REPORTED:	1-Apr

CAN NO.	34	2	3				
WT. OF CAN	4.34	8.71	8.68				
WT. OF SOIL & CAN	16.5	19.91	20.28				
WT. OF DRY SOIL & CAN	10.88	14.89	15.16				
WT. OF MOISTURE	5.62	5.02	5.12				
WT. OF DRY SOIL & CAN	6.54	6.18	6.48				
WATER CONTENT, w, %	**85.93**	**81.23**	**79.01**				
NO. OF BLOWS, N	14	25	32				

CAN NO.	3	71
WT. OF CAN	19.39	19.98
WT. OF SOIL & CAN	28.37	28.74
WT. OF DRY SOIL & CAN	25.81	26.25
WT. OF MOISTURE	2.56	2.49
WT. OF DRY SOIL & CAN	6.42	6.27
WATER CONTENT, w, %	**39.88**	**39.71**

RESULTS	
LIQUID LIMIT	**82**
PLASTIC LIMIT	**40**
PLASTICITY INDEX	**42**



TECHNICIAN: CP	REVIEWED BY:	C. Beadow	J. Forsyth, P. Eng.

PATERSON GROUP

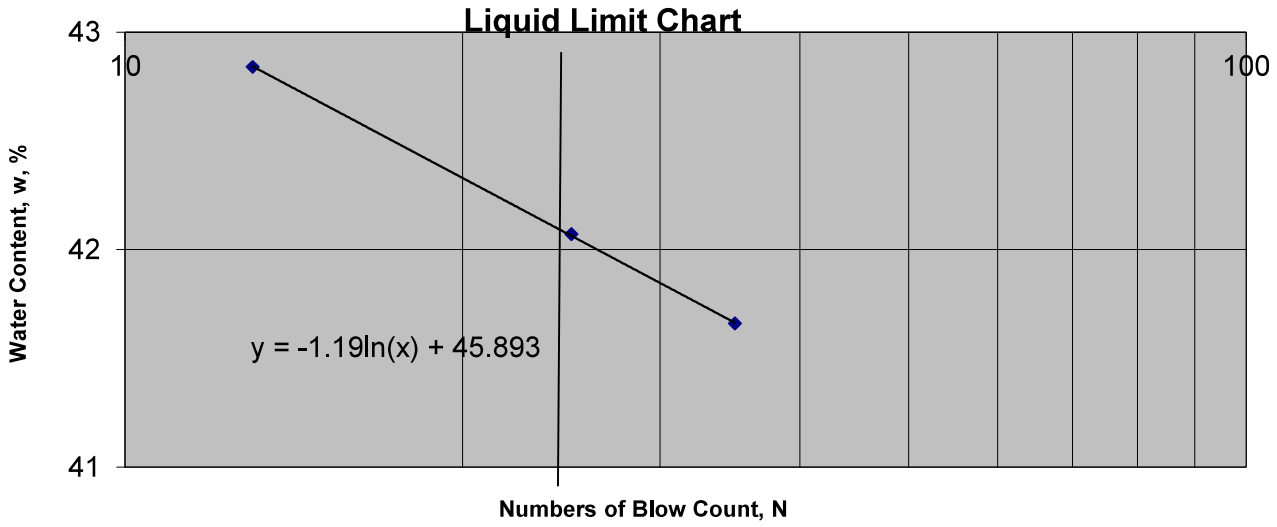
ATTERBERG LIMITS
LS-703/704

CLIENT:	Terrapex	FILE NO.:	PM12708
PROJECT:	C0952.01	DATE SAMPLED:	6-Mar
LOCATION:	MW 114-15	DATE REPORTED:	1-Apr

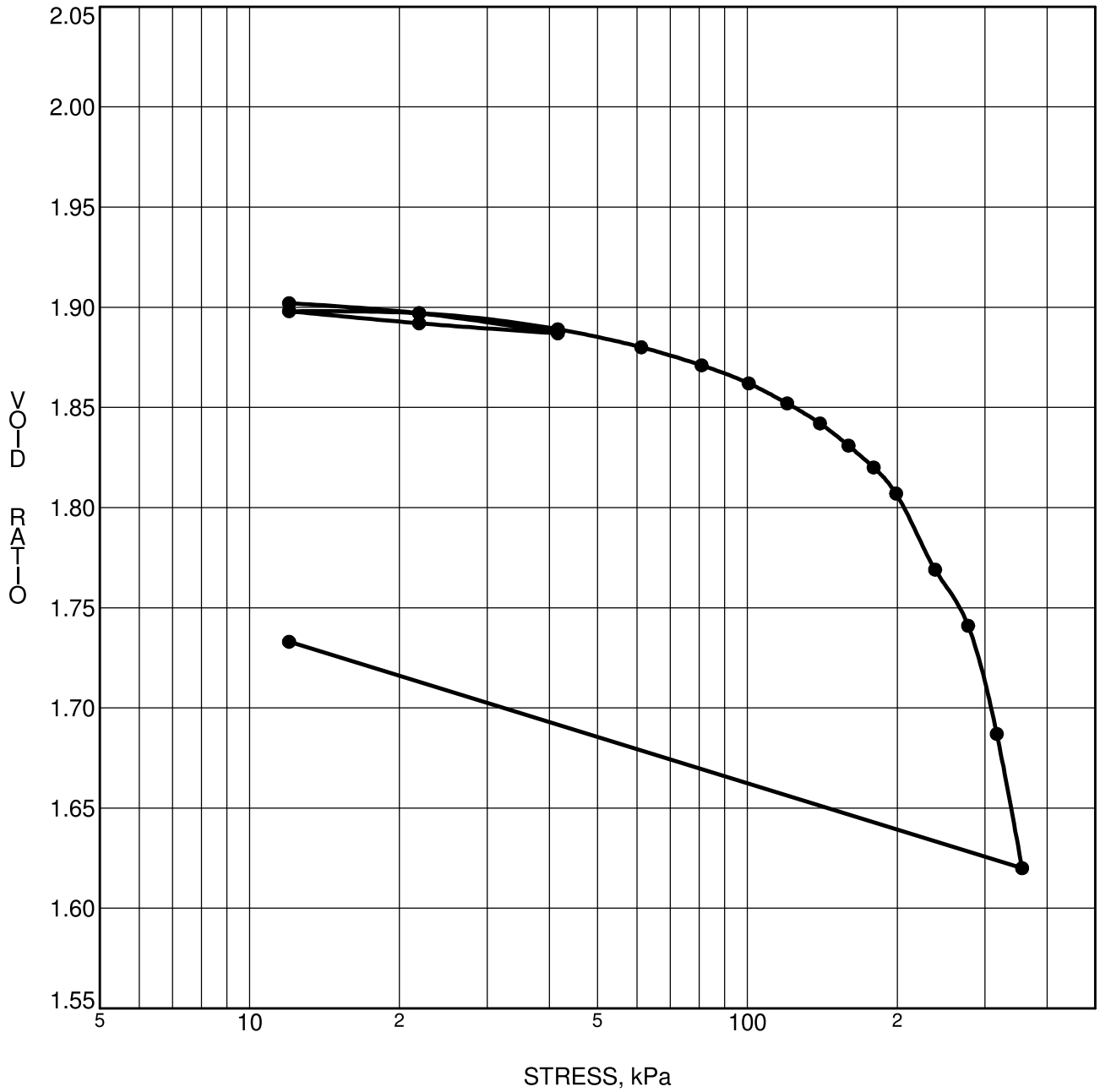
CAN NO.	30	31	17				
WT. OF CAN	4.37	4.34	4.36				
WT. OF SOIL & CAN	16.17	16.11	15.64				
WT. OF DRY SOIL & CAN	12.70	12.58	12.30				
WT. OF MOISTURE	3.47	3.53	3.34				
WT. OF DRY SOIL & CAN	8.33	8.24	7.94				
WATER CONTENT, w, %	**41.66**	**42.84**	**42.07**				
NO. OF BLOWS, N	35	13	25				

CAN NO.	10	1
WT. OF CAN	19.77	19.85
WT. OF SOIL & CAN	28.51	28.45
WT. OF DRY SOIL & CAN	26.74	26.69
WT. OF MOISTURE	1.77	1.76
WT. OF DRY SOIL & CAN	6.97	6.84
WATER CONTENT, w, %	**25.39**	**25.73**

RESULTS	
LIQUID LIMIT	**42**
PLASTIC LIMIT	**26**
PLASTICITY INDEX	**16**



TECHNICIAN: CP	REVIEWED BY:	C. Beadow	J. Forsyth, P. Eng.



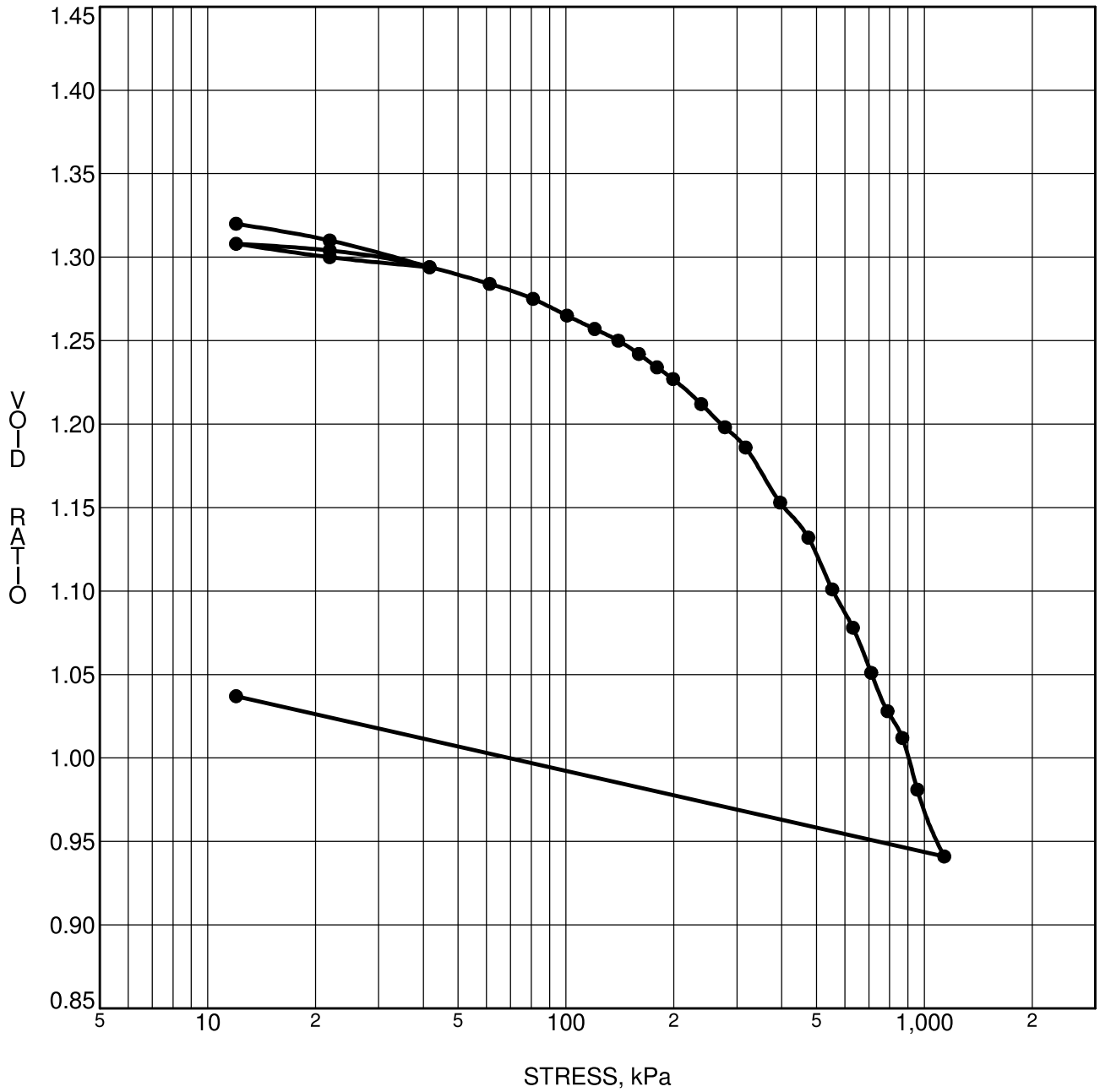
CONSOLIDATION TEST DATA SUMMARY					
Borehole No.	**MW101**	p'_o	**26.91** kPa	Ccr	**0.023**
Sample No.		p'_c	**251.19** kPa	Cc	**1.223**
Sample Depth	**4.09** m	OC Ratio	**9.3**	Wo	**69.4** %
Sample Elev.	**63.37** m	Void Ratio	**1.907**	Unit Wt.	**15.7** kN/m ^{3}

CLIENT **Terrapex** FILE NO. **PM12708**

PROJECT **CO 950.01 - 2180 Montreal Road** DATE **3/11/2024**

patersongroup Consulting Engineers
9 Auriga Drive, Ottawa, Ontario K2E 7T9

CONSOLIDATION TEST

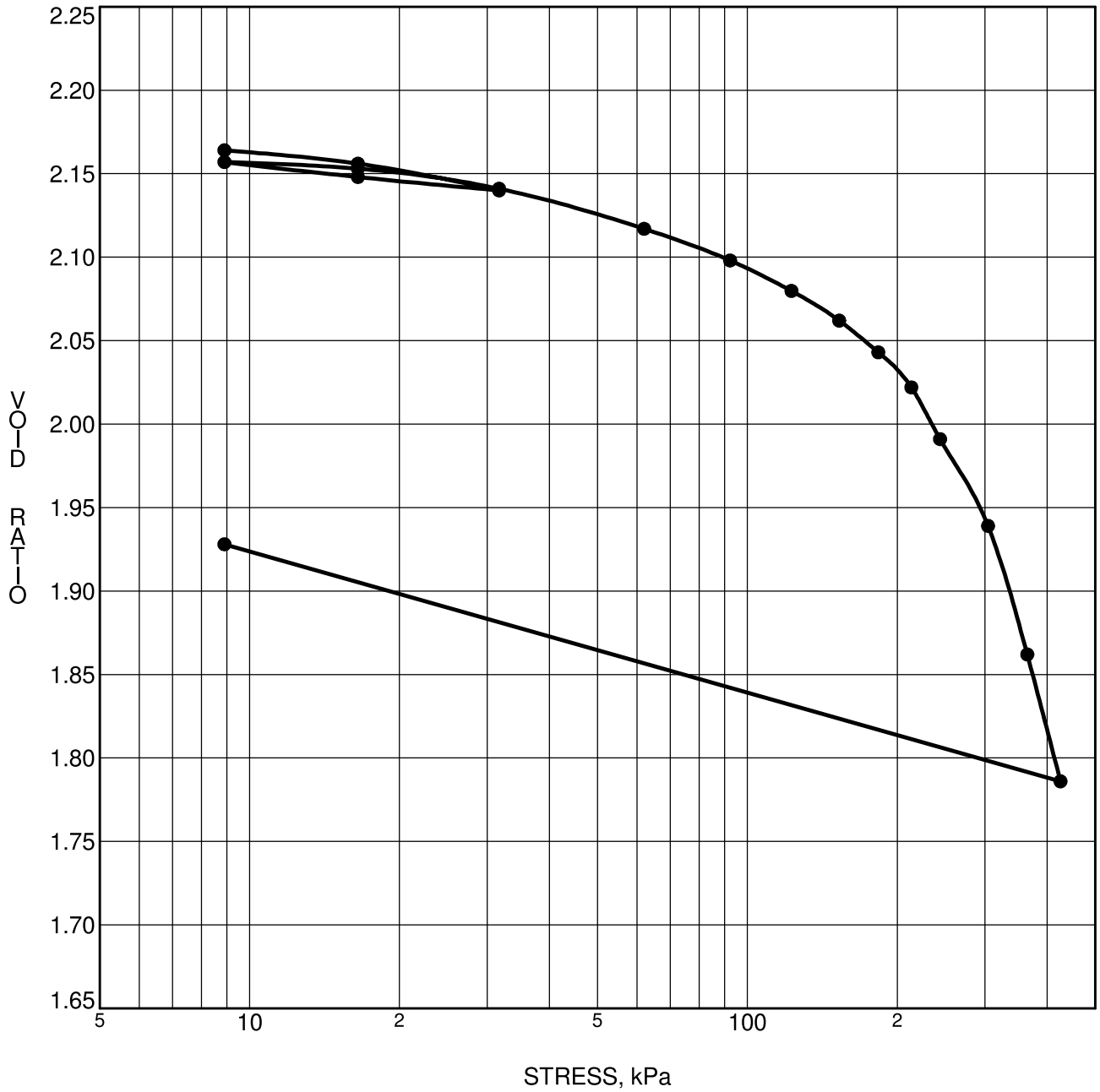


CONSOLIDATION TEST DATA SUMMARY					
Borehole No.	**MW102**	p'_o	**37.41** kPa	Ccr	**0.028**
Sample No.		p'_c	**501.19** kPa	Cc	**0.638**
Sample Depth	**2.62** m	OC Ratio	**13.4**	Wo	**48.4** %
Sample Elev.	**64.66** m	Void Ratio	**1.331**	Unit Wt.	**17.2** kN/m ^{3}

CLIENT	**Terrapex**	FILE NO.	**PM12708**
PROJECT	**CO 950.01 - 2180 Montreal Road**	DATE	**3/11/2024**

patersongroup Consulting Engineers
9 Auriga Drive, Ottawa, Ontario K2E 7T9

CONSOLIDATION TEST



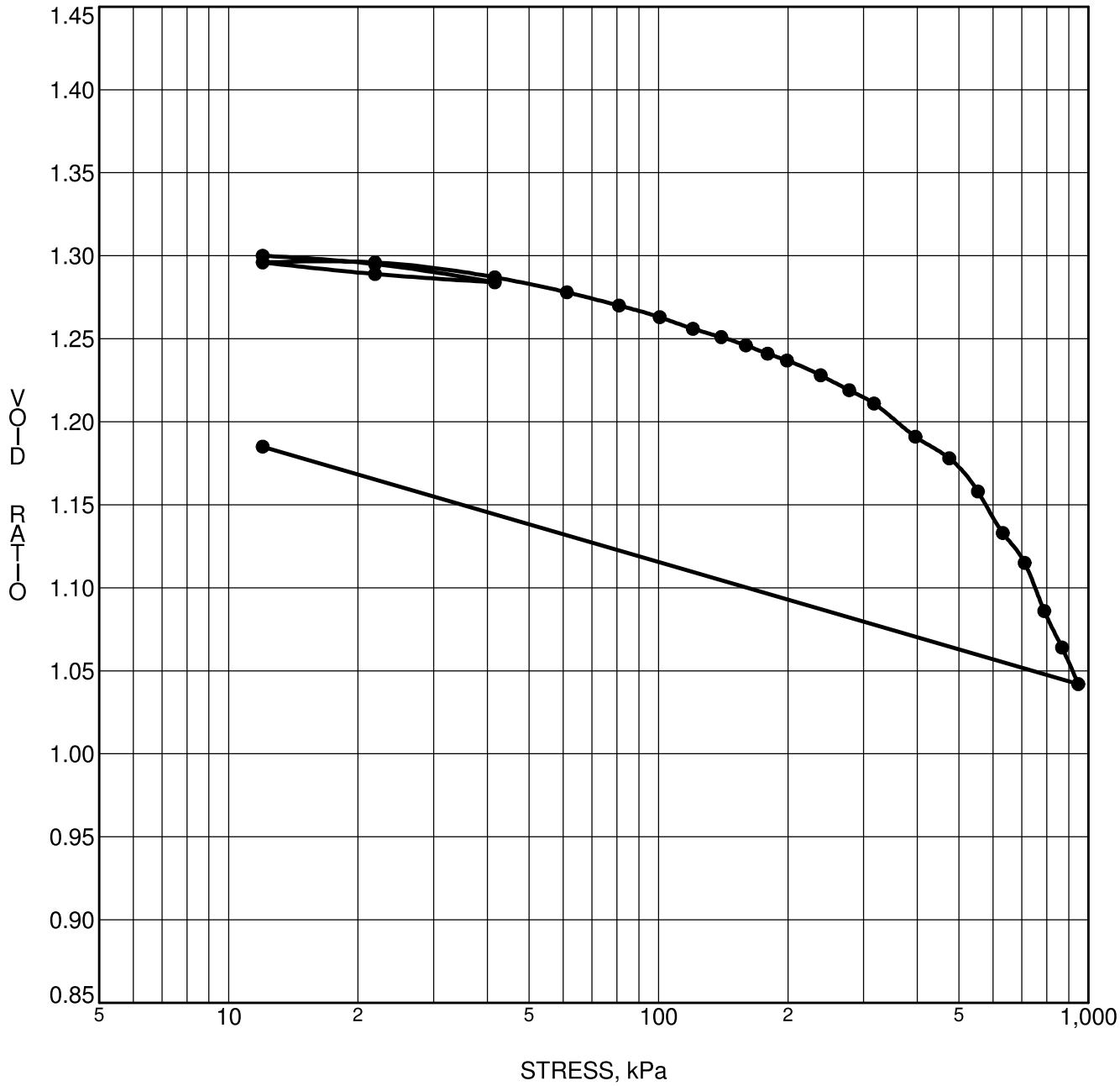
CONSOLIDATION TEST DATA SUMMARY					
Borehole No.	**MW104**	p'o	**37.88** kPa	Ccr	**0.024**
Sample No.		p'c	**239.88** kPa	Cc	**1.112**
Sample Depth	**2.67** m	OC Ratio	**6.3**	Wo	**78.8** %
Sample Elev.	**64.87** m	Void Ratio	**2.168**	Unit Wt.	**15.2** kN/m ^{3}

CLIENT **Terrapex** FILE NO. **PM12708**

PROJECT **CO 950.01 - 2180 Montreal Road** DATE **3/11/2024**

patersongroup Consulting Engineers
9 Auriga Drive, Ottawa, Ontario K2E 7T9

CONSOLIDATION TEST



CONSOLIDATION TEST DATA SUMMARY					
Borehole No.	**MW113**	p'o	**22.02** kPa	Ccr	**0.024**
Sample No.		p'c	**478.63** kPa	Cc	**0.561**
Sample Depth	**2.74** m	OC Ratio	**21.7**	Wo	**47.4** %
Sample Elev.	m	Void Ratio	**1.304**	Unit Wt.	**17.3** kN/m ^{3}

CLIENT	**Terrapex**	FILE NO.	**PM12708**
PROJECT	**CO 950.01 - 2180 Montreal Road**	DATE	**3/18/2024**

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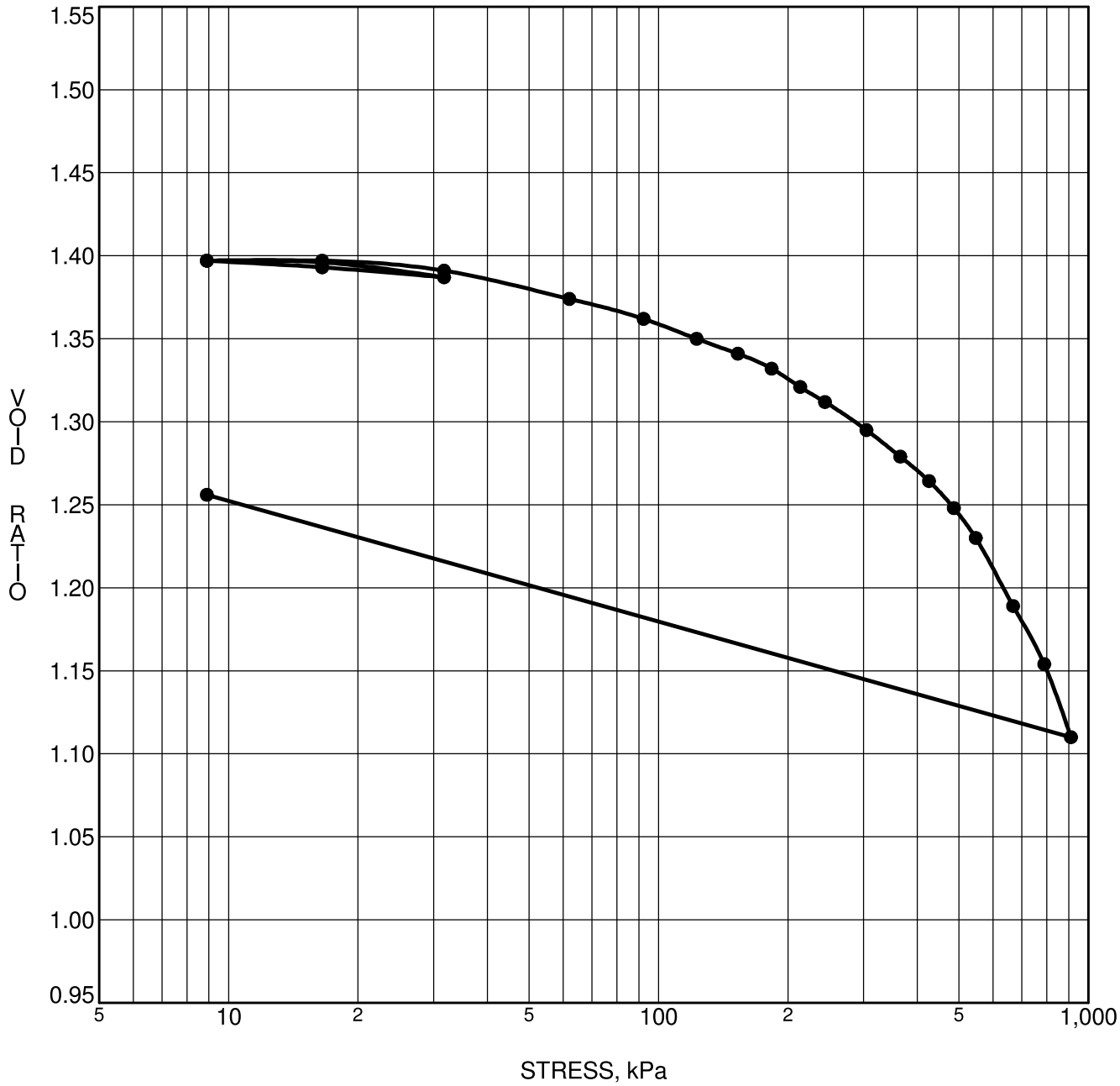
9 Auriga Drive, Ottawa, Ontario K2E 7T9

CONSOLIDATION TEST



CONSOLIDATION TEST DATA SUMMARY					
Borehole No.	**MW114**	p'_o	**48.03** kPa	Ccr	**0.017**
Sample No.		p'_c	**423.32** kPa	Cc	**0.600**
Sample Depth	**2.72** m	OC Ratio	**8.8**	Wo	**50.8** %
Sample Elev.	m	Void Ratio	**1.397**	Unit Wt.	**17.0** kN/m ^{3}

CLIENT **Terrapex** FILE NO. **PM12708**

PROJECT **CO 950.01 - 2180 Montreal Road** DATE **3/18/2024**

patersongroup Consulting Engineers
9 Auriga Drive, Ottawa, Ontario K2E 7T9

CONSOLIDATION TEST

APPENDIX E
CERTIFICATE OF CHEMICAL ANALYSIS

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: Yacouba Doro

PROJECT: CO952.01

AGAT WORK ORDER: 24Z125632

SOIL ANALYSIS REVIEWED BY: Nivine Basily, Inorganic Team Lead

DATE REPORTED: Mar 08, 2024

PAGES (INCLUDING COVER): 7

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.*
- *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

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

Certificate of Analysis

AGAT WORK ORDER: 24Z125632

PROJECT: CO952.01

CLIENT NAME: TERRAPEX ENVIRONMENTAL LIMITED

ATTENTION TO: Yacouba Doro

SAMPLING SITE:2180 MTL RD

SAMPLED BY:HM

Corrosivity Package

DATE RECEIVED: 2024-03-01

DATE REPORTED: 2024-03-08

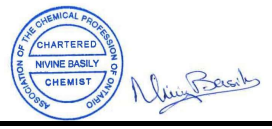
				SAMPLE DESCRIPTION:	MW111-3	MW106-3	MW111-4
				SAMPLE TYPE:	Soil	Soil	Soil
				DATE SAMPLED:	2024-03-01 11:10	2024-03-01 11:10	2024-03-01 11:10
Parameter	Unit	G / S	RDL		5693651	5693653	5693654
Sulphate (2:1)	µg/g		2		49	147	66

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

5693651-5693654 Sulphate was determined on the extract obtained from the 2:1 leaching procedure (2 parts DI water: 1 part soil). Resistivity is a calculated parameter.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



AGAT Laboratories

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

Certificate of Analysis

AGAT WORK ORDER: 24Z125632

PROJECT: CO952.01

CLIENT NAME: TERRAPEX ENVIRONMENTAL LIMITED

ATTENTION TO: Yacouba Doro

SAMPLING SITE:2180 MTL RD

SAMPLED BY:HM

pH in Soil

DATE RECEIVED: 2024-03-01

DATE REPORTED: 2024-03-08

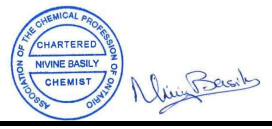
				SAMPLE DESCRIPTION:	MW111-3	MW106-3	MW111-4
				SAMPLE TYPE:	Soil	Soil	Soil
				DATE SAMPLED:	2024-03-01 11:10	2024-03-01 11:10	2024-03-01 11:10
Parameter	Unit	G / S	RDL		5693651	5693653	5693654
pH, 2:1 CaCl2 Extraction	pH Units		NA		6.80	6.63	6.51

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

5693651-5693654 pH was determined on the 0.01M CaCl2 extract prepared at 2:1 ratio (2 parts extraction fluid : 1 part soil).

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



AGAT Laboratories

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

Quality Assurance

CLIENT NAME: TERRAPEX ENVIRONMENTAL LIMITED

AGAT WORK ORDER: 24Z125632

PROJECT: CO952.01

ATTENTION TO: Yacouba Doro

SAMPLING SITE:2180 MTL RD

SAMPLED BY:HM

Soil Analysis

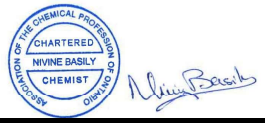
RPT Date: Mar 08, 2024			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
pH in Soil															
pH, 2:1 CaCl2 Extraction	5693645		5.99	6.16	2.7%	NA	101%	80%	120%						
Corrosivity Package															
Sulphate (2:1)	5693651	5693651	49	48	2.1%	< 2	102%	70%	130%	95%	80%	120%	95%	70%	130%

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

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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Time Markers

AGAT WORK ORDER: 24Z125632
PROJECT: CO952.01

CLIENT NAME: TERRAPEX ENVIRONMENTAL LIMITED

ATTENTION TO: Yacouba Doro

Sample ID	Sample Description	Sample Type	Date Sampled	Date Received
5693651	MW111-3	Soil	01-MAR-2024	01-MAR-2024

Corrosivity Package

Parameter	Date Prepared	Date Analyzed	Initials
Sulphate (2:1)	07-MAR-2024	07-MAR-2024	LC

pH in Soil

Parameter	Date Prepared	Date Analyzed	Initials
pH, 2:1 CaCl2 Extraction	08-MAR-2024	08-MAR-2024	XL

Sample ID	Sample Description	Sample Type	Date Sampled	Date Received
5693653	MW106-3	Soil	01-MAR-2024	01-MAR-2024

Corrosivity Package

Parameter	Date Prepared	Date Analyzed	Initials
Sulphate (2:1)	07-MAR-2024	07-MAR-2024	LC

pH in Soil

Parameter	Date Prepared	Date Analyzed	Initials
pH, 2:1 CaCl2 Extraction	08-MAR-2024	08-MAR-2024	XL

Sample ID	Sample Description	Sample Type	Date Sampled	Date Received
5693654	MW111-4	Soil	01-MAR-2024	01-MAR-2024

Corrosivity Package

Parameter	Date Prepared	Date Analyzed	Initials
Sulphate (2:1)	07-MAR-2024	07-MAR-2024	LC

pH in Soil

Parameter	Date Prepared	Date Analyzed	Initials
pH, 2:1 CaCl2 Extraction	08-MAR-2024	08-MAR-2024	XL

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MISSISSAUGA, ONTARIO
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Method Summary

CLIENT NAME: TERRAPEX ENVIRONMENTAL LIMITED

AGAT WORK ORDER: 24Z125632

PROJECT: CO952.01

ATTENTION TO: Yacouba Doro

SAMPLING SITE:2180 MTL RD

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 CaCl2 Extraction	INOR-93-6075	modified from EPA 9045D, MCKEAGUE 3.11 E3137	PC TITRATE

AGAT Laboratories

Have feedback? Scan here for a quick survey!

5835 Coopers Avenue
Mississauga, Ontario, L4Z 1Y2
Tel: 905.712.5100 Fax: 905.712.5122
www.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: Terraprex
Contact: Yacouba Doro
Address: 20 Gurdwara Rd
Phone: Fax:
Reports to be sent to:
1. Email: y.doro@terraprex.com
2. Email: h.Mohammed@terraprex.com

Project Information:

Project: CO952.01
Site Location: 2180 MTL RD
Sampled By: HM
AGAT Quote #: 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

☐ Regulation 406
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

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

Laboratory Use Only

Work Order #: 24712563 2

Cooler Quantity: One on ice
Arrival Temperatures: 10.0 | 10.4 | 10.2
LT 8.7 | 8.2 | 8.3
Custody Seal Intact: ☐ Yes ☐ No ☐ N/A
Notes: 100 se 7@

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	VOC	PAHs	PCBs	PCBs: Arocolors ☐	O. Reg 558: Landfill Disposal Characterization TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	O. Reg 406: Regulation 406 SPLP Rainwater Leach SPLP: ☐ Metals ☐ VOCs ☐ SVOCs	O. Reg 406: Regulation 406 Characterization Package pH, ICPMS Metals, BTEX, F1-F4	Corrosivity: ☐ Moisture ☐ Sulphide	PH and Soluble Sulphates						Potentially Hazardous or High Concentration (Y/N)
1. MW 111 - 3	Mar 1/24	11:10 AM/PM	1	S		N												✓						
2. MW 106 - 3	Mar 1/24	11:15 AM/PM	1	S		N												✓						
3. MW 111 - 4	Mar 1/24	11:05 AM/PM	1	S		N												✓						
4.		AM/PM																						
5.		AM/PM																						
6.		AM/PM																						
7.		AM/PM																						
8.		AM/PM																						
9.		AM/PM																						
10.		AM/PM																						
11.		AM/PM																						

Samples Relinquished By (Print Name and Sign)	Date	Time	Samples Received By (Print Name and Sign)	Date	Time
Hussam Mohammed	Mar 1/24	13:15	Berthelot	2024-03-01	13h28
[illegible] 2024-03-01	2024-03-01	15h00	MD	Mar 2/24	10:30am

Page ____ of ____