TIL TorontoInspection LTD.
GEO-ENVIRONMENTAL CONSULTANTS

REPORT ON
GEOTECHNICAL INVESTIGATION
65 GRACE STREET
TORONTO, ONTARIO

REPORT NO.: 5625W-21-GA
REPORT DATE: MAY 6, 2021

PREPARED BY
TORONTO INSPECTION LIMITED

PREPARED FOR
CONSEIL SCOLAIRE VIAMONDE
116 CORNELIUS PARKWAY
TORONTO, ONTARIO
M6L 2K5

110 KONRAD CRESCENT, UNIT 16, MARKHAM, ONTARIO L3R 9X2
TEL.: 905-940-8509 FAX: 905-940-8192

Toronto Inspection Ltd.

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1.0 INTRODUCTION

Toronto Inspection Ltd. was retained by Conseil Scolaire Viamonde to conduct a geotechnical investigation at a property located at 65 Grace Street in Toronto, Ontario (hereinafter described as "the Site").

The purpose of the investigation was to determine the subsoil and groundwater conditions affecting the design and construction of a proposed addition to the existing building. In particular, geotechnical data was to be provided for:

- General founding conditions
- Foundation design bearing pressures
- Construction recommendations
- Excavation recommendations
- Pavement design and construction
- Soil infiltration recommendations

This report is provided on the basis of the above terms of reference and on an assumption that the design of the structures will be in accordance with the applicable building codes and standards. If there are any changes in the design features relevant to the geotechnical analysis, our office should be consulted to review the design and to confirm the recommendations and comments provided in the report.

2.0 SITE CONDITION

The Site, approximately 2.5 hectares in area, is located on the east side of Grace Street, about 130m north of Dundas Street West in Toronto, Ontario.

At the time of the investigation, the Site was occupied by Pierre Elliott Trudeau Elementary School, a two-storey, part one storey building with a slab on grade. There was a paved parking area on the southeast side accessible from Belwoods Avenue from the east. A paved driveway and a small parking area on the northwest side provides access Grace Street. The remainder of the property consisted of a paved play area and a landscaped area on the eastern portion, and a sodded playing field on the northern portion of the Site.

The developments surrounding the Site consisted mostly of residential dwellings. The site gradient was slightly sloping from north to south.

3.0 INVESTIGATION PROCEDURE

The field work for the investigation was carried out on April 16, 2021, and consisted of drilling five sampled boreholes (20BH-1 to 20BH-5), extending to a depths of 3.5m to 9.6m from grade, and two test pits. The location of the boreholes and test pits are shown in the attached Borehole and Test Pit Location Plan (Drawing No. 1).

The boreholes were advanced using a truck mounted drill rig, equipped with continuous flight solid stem augers and sampling rods, supplied and operated by a specialist drilling contractor. Soil samples were retrieved from the boreholes at 0.76m intervals to a depth of 3.5m and at 1.5m intervals thereafter. The samples were obtained using a split spoon sampler in conjunction with Standard Penetration Tests (SPT) using a driving energy of 475 joules (350 ft-lbs). The samples were identified and logged in the field and were carefully bagged and delivered to our laboratory for moisture content determination and grain size analysis.

Groundwater observations were made in the boreholes during and upon the completion of drilling.

The test pits were excavated by a mini-backhoe, operated by the drilling contractor. Test pit 21TP-1 was excavated against the outer wall on the north side of the building, and extended to the underside of the existing foundation wall / footing. The depth of the foundation wall / footing and nature of the subgrade were noted. Test pit 21TP-2 was excavated near the location of the proposed storm water infiltration system at the northwest portion of the site.

The borehole and test pit locations, established in the field by our site personnel, are shown on the appended Borehole Location Plan, Drawing No. 1.

The ground elevations at the borehole locations were interpolated from the spot elevations shown on the "Surveyor's Real Property Report, Plan of Lots 25 to 34 (Both Inclusive) and Part of Lot 35 Registered Plan 748 and Lot 3 and Part of Lot 2 (West Side of Strachan Street) Block C and Lots 1, 4 & 5 (West of Strachan Street) Block F and Lane Between Lots 1 and 5, Block F & Part of Lane Registered Plan 75, City of Toronto" prepared by Land Survey Group, OLS, dated March 24, 2021, provided to our office by the Client.

4.0 SUMMARIZED SUBSURFACE CONDITIONS

Reference is made to the appended Borehole and Test Pit Location Plan (Drawing No. 1), the Log of Boreholes (Drawing Nos. 2 to 6) and the Test Pit Findings (Drawing No. 7) for details of field work, including soil classification, inferred stratigraphy, groundwater observations in the boreholes, and details of the existing footing.

The subsoils, below the pavement and topsoil at the borehole locations, consisted of fill and rubble fill overlying a native deposit of sandy silt till. Brief descriptions of the subsurface materials encountered at the borehole locations are as follows:

4.1 Surface Course

A pavement, consisting of 75mm thick asphalt underlain by a 300mm thick granular base, was contacted at the ground surface at the location of borehole 21BH-1. Topsoil, 150mm to 200mm in thickness was contacted at the ground surface at the locations of boreholes 21BH-2, 21BH-3, 21BH-4 and 21BH-5.

4.2 Fill

Underlying the pavement, a layer of fill was encountered at the locations of boreholes 21BH-2, 21BH-3, 21BH-4 and 21BH-5. The fill consisted of clayey to sandy silt and topsoil, with some organics, brick and asphalt fragments in places, and extended to depths of 0.7m to 1.4m from grade.

Based on the Standard Penetration N-values in the range of 7 to 11 blows for a penetration of 300mm, the fill is considered to be in a loose to compact condition.

The in-situ moisture content of the soil samples, retrieved from the fill, ranged from 3% to 18%, indicating moist to very moist conditions.

4.3 Rubble Fill

Rubble fill was encountered underlying the fill at the location of borehole 21BH-1, and underlying the clayey to sandy silt fill at a depth of 0.7m at the locations of boreholes 21BH-3 and 21BH-4. The rubble fill consisted of mixed sand, gravel and brick fragments, and extended to depths of 2.1m to 2.5m from grade.

Based on the Standard Penetration N-values of in the range of 2 to 17 blows for a

penetration of 300mm, the rubble fill is considered to be in a very loose to compact condition.

The in-situ moisture contents of the soil samples, retrieved from the rubble fill, varied from 16% to 17%, indicating very moist conditions.

4.4 Sandy Silt Till

A native deposit of sandy silt till was contacted below the clayey to sandy silt fill at a depth of 1.0 to 1.4m at the locations of boreholes 21BH-2 and 21BH-5, and below the rubble fill at a depth of 2.1m to 2.5m from grade at the locations of boreholes 21BH-1, 21BH-3 and 21BH-4. This deposit consisted of a brown to grey heterogeneous mixture of silt and sand, trace gravel, trace clay. All of the boreholes were terminated in the sandy silt till deposit at depths of between 3.5m and 9.6m from grade.

Based on the Standard Penetration N-values in the range of 15 to more than 100 blows for a penetration of 300mm, the sandy silt till is considered to have a compact to very dense relative density.

The in-situ moisture content of the soil samples, retrieved from the fill, ranged from 4% to 11%, indicating moist conditions.

A grain size analysis was carried out on a soil sample from the sandy silt till deposit, retrieved from borehole 21BH-4 (sample SS2 at a depth of 3.0m), using mechanical sieves and hydrometer methods. The result of the grain size test is shown on the appended Figure No. 1.

4.5 Groundwater

No free water was encountered in any of the boreholes, which were all dry and open to the full depth upon completion of drilling.

Based on the field observations and the moisture content profiles of the retrieved soil samples, it is our opinion that there is no continuous groundwater table within the depths investigated. Perched water conditions may occur within the fill and rubble fill, and on top of the less pervious sandy silt till deposit.

4.6 Test Pit Findings

The details of the depth and subgrade of the existing footing, encountered at the location of test pit 21TP-1 is shown on the sketch in Drawing No. 7 (Test Pit Findings).

At the location of test pit TP-1, no footing was encountered, and the underside of the concrete foundation wall was located 1.85m from ground surface. The subgrade at the underside of the foundation wall was composed of compact native sandy silt till.

Test pit 21TP-2 was excavated near the proposed infiltration system at the northwest portion of the site. Below the surficial layer of topsoil, the test pit encountered rubble fill, composed of sand, gravel, brick and concrete fragments. Due to the limitations of the reach of the excavator and the caving ground, the test pit was extended only to a depth of 1.4m from grade. A sample of rubble fill was collected at the bottom of the test pit. Grain size analysis was carried out on the rubble fill sample, using mechanical sieves and hydrometer methods. The result of the grain size test is shown on the appended Figure No. 1.

5.0 RECOMMENDATIONS

The "Ground Floor Plan" prepared by Barry Bryan Associates indicates that the addition will be located on the north side of the existing school building, and will be a one storey structure with a footprint of 420 sq. m, and a slab on grade. The proposed finished floor of the addition was not available at the time of this report, and it is anticipated that this will match the existing building. It is understood that the existing building has a finished floor elevation of 106.51m.

Based on the subsoils encountered at the borehole locations, our comments and recommendations for the design and construction of the proposed development are as follows:

5.1 Site Preparation

The existing frame shed, pavement, curbs, vegetation remains and topsoil should be removed from within the area of the proposed addition. The existing fill and rubble fill is generally loose to very loose, and the presence of these materials under the building pad and paved areas could result in excessive settlement of the footings and cracking of the floor slab and the pavement.

All of the existing fill and rubble fill within the proposed addition and paved areas should be removed and replaced with engineered fill. The area to be replaced should extend to at least 3m on all sides of the building footprint / paved area. Prior to placement of engineered fill, the top of the exposed subgrade should be inspected and proof-rolled under the supervision of a geotechnical engineer / technician from ***Toronto Inspection Ltd.*** Any soft or wet areas identified should be sub-excavated and replaced with compacted granular fill.

The material proposed for engineered fill should be pre-approved by a geotechnical engineer / technician from ***Toronto Inspection Ltd.*** If the fill is wet, its should be allowed to dry to within 2% of its optimum moisture value prior to placement. The backfill should be placed in loose lifts not exceeding 200mm and compacted, using heavy compaction equipment, to at least 100% of its Standard Proctor maximum dry density (SPMDD). The Guidelines for Engineered Fill, shown in Appendix A, provides some of the conditions that must be satisfied for fill to be classified as engineered fill.

The excavated fill and rubble fill will not be suitable for reuse for engineered fill,

and will have to be disposed off-site or reused in landscaped areas, subject to approval by the landscape architect.

5.2 Foundation Design

If the building pad is prepared as recommended in Section 5.1 (Site Preparation), the subgrade below the founding elevation will consist of engineered fill or the native sandy silt till deposit. Spread or strip footings, founded in the engineered fill / native undisturbed soil, at or below depths of 0.6m for interior footings and 1.2m for perimeter footings, from outside finished grade, can be designed for the following bearing pressures:

- At Serviceability Limit State = 150 kPa
- At Factored Ultimate Limit State = 225 kPa

We recommend that all strip footings, placed in the engineered fill, should be reinforced continuously with at least 2-15M steel bars.

The total and differential settlement of footings, designed for the above Serviceability Limit State, will not exceed 25mm and 20mm, respectively.

All perimeter footings or any footings, which may be exposed to freezing conditions, should be placed below the frost penetration depth of 1.2m below the outside grade or provided with an equivalent thermal protection.

Any new footing to be located adjacent the existing building should not be located higher than the underside of the existing footing/foundation wall and should preferably be located at the same level as those existing. If the new footing is to be located significantly lower than the adjacent existing footing or bottom of foundation wall, then the need for shoring or underpinning should be assessed.

It should be noted that the above recommendations for the foundations have been analyzed by ***Toronto Inspection Ltd.*** from the information obtained at the borehole locations. The bearing material, the interpretation between the boreholes and the recommendations of this report must be checked through field inspection provided by ***Toronto Inspection Ltd***. to validate the information for use during construction.

5.3 Floor Slab Construction

It is anticipated that the finished floor of the addition will match the existing. Following the site preparation as recommended in Section 5.1, the floor slab of the addition can be designed and constructed as a conventional slab-on-grade.

The exposed subgrade should be proof-rolled under the supervision of a geotechnical technician from ***Toronto Inspection Ltd.*** Any compressible, loose or weak spots encountered during the proof rolling process should be sub-excavated to a firm ground. Any new fill below the slab-on-grade should consist of organic free soils, compacted to at least 98% SPMDD.

A granular bedding consisting of at least 150 mm of Granular A (OPSS Form 1010) or its approved equivalent, should be provided under the floor slab as a moisture barrier. The bedding should be compacted to at least 100% SPMDD.

5.4 Earthquake Consideration

The Ontario Building Code requires that all buildings be designed to resist earthquake forces. In accordance with Table 4.1.8.4.A of the Ontario Building Code, the Site classification for the Seismic Site Response is Class C (Very dense soil).

The acceleration and velocity based site coefficients, Fa and Fv, should conform to Tables 4.1.8.4.B and 4.1.8.4.C. These values should be reviewed by the Structural Engineer.

5.5 Excavation and Site Services

All excavations should comply with the Ontario Occupational Health and Safety Act. The fill and rubble fill can be classified as Type 3 soil and the sandy silt till deposit can be classified as Type 2 soil. Any excavation in the fill and rubble fill should be sloped back to a safe angle of 45° or flatter. Excavations deeper than 1.2m in the native sandy silt till deposit should be sloped back to a safe angle of 45°.

The pipe bedding for underground services, including any catch basins and manholes, should consist of OPSS Granular A, 20mm crusher run limestone, or equivalent, compacted to 98% SPMDD. If free water is encountered in the trenches, from perched water, the bedding in the service trenches may consist of HL6 stone or equivalent, provided that a geotextile filter fabric (Terrafix 270R or equivalent) is used to separate the stone bedding from the base and the sides of the excavation. The geotextile filter fabric must surround the clear stone bedding completely.

We do not anticipate any groundwater problems during the excavation and construction of the foundation of the addition. However, provision should be made to use filtered sumps to remove any perched ground water that may be encountered.

5.6 Pavement Design and Construction

New paved areas are proposed on the west, northwest and east sides of the addition. It is understood that a heavy duty asphalt is required for the driveway and parking lot on the west and northwest sides, a medium duty asphalt is required for the play area on the east side of the addition, and a light duty asphalt is sufficient for the relocated walkway on the north and east sides.

Following the site preparation as recommended in Section 5.1, the subgrade of the paved areas will consist of engineered fill. The following minimum pavement designs are recommended.

Pavement Structure		Heavy Duty Asphalt	Medium Duty Asphalt	Light Duty Asphalt
Asphaltic Concrete:	**OPSS HL3 or equivalent**	**40mm**	**40mm**	**65mm**
	OPSS HL8 or equivalent	**65mm**	**50mm**	
Base:	**OPSS Granular A or 20mm crusher-run**	**150mm**	**150mm**	**150mm**
Sub-base:	**OPSS Granular B or 50mm crusher-run**	**300 mm**	**300mm**	**200mm**

The granular base and sub-base should be compacted to a minimum of 100% SPMDD. The asphaltic concrete should be compacted to at least 96% Marshall density. With the approval of the client, we can carry out bulk sample analyses of the excavated granular base at time of construction to determine its suitability for re-use as base courses.

The above pavement thicknesses are based on favourable site conditions and the construction being carried out during the drier time of the year, and that the subgrade is stable and not heaving under construction traffic. If the subgrade is wet and unstable, additional thickness of sub-base material will be required.

Following site grading, the subgrade of the entire pavement should be proof-rolled using a heavy vibratory roller. Any soft spots revealed by the proof-rolling should be sub-excavated and replaced with approved dry material and compacted to at least 98% SPMDD.

Frequent inspection by geotechnical personnel from ***Toronto Inspection Ltd. s***hould be carried out during construction to verify the compaction of the subgrade, base courses and asphaltic concrete by in-situ density testing using nuclear gauges.

5.7 Soil Infiltration

It is understood that a storm water infiltration system is proposed on the new parking area at the northwest side of the Site. The design of this system is dependent on the permeability and infiltration rate of the subsoils and the location of the groundwater table.

The soil permeability and infiltration rate of the native sandy silt till at the location of borehole 21BH-4 has been assessed based on the grain size distribution. The grain size distribution of a sample of the native subsoil taken from borehole 21BH-4 SS2 at depth of 3.0m is shown in Figure 1. The grain size curve indicated that the native soil consisted sandy silt, with some clay, trace gravel, and has an effective size, D_{10}, of approximately 0.002mm Based on the findings, the recommended values for soil permeability and infiltration rate for the native sandy silt till deposit at the test location are as follows:

- Soil permeability, k : 4×10^{-6} cm/sec
- Infiltration rate : 20 mm/hr

The value given above is the unfactored infiltration rate based on the grain size analysis. It will be up to the discretion of the engineer designing the infiltration system to select the factor of safety for the design. Approval from regulatory bodies is necessary prior to proceeding with LID construction.

If a site specific infiltration test is required, this may be carried out at specific depths in a test pit using a Guelph Permeameter.

5.8 Soil Analytical Testing

A sample of the rubble fill, retrieved from borehole 21BH-4 sample SS1, at a depth of 1.5m, was submitted to ALS Environmental for laboratory analytical testing for F1-F4 Petrohydrocarbons, BTEX, PAH's, leachate for metals and metals and inorganics parameters in accordance with O/Reg 406/19, for disposal purposes.

The copy of the Certificate of Analysis is shown in Appendix B.

6.0 GENERAL STATEMENT OF LIMITATION

The comments and recommendations presented in this report are based on the subsoil and ground water conditions encountered at the borehole locations, indicated in the borehole location plan, and are intended for the guidance of the design engineer. Although we consider this report to be representative of the subsurface conditions at the subject property, the soil and the ground water conditions between and beyond the borehole locations may differ from those encountered at the time of our investigation and may become apparent during construction. Any contractor bidding on, or undertaking the works, should decide on their own investigation and interpretations of the groundwater and the soil conditions between the borehole locations.

Any use and / or the interpretation of the data presented in this report, and any decisions made on it by the third party are the responsibility of the third parties. The responsibility of ***Toronto Inspection Ltd.*** is limited to the accurate interpretation of the soil and ground water conditions prevailing in the locations investigated and accepts no responsibility for the loss of time and damages, if any, suffered by the third party as a result of decisions or actions based on this report.

Any legal actions arising directly or indirectly from this work and/or ***Toronto Inspection Ltd.'s*** performance of the services shall be filed no longer than two years from the date of ***Toronto Inspection Ltd.'s*** substantial completion of the services. ***Toronto Inspection Ltd.*** shall not be responsible to the client for lost revenues, loss of profits, cost of content, claims of customers, or other special indirect, consequential or punitive damages.

To the fullest extent permitted by law, the client's maximum aggregate recovery against ***Toronto Inspection Ltd.***, its directors, employees, sub-contractors and representatives, for any and all claims by clients for all causes including, but not limited to, claims of breach of contract, breach of warranty and /or negligence, shall be the amount of the fee paid to ***Toronto Inspection Ltd.*** for its professional services rendered under the agreement with respect to the particular site which is the subject of the claim by the client.

Yours very truly,
TORONTO INSPECTION LTD.

LICENSED PROFESSIONAL ENGINEER
R.T. QUIAMBAO
100080555
May 6, 2021
PROVINCE OF ONTARIO

Rene Quiambao, P.Eng.
Senior Engineer

Victor A. Wood, M.Eng., P.Eng.
Principal Engineer

Toronto Inspection Ltd.

Drawings and Figures

Borehole and Test Pit Location Plan
Borehole Logs
Test Pit Findings
Gradation Curves

LEGEND:

Borehole Location

Test Pit Location

Site Boundary

NOT TO SCALE

TorontoInspection LTD.
GEO-ENVIRONMENTAL CONSULTANTS

110 Konrad Crescent,
Unit 16
Markham, Ontario
L3R 9X2

Tel: 905-940 8509 Fax: 905-940 8192 Email : TIL@torontoinspection.com

TITLE:	Borehole and Test Pit Location Plan		
LOCATION:	65 Grace Street, Toronto, Ontario		
PROJECT NO. 5625W-21-GA	DATE : April 2021	DRAWING NO: 1	

Project No. 5625W-21-GA

Log of Borehole 21BH-1

Dwg No. 2

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: 65 Grace Street, Toronto, Ontario

Date Drilled: 4/16/21

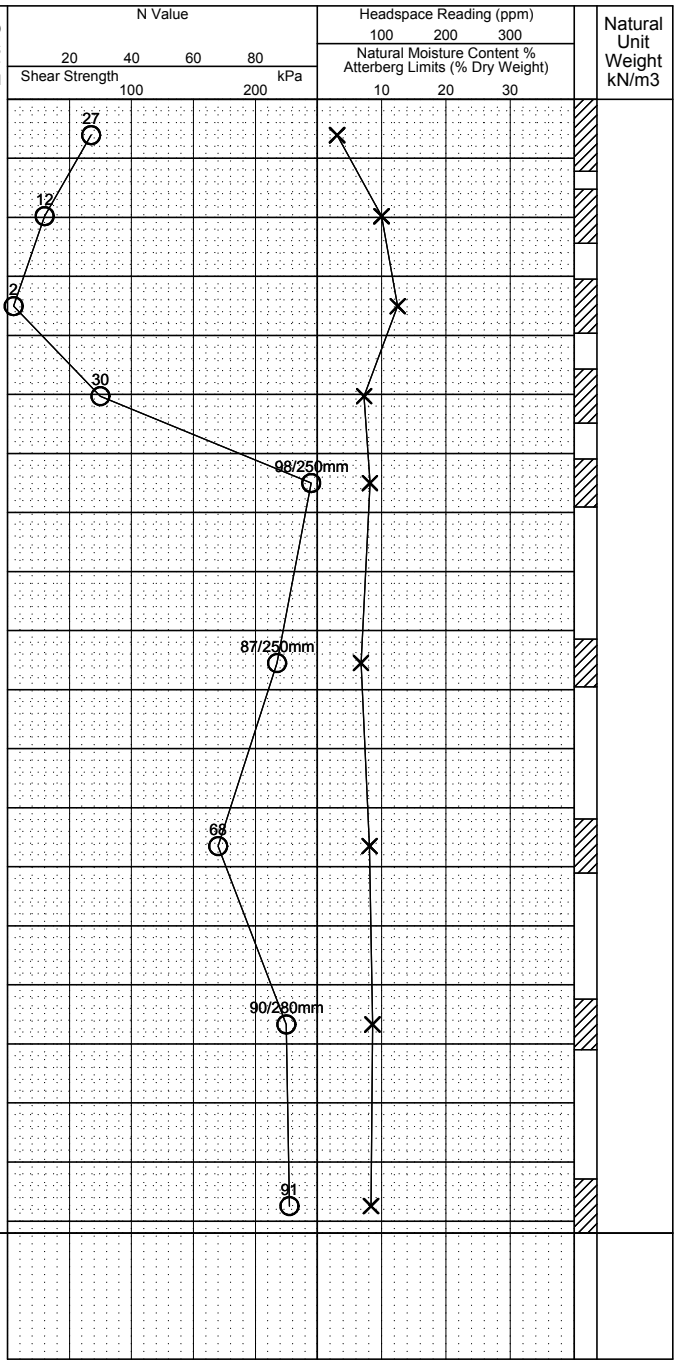
Drill Type: Truck Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m
		Ground Surface	106.10
		ASPHALT PAVEMENT - 75mm asphalt over 300mm granular base	106.02 / 105.80
		FILL - light grey to light brown sand, gravel and brick fragments - compact to very loose - moist	104.00
		SANDY SILT TILL - dense to very dense - brown, grey below 4.0m - trace gravel - trace clay - moist	96.50
		END OF BOREHOLE **NOTE:** Upon completion of drilling: - no free water - open cave-in	



Natural Unit Weight kN/m3

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

LGBE3 5625W-21-GA.GPJ 5/5/21

Project No. 5625W-21-GA

Log of Borehole 21BH-2

Dwg No. 3

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: 65 Grace Street, Toronto, Ontario

Date Drilled: 4/16/21

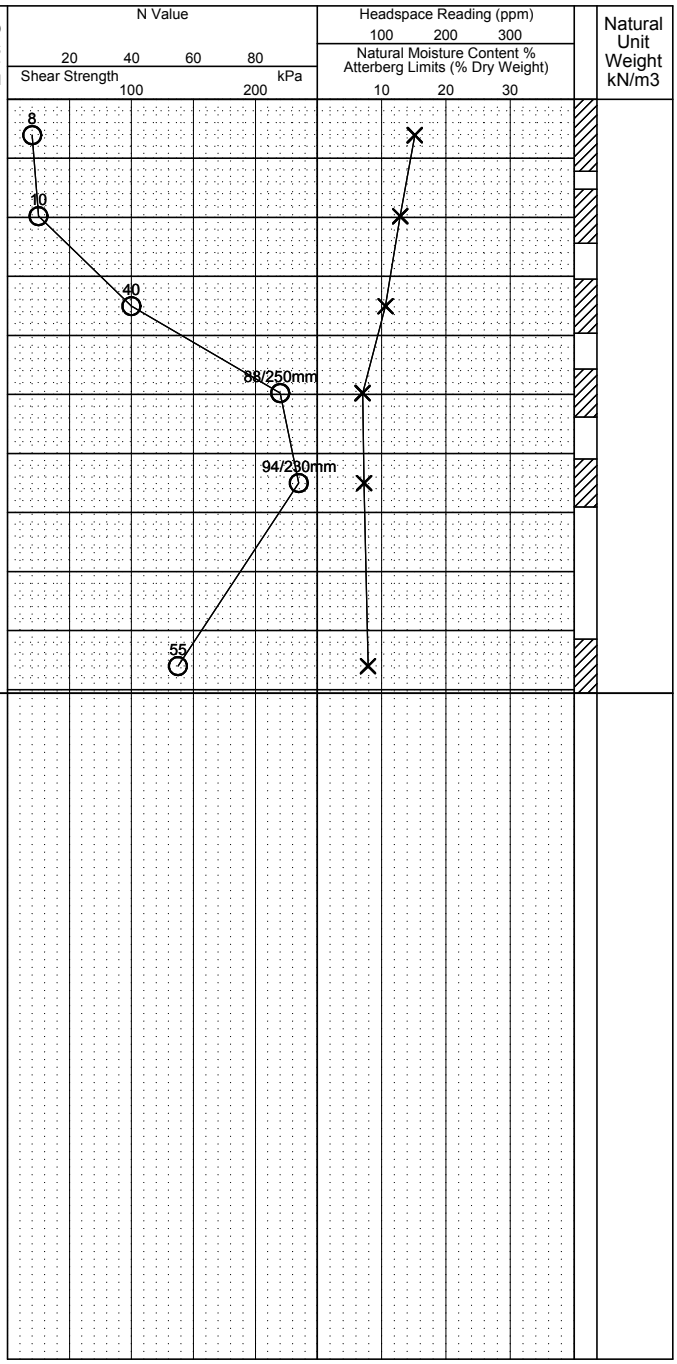
Drill Type: Truck Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m
		Ground Surface	106.50
		TOPSOIL - 200mm topsoil thickness	106.30
		FILL - greyish brown sand silt - loose to compact - some topsoil - trace gravel - moist	105.10
		SANDY SILT TILL - dense to very dense - brown, grey below 4.0m - trace gravel - trace clay - moist	101.47
		END OF BOREHOLE **NOTE:** Upon completion of drilling: - no free water - open cave-in	



Natural Unit Weight kN/m3

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

LGBE3 5625W-21-GA.GPJ 5/5/21

Project No. 5625W-21-GA

Log of Borehole 21BH-3

Dwg No. 4

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: 65 Grace Street, Toronto, Ontario

Date Drilled: 4/16/21

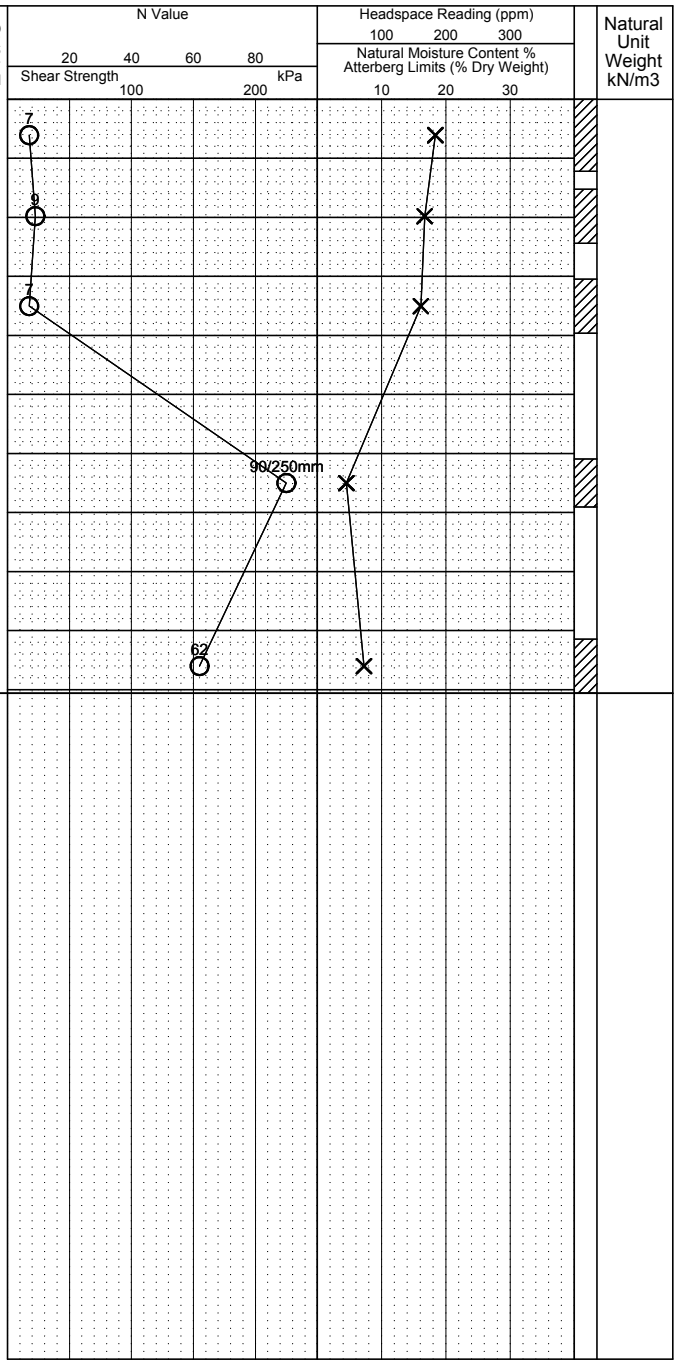
Drill Type: Truck Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m
		Ground Surface	106.30
		TOPSOIL - 200mm topsoil thickness	106.10
		FILL - greyish brown clayey silt and topsoil - loose - some organics, asphalt fragments - very moist	105.60
		RUBBLE FILL - light grey to light brown sand, gravel and brick fragments - loose - very moist	103.80
		SANDY SILT TILL - very dense - brown, grey below 4.0m - trace gravel - trace clay - moist	101.27
		END OF BOREHOLE **NOTE:** Upon completion of drilling: - no free water - open cave-in	



Natural Unit Weight kN/m3

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

LGBE3 5625W-21-GA.GPJ 5/5/21

Project No. 5625W-21-GA

Log of Borehole 21BH-4

Dwg No. 5

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: 65 Grace Street, Toronto, Ontario

Date Drilled: 4/16/21

Drill Type: Truck Mounted Drill Rig

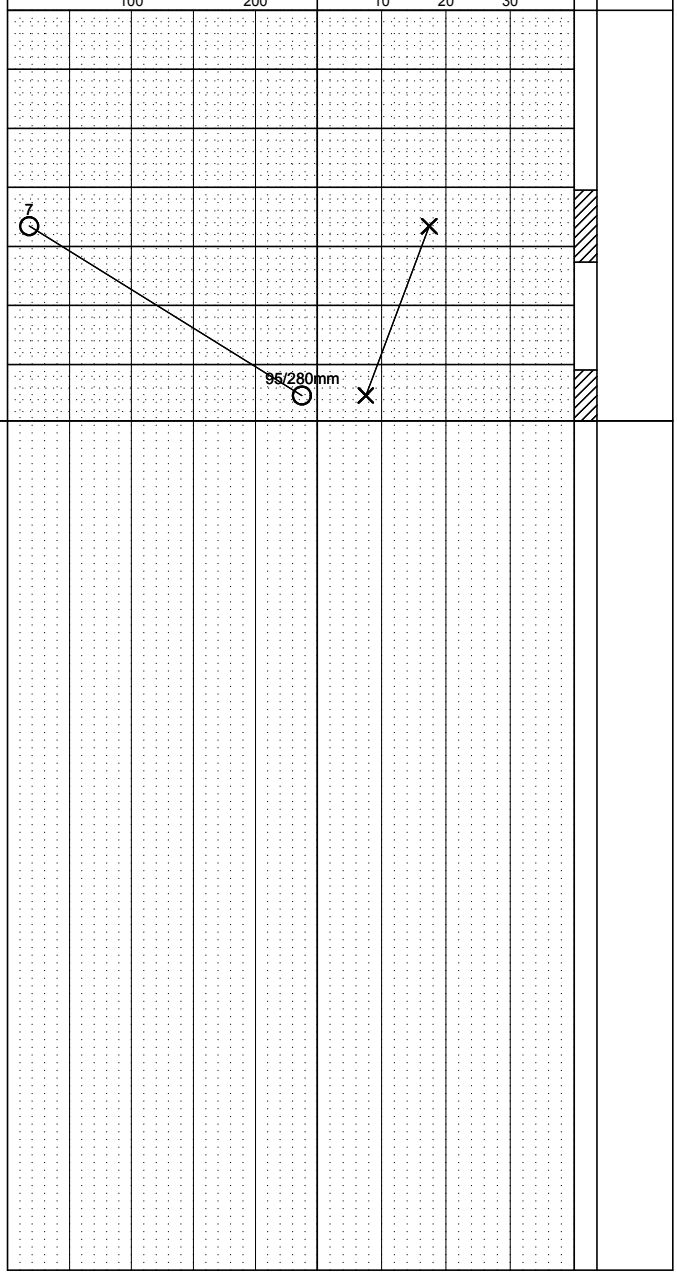
Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH
		Ground Surface	106.10	0
		TOPSOIL - 200mm topsoil thickness	105.90	
		FILL - augering - no testing and sampling	105.40	
		RUBBLE FILL - light grey to light brown - sand, gravel and brick fragments - loose - very moist		1 2
			103.60	
		SANDY SILT TILL - very dense, brown - trace gravel - trace clay - moist	102.62	3
		END OF BOREHOLE **NOTE:** Upon completion of drilling: - no free water - open cave-in		

N Value: 20 40 60 80
Shear Strength: 100 200 kPa
Headspace Reading (ppm): 100 200 300
Natural Moisture Content % / Atterberg Limits (% Dry Weight): 10 20 30
Natural Unit Weight kN/m3



LGBE3 5625W-21-GA.GPJ 5/5/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5625W-21-GA

Log of Borehole 21BH-5

Dwg No. 6

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: 65 Grace Street, Toronto, Ontario

Date Drilled: 4/16/21

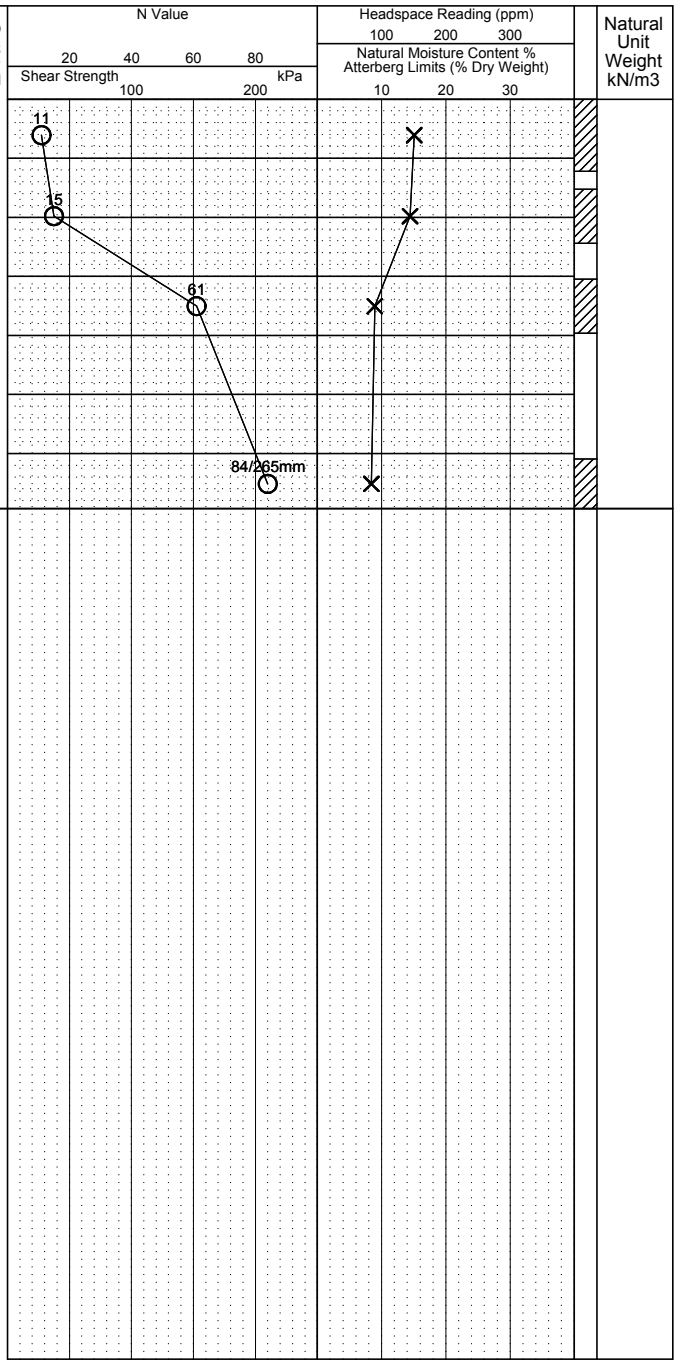
Drill Type: Truck Mounted Drill Rig

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m
		Ground Surface	105.90
		TOPSOIL - 150mm topsoil thickness	105.75
		FILL - greyish brown sandy silt and topsoil - compact - some organics and roots - trace brick fragments - moist	104.90
		SANDY SILT TILL - compact to very dense - brown - trace gravel - trace clay - moist	102.43
		END OF BOREHOLE **NOTE:** Upon completion of drilling: - no free water - open cave-in	



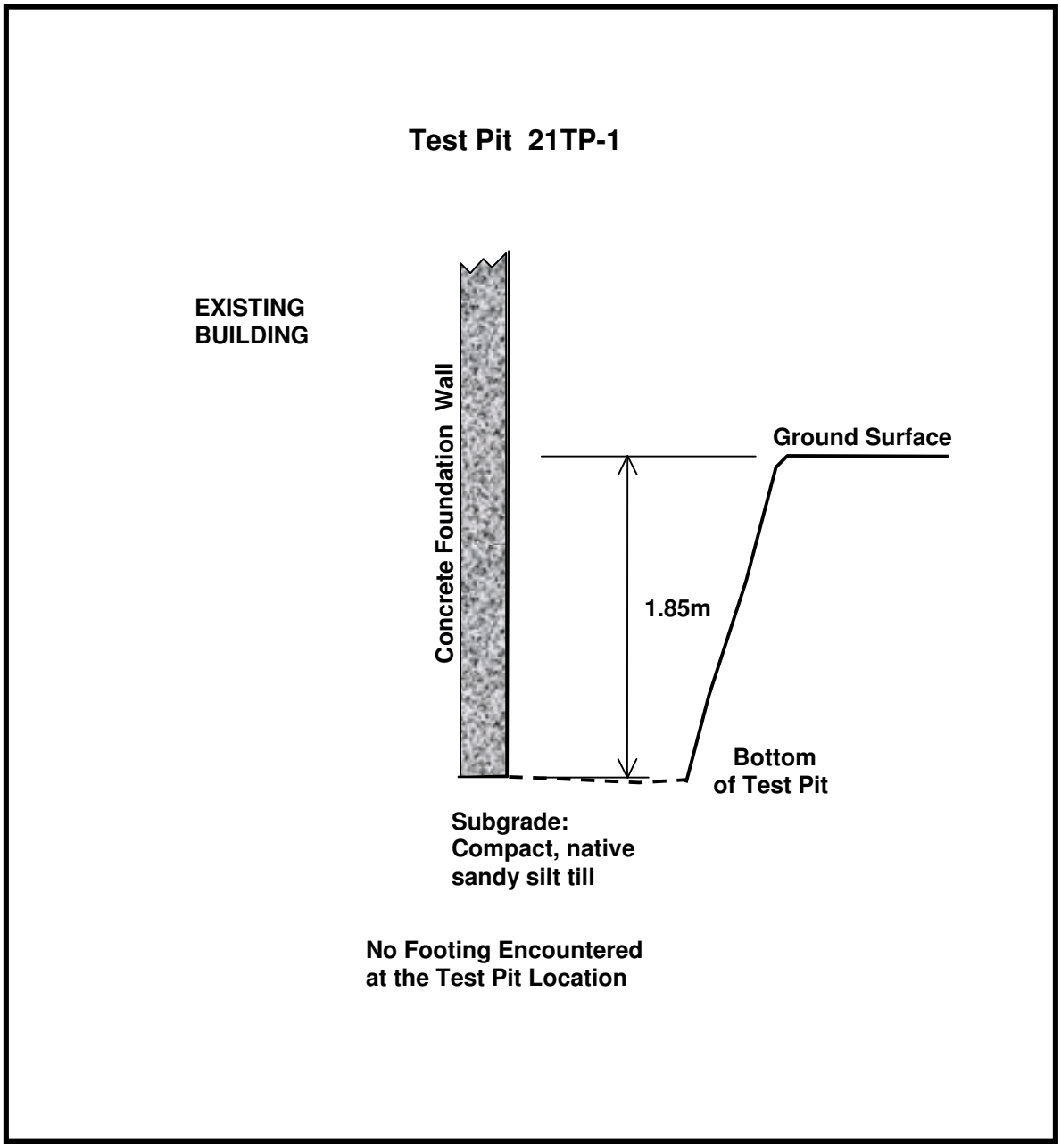
Natural Unit Weight kN/m3

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

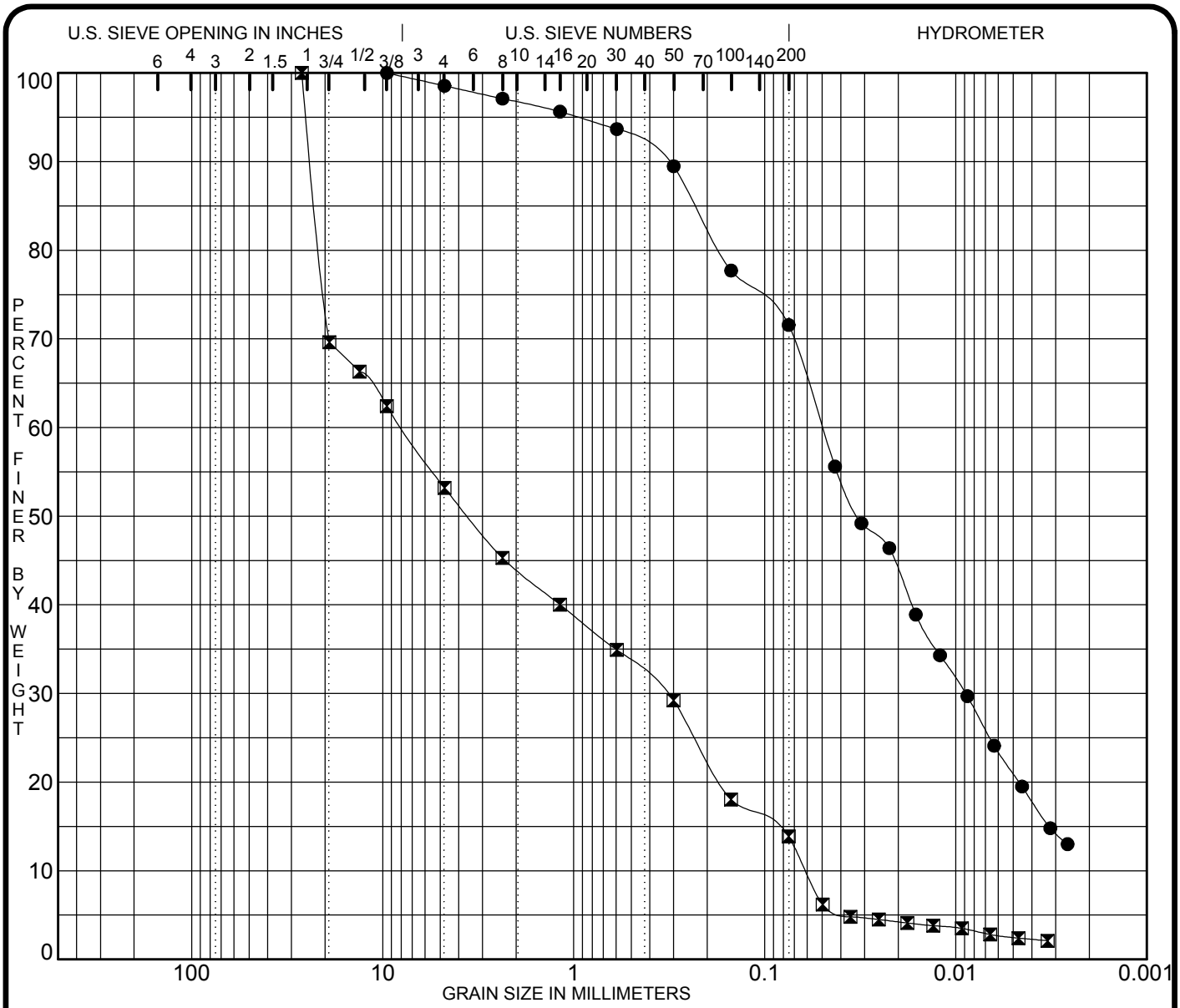
Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

LGBE3 5625W-21-GA.GPJ 5/5/21



TEST PIT FINDINGS



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
●	**21BH-4**	**3.0**							
⧗	**21TP-2**	**1.4**						**0.22**	**129.8**

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**21BH-4**	**3.0**	**9.50**	**0.05**	**0.009**		**1.4**	**27.0**	**50.6**	**20.9**
⧗	**21TP-2**	**1.4**	**26.50**	**7.92**	**0.330**	**0.0610**	**46.8**	**39.3**	**11.4**	**2.5**

PROJECT **Geotechnical Investigation - 65 Grace Street, Toronto, Ontario**

JOB NO. **5625W-21-GA**
DATE **5/4/21**

GRADATION CURVES

FIGURE NO.1

Toronto Inspection Ltd.

Appendix A

Guidelines for Engineered Fill

GUIDELINES FOR ENGINEERED FILL

The information presented in this guideline is intended for general guidance only. Site specific and prevailing weather conditions may require modification of the material(s) to be used and the compaction standards or procedures changed. The site preparation and the material(s) to be used must be discussed and procedures agreed with ***Toronto Inspection Ltd.*** prior to the start of the earthworks and must be subjected to on going review during construction.

For fill to be classified as engineered fill, suitable for supporting structural loads, a number of conditions must be satisfied, including but not necessarily limited to the following:

1. Areal Extent

The engineered fill must extend beyond the envelope of the structure to be supported. The minimum extent should be 2.0m beyond the envelope in all directions at the foundation level, including the loading dock pad and the front sidewalk, and sloping downwards to the sub-grade at 45°. Once the envelope is set, the structure cannot be moved out of the envelope without consultation with ***Toronto Inspection Ltd.*** Similarly, no excavation should encroach on the engineered fill envelope without consultation with ***Toronto Inspection Ltd.***

2. Survey Control

Accurate survey control is essential to the success of an engineered fill project. The boundaries of the engineered fill must be laid out by a surveyor. During construction. it is necessary to have qualified surveyors providing control stations on the three-dimensional extent of the engineered fill.

3. Subsurface Preparation

Prior to placement of the engineered fill, the sub-grade must be prepared to the satisfaction of ***Toronto Inspection Ltd.*** All deleterious material must be removed and in some cases excavation of native mineral soils may also be required. Particular attention must be paid to wet sub-grade and possible additional measures required to achieve sufficient compaction. Where fill is placed against a slope, benching will be necessary and natural drainage paths must not be blocked.

4. Suitable Fill Material

All material to be used as fill must be approved by ***Toronto Inspection Ltd.*** Such approval will be influenced by weather factors. External sources of fill material must be sampled, tested and approved prior to material being hauled to the job site.

5. Trial Test Section

In advance of the construction of the engineered fill pad, the contractor should conduct a trial test section. The compaction criterion will be assessed for the backfill material to be used, using specified lift thicknesses and number of passes for the compaction equipment proposed by the contractor. To achieve a uniform degree of compaction of each layer, the lift thickness of loose

material, prior to start of compaction, must not exceed 200mm (8 inches). Additional trial test section(s) may be required throughout the course of the project to reflect changes in material sources, the moisture content of the material and the weather conditions.

6. Degree of Compaction

The minimum degree of compaction for the engineered fill should not be less than 100% of the Standard Proctor maximum dry density, or 95% of the Modified Proctor maximum dry density, to the level at or above 0.3m from proposed footing founding level. Each layer must be tested and approved by this office before the next layer is placed.

7. Inspection and Testing

Uniform and thorough compaction is crucial to the performance of the fill and the supported structure. Hence, all subgrade preparation, filling and compacting must be done with full time inspection and to the satisfaction of ***Toronto Inspection Ltd.*** All founding surfaces must be inspected and approved by ***Toronto Inspection Ltd.*** prior to placement of concrete.

8. Protection of Fill

Fills are generally more susceptible to the effects of weather than are natural soils. Fill placed and approved to the level at which structural support is required must be protected from excessive wetting, drying, erosion or freezing. Where inadequate protection had been provided, it may be necessary to provide deeper founding level for footings or to strip and re-compact some of the filled layers.

9. Limitations

The engineered fill is subjected to the following limitations:

i. Proper drainage must be maintained at all times within the engineered fill pad.
ii. If the engineered fill is left in place during the winter months, adequate protection must be provided against frost penetration to the proposed footing depths.
iii. If the engineered fill depth exceeds 5m below the foundation depth, the construction of the foundations might have to be delayed for a period of 1 year after placement, depending on the type of fill material used.
iv. Strip footings and foundation walls founded on engineered fill must be reinforced continuously with a minimum of two 15mm steel bars with at least 1m of overlap.

Appendix B

Analytical Test Results

TORONTO INSPECTION
ATTN: Andrew Wood
110 KONRAD CRESCENT #16
MARKHAM ON L3R 9X1

Date Received: 23-APR-21
Report Date: 17-MAY-21 09:40 (MT)
Version: FINAL REV. 2

Client Phone: 905-940-8509

Certificate of Analysis

Lab Work Order #: L2579964

Project P.O. #: NOT SUBMITTED
Job Reference: 5625W
C of C Numbers:
Legal Site Desc: 65 GRACE ST. TORONTO

Comments: ADDITIONAL 10-MAY-21 11:57

Jennifer Barkshire-Paterson
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ANALYTICAL REPORT

Summary of Guideline Exceedances

ALS ID	Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
Ontario Regulation 406/19 - Excess Soils - 17-December-20 - T1 - Soil - Res/Park/Inst/Ind/Com/Commu Property Use						
L2579964-1	5625W- 21BH-4/S1	Metals	Lead (Pb)	130	120	ug/g
Ontario Regulation 406/19 - Excess Soils - 17-December-20 - T2.1 - Volume Independent Soil - Res/Park/Inst Property Use						
L2579964-1	5625W- 21BH-4/S1	Metals	Lead (Pb)	130	120	ug/g

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Sample Preparation - WASTE

			Lab ID	L2579964-1
			Sample Date	16-APR-21
			Sample ID	5625W- 21BH-4/S1
		Guide Limits		
Analyte	**Unit**	**#1**	**#2**	
Initial pH	pH units	-	-	9.63 LTIS
Final pH	pH units	-	-	9.51 LTIS

Guide Limit #1: T1 - Soil - Res/Park/Inst/Ind/Com/Commu Property Use
Guide Limit #2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Physical Tests - SOIL

			Lab ID	L2579964-1
			Sample Date	16-APR-21
			Sample ID	5625W- 21BH-4/S1
		Guide Limits		
Analyte	**Unit**	**#1**	**#2**	
Conductivity	mS/cm	0.57	0.7	0.235
% Moisture	%	-	-	14.1
pH	pH units	-	-	7.88

Guide Limit #1: T1 - Soil - Res/Park/Inst/Ind/Com/Commu Property Use
Guide Limit #2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Cyanides - SOIL

			Lab ID	L2579964-1
			Sample Date	16-APR-21
			Sample ID	5625W- 21BH-4/S1
		Guide Limits		
Analyte	**Unit**	**#1**	**#2**	
Cyanide, Weak Acid Diss	ug/g	0.051	0.051	<0.050

Guide Limit #1: T1 - Soil - Res/Park/Inst/Ind/Com/Commu Property Use
Guide Limit #2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Saturated Paste Extractables - SOIL

			Lab ID	L2579964-1
			Sample Date	16-APR-21
			Sample ID	5625W- 21BH-4/S1
		Guide Limits		
Analyte	**Unit**	**#1**	**#2**	
SAR	SAR	2.4	5	0.33
Calcium (Ca)	mg/L	-	-	20.8
Magnesium (Mg)	mg/L	-	-	10.1
Sodium (Na)	mg/L	-	-	7.35

Guide Limit #1: T1 - Soil - Res/Park/Inst/Ind/Com/Commu Property Use
Guide Limit #2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Metals - SOIL

			Lab ID	L2579964-1
			Sample Date	16-APR-21
			Sample ID	5625W- 21BH-4/S1
		Guide Limits		
Analyte	**Unit**	**#1**	**#2**	
Antimony (Sb)	ug/g	1.3	7.5	<1.0
Arsenic (As)	ug/g	18	18	3.0
Barium (Ba)	ug/g	220	390	53.8
Beryllium (Be)	ug/g	2.5	4	<0.50
Boron (B)	ug/g	36	120	6.2
Boron (B), Hot Water Ext.	ug/g	36	1.5	0.39
Cadmium (Cd)	ug/g	1.2	1.2	<0.50
Chromium (Cr)	ug/g	70	160	12.1
Cobalt (Co)	ug/g	21	22	2.9
Copper (Cu)	ug/g	92	140	7.2
Lead (Pb)	ug/g	120	120	130
Mercury (Hg)	ug/g	0.27	0.27	0.0180
Molybdenum (Mo)	ug/g	2	6.9	<1.0
Nickel (Ni)	ug/g	82	100	6.2
Selenium (Se)	ug/g	1.5	2.4	<1.0
Silver (Ag)	ug/g	0.5	20	<0.20
Thallium (Tl)	ug/g	1	1	<0.50
Uranium (U)	ug/g	2.5	23	<1.0
Vanadium (V)	ug/g	86	86	24.2
Zinc (Zn)	ug/g	290	340	49.5

Guide Limit #1: T1 - Soil - Res/Park/Inst/Ind/Com/Commu Property Use
Guide Limit #2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Speciated Metals - SOIL

				Lab ID	L2579964-1
				Sample Date	16-APR-21
				Sample ID	5625W- 21BH-4/S1
		Guide Limits			
Analyte	Unit	#1	#2		
Chromium, Hexavalent	ug/g	0.66	8		0.26

Guide Limit #1: T1 - Soil - Res/Park/Inst/Ind/Com/Commu Property Use
Guide Limit #2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

SPLP Metals - WASTE

			Lab ID	L2579964-1
			Sample Date	16-APR-21
			Sample ID	5625W- 21BH-4/S1
		Guide Limits		
Analyte	**Unit**	**#1**	**#2**	
Antimony (Sb)	ug/L	-	-	<5.0
Arsenic (As)	ug/L	-	-	<5.0
Barium (Ba)	ug/L	-	-	<100
Beryllium (Be)	ug/L	-	-	<2.0
Boron (B)	ug/L	-	-	<500
Cadmium (Cd)	ug/L	-	-	<0.10
Chromium (Cr)	ug/L	-	-	<5.0
Cobalt (Co)	ug/L	-	-	<2.0
Copper (Cu)	ug/L	-	-	<10
Lead (Pb)	ug/L	-	-	<2.0
Molybdenum (Mo)	ug/L	-	-	<10
Nickel (Ni)	ug/L	-	-	<20
Selenium (Se)	ug/L	-	-	<1.0
Silver (Ag)	ug/L	-	-	<0.25
Thallium (Tl)	ug/L	-	-	<0.80
Uranium (U)	ug/L	-	-	<15
Vanadium (V)	ug/L	-	-	9.8
Zinc (Zn)	ug/L	-	-	<30

Guide Limit #1: T1 - Soil - Res/Park/Inst/Ind/Com/Commu Property Use
Guide Limit #2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Volatile Organic Compounds - SOIL

			Lab ID	L2579964-1
			Sample Date	16-APR-21
			Sample ID	5625W- 21BH-4/S1
		Guide Limits		
Analyte	**Unit**	**#1**	**#2**	
Benzene	ug/g	0.02	0.02	<0.0068
Ethylbenzene	ug/g	0.05	0.05	<0.018
Toluene	ug/g	0.2	0.2	<0.080
o-Xylene	ug/g	-	-	<0.020
m+p-Xylenes	ug/g	-	-	<0.030
Xylenes (Total)	ug/g	0.05	0.091	<0.050
Surrogate: 4-Bromofluorobenzene	%	-	-	143.9 SURR-ND
Surrogate: 1,4-Difluorobenzene	%	-	-	133.2

Guide Limit #1: T1 - Soil - Res/Park/Inst/Ind/Com/Commu Property Use
Guide Limit #2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Hydrocarbons - SOIL

			Lab ID	L2579964-1
			Sample Date	16-APR-21
			Sample ID	5625W- 21BH-4/S1
		Guide Limits		
Analyte	**Unit**	**#1**	**#2**	
F1 (C6-C10)	ug/g	25	25	<5.0
F1-BTEX	ug/g	25	25	<5.0
F2 (C10-C16)	ug/g	10	10	<10
F2-Naphth	ug/g	-	-	<10
F3 (C16-C34)	ug/g	240	240	84
F3-PAH	ug/g	-	-	84
F4 (C34-C50)	ug/g	120	2800	<50
Total Hydrocarbons (C6-C50)	ug/g	-	-	84
Chrom. to baseline at nC50		-	-	YES
Surrogate: 2-Bromobenzotrifluoride	%	-	-	90.8
Surrogate: 3,4-Dichlorotoluene	%	-	-	113.5

Guide Limit #1: T1 - Soil - Res/Park/Inst/Ind/Com/Commu Property Use
Guide Limit #2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Polycyclic Aromatic Hydrocarbons - SOIL

			Lab ID	L2579964-1
			Sample Date	16-APR-21
			Sample ID	5625W- 21BH-4/S1
		Guide Limits		
Analyte	**Unit**	**#1**	**#2**	
Acenaphthene	ug/g	0.072	2.5	<0.050
Acenaphthylene	ug/g	0.093	0.093	<0.050
Anthracene	ug/g	0.16	0.16	<0.050
Benzo(a)anthracene	ug/g	0.36	0.5	0.058
Benzo(a)pyrene	ug/g	0.3	0.31	<0.050
Benzo(b&j)fluoranthene	ug/g	0.47	3.2	0.072
Benzo(g,h,i)perylene	ug/g	0.68	6.6	<0.050
Benzo(k)fluoranthene	ug/g	0.48	3.1	<0.050
Chrysene	ug/g	2.8	7	0.054
Dibenz(a,h)anthracene	ug/g	0.1	0.57	<0.050
Fluoranthene	ug/g	0.56	0.69	0.119
Fluorene	ug/g	0.12	6.8	<0.050
Indeno(1,2,3-cd)pyrene	ug/g	0.23	0.38	<0.050
1+2-Methylnaphthalenes	ug/g	0.59	0.59	<0.042
1-Methylnaphthalene	ug/g	0.59	0.59	<0.030
2-Methylnaphthalene	ug/g	0.59	0.59	<0.030
Naphthalene	ug/g	0.09	0.2	<0.013
Phenanthrene	ug/g	0.69	6.2	0.083
Pyrene	ug/g	1	28	0.094
Surrogate: 2-Fluorobiphenyl	%	-	-	87.5
Surrogate: d14-Terphenyl	%	-	-	92.4

Guide Limit #1: T1 - Soil - Res/Park/Inst/Ind/Com/Commu Property Use
Guide Limit #2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
SURR-ND	Surrogate recovery marginally exceeded ALS DQO. Reported non-detect results for associated samples were deemed to be unaffected.
LTIS	Limited sample was available for TCLP or SPLP inorganics & semi-volatiles extraction (<100 grams). Extraction fluid volume &/or other elements of the method were scaled down

Reference Information

proportionately to permit analysis. Test results from modified leach procedures may be unsuitable for regulatory purposes.

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
B-HWS-R511-WT	Soil	Boron-HWE-O.Reg 153/04 (July 2011)	HW EXTR, EPA 6010B

A dried solid sample is extracted with calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

BTX-511-HS-WT	Soil	BTEX-O.Reg 153/04 (July 2011)	SW846 8260

BTX is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/MS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

CN-WAD-R511-WT	Soil	Cyanide (WAD)-O.Reg 153/04 (July 2011)	MOE 3015/APHA 4500CN I-WAD

The sample is extracted with a strong base for 16 hours, and then filtered. The filtrate is then distilled where the cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

CR-CR6-IC-WT	Soil	Hexavalent Chromium in Soil	SW846 3060A/7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

EC-WT	Soil	Conductivity (EC)	MOEE E3138

A representative subsample is tumbled with de-ionized (DI) water. The ratio of water to soil is 2:1 v/w. After tumbling the sample is then analyzed by a conductivity meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

F1-F4-511-CALC-WT	Soil	F1-F4 Hydrocarbon Calculated Parameters	CCME CWS-PHC, Pub #1310, Dec 2001-S

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F1-HS-511-WT	Soil	F1-O.Reg 153/04 (July 2011)	E3398/CCME TIER 1-HS

Fraction F1 is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

F2-F4-511-WT	Soil	F2-F4-O.Reg 153/04 (July 2011)	CCME Tier 1

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from soil with 1:1 hexane:acetone using a rotary extractor. Extracts are treated with silica gel to remove polar organic interferences. F2, F3, & F4 are analyzed by GC-FID. F4G-sg is analyzed gravimetrically.

Notes:
1. F2 (C10-C16): Sum of all hydrocarbons that elute between nC10 and nC16.
2. F3 (C16-C34): Sum of all hydrocarbons that elute between nC16 and nC34.
3. F4 (C34-C50): Sum of all hydrocarbons that elute between nC34 and nC50.
4. F4G: Gravimetric Heavy Hydrocarbons
5. F4G-sg: Gravimetric Heavy Hydrocarbons (F4G) after silica gel treatment.
6. Where both F4 (C34-C50) and F4G-sg are reported for a sample, the larger of the two values is used for comparison against the relevant CCME guideline for F4.
7. F4G-sg cannot be added to the C6 to C50 hydrocarbon results to obtain an estimate of total extractable hydrocarbons.
8. This method is validated for use.
9. Data from analysis of validation and quality control samples is available upon request.
10. Reported results are expressed as milligrams per dry kilogram, unless otherwise indicated.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

HG-200.2-CVAA-WT	Soil	Mercury in Soil by CVAAS	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

LEACH-MSPLP-WT	Waste	Modified SPLP Extraction	E9003

A Sample (100g) of soil is leached for 18 +/- 2 hours with 2.0 liters of splp leaching fluid #2 (pH = 5). For the analysis of metals, the leachate is filtered through a 0.45um filter using a metals free filtering system prior to digestion and analysis.

MET-200.2-CCMS-WT	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020B (mod)

Soil/sediment is dried, disaggregated, and sieved (2 mm). For tests intended to support Ontario regulations, the <2mm fraction is ground to pass through a 0.355 mm sieve. Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

MET-SPLP-WT	Waste	SPLP Leachable Metals	EPA 200.8

An extract produced by the Synthetic Precipitation Leaching Procedure (SPLP) as per EPA 1312 or Ontario MECP E9003 is analyzed by Collision/Reaction Cell ICPMS. The extract is filtered through a 0.6 to 0.8 micron glass fibre filter for Method 1312 or through a 0.45um filter for Method E9003.

METHYLNAPS-CALC-WT	Soil	ABN-Calculated Parameters	SW846 8270
MOISTURE-WT	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)
PAH-511-WT	Soil	PAH-O.Reg 153/04 (July 2011)	SW846 3510/8270

A representative sub-sample of soil is fortified with deuterium-labelled surrogates and a mechanical shaking techniqueis used to extract the sample with a mixture of methanol and toluene. The extracts are concentrated and analyzed by GC/MS. Results for benzo(b) fluoranthene may include contributions from benzo(j)fluoranthene, if also present in the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

PH-WT	Soil	pH	MOEE E3137A

A minimum 10g portion of the sample is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil and then analyzed using a pH meter and electrode.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

SAR-R511-WT	Soil	SAR-O.Reg 153/04 (July 2011)	SW846 6010C

A dried, disaggregated solid sample is extracted with deionized water, the aqueous extract is separated from the solid, acidified and then analyzed using a ICP/OES. The concentrations of Na, Ca and Mg are reported as per CALA requirements for calculated parameters. These individual parameters are not for comparison to any guideline.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

XYLENES-SUM-CALC-WT	Soil	Sum of Xylene Isomer Concentrations	CALCULATION

Total xylenes represents the sum of o-xylene and m&p-xylene.

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Reference Information

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Quality Control Report

Workorder: L2579964 Report Date: 17-MAY-21

Client: TORONTO INSPECTION
110 KONRAD CRESCENT #16
MARKHAM ON L3R 9X1

Contact: Andrew Wood

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
B-HWS-R511-WT	**Soil**							
Batch R5445879								
WG3527727-4 DUP		**L2580237-1**						
Boron (B), Hot Water Ext.		<0.10	<0.10	RPD-NA	ug/g	N/A	30	03-MAY-21
WG3527727-2 IRM		**WT SAR4**						
Boron (B), Hot Water Ext.			100.3		%		70-130	03-MAY-21
WG3527727-3 LCS								
Boron (B), Hot Water Ext.			105.0		%		70-130	03-MAY-21
WG3527727-1 MB								
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	03-MAY-21
BTX-511-HS-WT	**Soil**							
Batch R5443520								
WG3524502-4 DUP		**WG3524502-3**						
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	30-APR-21
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	30-APR-21
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	30-APR-21
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	30-APR-21
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	30-APR-21
WG3524502-2 LCS								
Benzene			105.5		%		70-130	30-APR-21
Ethylbenzene			104.1		%		70-130	30-APR-21
m+p-Xylenes			103.5		%		70-130	30-APR-21
o-Xylene			104.2		%		70-130	30-APR-21
Toluene			98.2		%		70-130	30-APR-21
WG3524502-1 MB								
Benzene			<0.0068		ug/g		0.0068	30-APR-21
Ethylbenzene			<0.018		ug/g		0.018	30-APR-21
m+p-Xylenes			<0.030		ug/g		0.03	30-APR-21
o-Xylene			<0.020		ug/g		0.02	30-APR-21
Toluene			<0.080		ug/g		0.08	30-APR-21
Surrogate: 1,4-Difluorobenzene			124.8		%		50-140	30-APR-21
Surrogate: 4-Bromofluorobenzene			128.4		%		50-140	30-APR-21
WG3524502-5 MS		**WG3524502-3**						
Benzene			125.0		%		60-140	30-APR-21
Ethylbenzene			115.5		%		60-140	30-APR-21
m+p-Xylenes			118.3		%		60-140	30-APR-21
o-Xylene			116.0		%		60-140	30-APR-21
Toluene			112.4		%		60-140	30-APR-21

Quality Control Report

Workorder: L2579964 Report Date: 17-MAY-21

Client: TORONTO INSPECTION
110 KONRAD CRESCENT #16
MARKHAM ON L3R 9X1

Contact: Andrew Wood

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CN-WAD-R511-WT	**Soil**							
Batch R5443864								
WG3525734-3 DUP		**L2580253-1**						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	30-APR-21
WG3525734-2 LCS								
Cyanide, Weak Acid Diss			91.4		%		80-120	30-APR-21
WG3525734-1 MB								
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	30-APR-21
WG3525734-4 MS		**L2580253-1**						
Cyanide, Weak Acid Diss			100.4		%		70-130	30-APR-21
CR-CR6-IC-WT	**Soil**							
Batch R5445757								
WG3525692-4 CRM		**WT-SQC012**						
Chromium, Hexavalent			101.3		%		70-130	03-MAY-21
WG3525692-3 DUP		**L2580253-1**						
Chromium, Hexavalent		<0.20	<0.20	RPD-NA	ug/g	N/A	35	03-MAY-21
WG3525692-2 LCS								
Chromium, Hexavalent			90.3		%		80-120	03-MAY-21
WG3525692-1 MB								
Chromium, Hexavalent			<0.20		ug/g		0.2	03-MAY-21
EC-WT	**Soil**							
Batch R5446357								
WG3527315-4 DUP		**WG3527315-3**						
Conductivity		0.278	0.272		mS/cm	2.2	20	03-MAY-21
WG3527315-2 IRM		**WT SAR4**						
Conductivity			111.7		%		70-130	03-MAY-21
WG3527888-1 LCS								
Conductivity			104.6		%		90-110	03-MAY-21
WG3527315-1 MB								
Conductivity			<0.0040		mS/cm		0.004	03-MAY-21
F1-HS-511-WT	**Soil**							
Batch R5443520								
WG3524502-4 DUP		**WG3524502-3**						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	30-APR-21
WG3524502-2 LCS								
F1 (C6-C10)			90.5		%		80-120	30-APR-21
WG3524502-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	30-APR-21
Surrogate: 3,4-Dichlorotoluene			123.0		%		60-140	30-APR-21

Quality Control Report

Workorder: L2579964 Report Date: 17-MAY-21

Client: TORONTO INSPECTION
110 KONRAD CRESCENT #16
MARKHAM ON L3R 9X1

Contact: Andrew Wood

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT	**Soil**							
Batch R5443520								
WG3524502-5	**MS**	**WG3524502-3**						
F1 (C6-C10)			92.4		%		60-140	30-APR-21
F2-F4-511-WT	**Soil**							
Batch R5443594								
WG3524577-3	**DUP**	**WG3524577-5**						
F2 (C10-C16)		<20	<10	RPD-NA	ug/g	N/A	30	30-APR-21
F3 (C16-C34)		360	105	DUP-H,J	ug/g	256	200	30-APR-21
F4 (C34-C50)		560	309	DUP-H,J	ug/g	252	200	30-APR-21
WG3524577-2	**LCS**							
F2 (C10-C16)			102.7		%		80-120	30-APR-21
F3 (C16-C34)			104.7		%		80-120	30-APR-21
F4 (C34-C50)			99.9		%		80-120	30-APR-21
WG3524577-1	**MB**							
F2 (C10-C16)			<10		ug/g		10	30-APR-21
F3 (C16-C34)			<50		ug/g		50	30-APR-21
F4 (C34-C50)			<50		ug/g		50	30-APR-21
Surrogate: 2-Bromobenzotrifluoride			105.6		%		60-140	30-APR-21
WG3524577-4	**MS**	**WG3524577-5**						
F2 (C10-C16)			99.2		%		60-140	30-APR-21
F3 (C16-C34)			67.4		%		60-140	30-APR-21
F4 (C34-C50)			59.6	E	%		60-140	30-APR-21
HG-200.2-CVAA-WT	**Soil**							
Batch R5444896								
WG3527194-2	**CRM**	**WT-SS-2**						
Mercury (Hg)			94.2		%		70-130	03-MAY-21
WG3527194-6	**DUP**	**WG3527194-5**						
Mercury (Hg)		<0.0050	<0.0050	RPD-NA	ug/g	N/A	40	03-MAY-21
WG3527194-3	**LCS**							
Mercury (Hg)			96.0		%		80-120	03-MAY-21
WG3527194-1	**MB**							
Mercury (Hg)			<0.0050		mg/kg		0.005	03-MAY-21
MET-200.2-CCMS-WT	**Soil**							

Quality Control Report

Workorder: L2579964 Report Date: 17-MAY-21

Client: TORONTO INSPECTION
110 KONRAD CRESCENT #16
MARKHAM ON L3R 9X1

Contact: Andrew Wood

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R5447324								
WG3527194-2 CRM		**WT-SS-2**						
Antimony (Sb)			98.7		%		70-130	03-MAY-21
Arsenic (As)			106.3		%		70-130	03-MAY-21
Barium (Ba)			111.3		%		70-130	03-MAY-21
Beryllium (Be)			107.0		%		70-130	03-MAY-21
Boron (B)			9.7		mg/kg		3.5-13.5	03-MAY-21
Cadmium (Cd)			110.8		%		70-130	03-MAY-21
Chromium (Cr)			102.6		%		70-130	03-MAY-21
Cobalt (Co)			103.8		%		70-130	03-MAY-21
Copper (Cu)			104.8		%		70-130	03-MAY-21
Lead (Pb)			107.5		%		70-130	03-MAY-21
Molybdenum (Mo)			108.0		%		70-130	03-MAY-21
Nickel (Ni)			105.0		%		70-130	03-MAY-21
Selenium (Se)			0.14		mg/kg		0-0.34	03-MAY-21
Silver (Ag)			97.4		%		70-130	03-MAY-21
Thallium (Tl)			0.074		mg/kg		0.029-0.129	03-MAY-21
Uranium (U)			106.6		%		70-130	03-MAY-21
Vanadium (V)			106.5		%		70-130	03-MAY-21
Zinc (Zn)			98.6		%		70-130	03-MAY-21
WG3527194-6 DUP		**WG3527194-5**						
Antimony (Sb)		<0.10	<0.10	RPD-NA	ug/g	N/A	30	03-MAY-21
Arsenic (As)		1.47	1.56		ug/g	5.7	30	03-MAY-21
Barium (Ba)		32.7	33.0		ug/g	0.7	40	03-MAY-21
Beryllium (Be)		0.21	0.22		ug/g	4.8	30	03-MAY-21
Boron (B)		<5.0	5.1	RPD-NA	ug/g	N/A	30	03-MAY-21
Cadmium (Cd)		0.043	0.041		ug/g	4.6	30	03-MAY-21
Chromium (Cr)		9.62	9.58		ug/g	0.4	30	03-MAY-21
Cobalt (Co)		3.15	3.10		ug/g	1.3	30	03-MAY-21
Copper (Cu)		6.56	6.67		ug/g	1.7	30	03-MAY-21
Lead (Pb)		3.94	4.31		ug/g	8.9	40	03-MAY-21
Molybdenum (Mo)		0.40	0.39		ug/g	2.7	40	03-MAY-21
Nickel (Ni)		6.36	6.43		ug/g	1.1	30	03-MAY-21
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	03-MAY-21
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	03-MAY-21

Quality Control Report

Workorder: L2579964 Report Date: 17-MAY-21

Client: TORONTO INSPECTION
110 KONRAD CRESCENT #16
MARKHAM ON L3R 9X1

Contact: Andrew Wood

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R5447324								
WG3527194-6 DUP		**WG3527194-5**						
Thallium (Tl)		0.051	0.052		ug/g	1.3	30	03-MAY-21
Uranium (U)		0.511	0.477		ug/g	6.9	30	03-MAY-21
Vanadium (V)		19.3	19.1		ug/g	0.8	30	03-MAY-21
Zinc (Zn)		15.4	14.7		ug/g	4.5	30	03-MAY-21
WG3527194-4 LCS								
Antimony (Sb)			100.1		%		80-120	03-MAY-21
Arsenic (As)			108.2		%		80-120	03-MAY-21
Barium (Ba)			110.0		%		80-120	03-MAY-21
Beryllium (Be)			106.1		%		80-120	03-MAY-21
Boron (B)			103.2		%		80-120	03-MAY-21
Cadmium (Cd)			100.4		%		80-120	03-MAY-21
Chromium (Cr)			101.8		%		80-120	03-MAY-21
Cobalt (Co)			102.2		%		80-120	03-MAY-21
Copper (Cu)			99.0		%		80-120	03-MAY-21
Lead (Pb)			100.0		%		80-120	03-MAY-21
Molybdenum (Mo)			103.9		%		80-120	03-MAY-21
Nickel (Ni)			99.7		%		80-120	03-MAY-21
Selenium (Se)			104.3		%		80-120	03-MAY-21
Silver (Ag)			96.4		%		80-120	03-MAY-21
Thallium (Tl)			97.6		%		80-120	03-MAY-21
Uranium (U)			96.4		%		80-120	03-MAY-21
Vanadium (V)			106.7		%		80-120	03-MAY-21
Zinc (Zn)			96.5		%		80-120	03-MAY-21
WG3527194-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	03-MAY-21
Arsenic (As)			<0.10		mg/kg		0.1	03-MAY-21
Barium (Ba)			<0.50		mg/kg		0.5	03-MAY-21
Beryllium (Be)			<0.10		mg/kg		0.1	03-MAY-21
Boron (B)			<5.0		mg/kg		5	03-MAY-21
Cadmium (Cd)			<0.020		mg/kg		0.02	03-MAY-21
Chromium (Cr)			<0.50		mg/kg		0.5	03-MAY-21
Cobalt (Co)			<0.10		mg/kg		0.1	03-MAY-21
Copper (Cu)			<0.50		mg/kg		0.5	03-MAY-21
Lead (Pb)			<0.50		mg/kg		0.5	03-MAY-21

Quality Control Report

Workorder: L2579964 Report Date: 17-MAY-21

Client: TORONTO INSPECTION
110 KONRAD CRESCENT #16
MARKHAM ON L3R 9X1

Contact: Andrew Wood

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R5447324								
WG3527194-1 MB								
Molybdenum (Mo)			<0.10		mg/kg		0.1	03-MAY-21
Nickel (Ni)			<0.50		mg/kg		0.5	03-MAY-21
Selenium (Se)			<0.20		mg/kg		0.2	03-MAY-21
Silver (Ag)			<0.10		mg/kg		0.1	03-MAY-21
Thallium (Tl)			<0.050		mg/kg		0.05	03-MAY-21
Uranium (U)			<0.050		mg/kg		0.05	03-MAY-21
Vanadium (V)			<0.20		mg/kg		0.2	03-MAY-21
Zinc (Zn)			<2.0		mg/kg		2	03-MAY-21
MOISTURE-WT	**Soil**							
Batch R5442440								
WG3525250-3 DUP		**L2577763-2**						
% Moisture		20.0	17.4		%	14	20	28-APR-21
WG3525250-2 LCS								
% Moisture			98.5		%		90-110	28-APR-21
WG3525250-1 MB								
% Moisture			<0.25		%		0.25	28-APR-21
PAH-511-WT	**Soil**							
Batch R5443425								
WG3524918-3 DUP		**WG3524918-5**						
1-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	29-APR-21
2-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	29-APR-21
Acenaphthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	29-APR-21
Acenaphthylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	29-APR-21
Anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	29-APR-21
Benzo(a)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	29-APR-21
Benzo(a)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	29-APR-21
Benzo(b&j)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	29-APR-21
Benzo(g,h,i)perylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	29-APR-21
Benzo(k)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	29-APR-21
Chrysene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	29-APR-21
Dibenz(a,h)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	29-APR-21
Fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	29-APR-21
Fluorene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	29-APR-21
Indeno(1,2,3-cd)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	29-APR-21

Quality Control Report

Workorder: L2579964 Report Date: 17-MAY-21

Client: TORONTO INSPECTION
110 KONRAD CRESCENT #16
MARKHAM ON L3R 9X1

Contact: Andrew Wood

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R5443425								
WG3524918-3 DUP		**WG3524918-5**						
Naphthalene		<0.013	<0.013	RPD-NA	ug/g	N/A	40	29-APR-21
Phenanthrene		<0.046	<0.046	RPD-NA	ug/g	N/A	40	29-APR-21
Pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	29-APR-21
WG3524918-2 LCS								
1-Methylnaphthalene			94.0		%		50-140	29-APR-21
2-Methylnaphthalene			91.6		%		50-140	29-APR-21
Acenaphthene			89.8		%		50-140	29-APR-21
Acenaphthylene			86.4		%		50-140	29-APR-21
Anthracene			76.0		%		50-140	29-APR-21
Benzo(a)anthracene			90.6		%		50-140	29-APR-21
Benzo(a)pyrene			77.1		%		50-140	29-APR-21
Benzo(b&j)fluoranthene			84.4		%		50-140	29-APR-21
Benzo(g,h,i)perylene			89.7		%		50-140	29-APR-21
Benzo(k)fluoranthene			84.1		%		50-140	29-APR-21
Chrysene			88.1		%		50-140	29-APR-21
Dibenz(a,h)anthracene			88.2		%		50-140	29-APR-21
Fluoranthene			86.9		%		50-140	29-APR-21
Fluorene			89.0		%		50-140	29-APR-21
Indeno(1,2,3-cd)pyrene			80.9		%		50-140	29-APR-21
Naphthalene			87.7		%		50-140	29-APR-21
Phenanthrene			89.1		%		50-140	29-APR-21
Pyrene			85.8		%		50-140	29-APR-21
WG3524918-1 MB								
1-Methylnaphthalene			<0.030		ug/g		0.03	29-APR-21
2-Methylnaphthalene			<0.030		ug/g		0.03	29-APR-21
Acenaphthene			<0.050		ug/g		0.05	29-APR-21
Acenaphthylene			<0.050		ug/g		0.05	29-APR-21
Anthracene			<0.050		ug/g		0.05	29-APR-21
Benzo(a)anthracene			<0.050		ug/g		0.05	29-APR-21
Benzo(a)pyrene			<0.050		ug/g		0.05	29-APR-21
Benzo(b&j)fluoranthene			<0.050		ug/g		0.05	29-APR-21
Benzo(g,h,i)perylene			<0.050		ug/g		0.05	29-APR-21
Benzo(k)fluoranthene			<0.050		ug/g		0.05	29-APR-21
Chrysene			<0.050		ug/g		0.05	29-APR-21

Quality Control Report

Workorder: L2579964 Report Date: 17-MAY-21

Client: TORONTO INSPECTION
110 KONRAD CRESCENT #16
MARKHAM ON L3R 9X1

Contact: Andrew Wood

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R5443425								
WG3524918-1 MB								
Dibenz(a,h)anthracene			<0.050		ug/g		0.05	29-APR-21
Fluoranthene			<0.050		ug/g		0.05	29-APR-21
Fluorene			<0.050		ug/g		0.05	29-APR-21
Indeno(1,2,3-cd)pyrene			<0.050		ug/g		0.05	29-APR-21
Naphthalene			<0.013		ug/g		0.013	29-APR-21
Phenanthrene			<0.046		ug/g		0.046	29-APR-21
Pyrene			<0.050		ug/g		0.05	29-APR-21
Surrogate: 2-Fluorobiphenyl			87.7		%		50-140	29-APR-21
Surrogate: d14-Terphenyl			86.0		%		50-140	29-APR-21
WG3524918-4 MS		**WG3524918-5**						
1-Methylnaphthalene			97.1		%		50-140	29-APR-21
2-Methylnaphthalene			94.5		%		50-140	29-APR-21
Acenaphthene			93.5		%		50-140	29-APR-21
Acenaphthylene			90.3		%		50-140	29-APR-21
Anthracene			82.1		%		50-140	29-APR-21
Benzo(a)anthracene			97.1		%		50-140	29-APR-21
Benzo(a)pyrene			81.1		%		50-140	29-APR-21
Benzo(b&j)fluoranthene			88.7		%		50-140	29-APR-21
Benzo(g,h,i)perylene			92.9		%		50-140	29-APR-21
Benzo(k)fluoranthene			88.5		%		50-140	29-APR-21
Chrysene			90.7		%		50-140	29-APR-21
Dibenz(a,h)anthracene			91.0		%		50-140	29-APR-21
Fluoranthene			91.3		%		50-140	29-APR-21
Fluorene			93.2		%		50-140	29-APR-21
Indeno(1,2,3-cd)pyrene			92.0		%		50-140	29-APR-21
Naphthalene			90.1		%		50-140	29-APR-21
Phenanthrene			92.1		%		50-140	29-APR-21
Pyrene			90.1		%		50-140	29-APR-21
PH-WT	**Soil**							
Batch R5443337								
WG3524620-1 DUP		**L2579995-1**						
pH		7.36	7.40	J	pH units	0.04	0.3	29-APR-21
WG3526279-1 LCS								
pH			7.01		pH units		6.9-7.1	29-APR-21

Quality Control Report

Workorder: L2579964 Report Date: 17-MAY-21

Client: TORONTO INSPECTION
110 KONRAD CRESCENT #16
MARKHAM ON L3R 9X1

Contact: Andrew Wood

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SAR-R511-WT	**Soil**							
Batch R5446516								
WG3527315-4 DUP		**WG3527315-3**						
Calcium (Ca)		22.8	21.7		mg/L	4.9	30	03-MAY-21
Sodium (Na)		6.29	6.18		mg/L	1.8	30	03-MAY-21
Magnesium (Mg)		14.2	13.6		mg/L	4.3	30	03-MAY-21
WG3527315-2 IRM		**WT SAR4**						
Calcium (Ca)			116.2		%		70-130	03-MAY-21
Sodium (Na)			97.0		%		70-130	03-MAY-21
Magnesium (Mg)			113.7		%		70-130	03-MAY-21
WG3527315-5 LCS								
Calcium (Ca)			108.3		%		80-120	03-MAY-21
Sodium (Na)			101.8		%		80-120	03-MAY-21
Magnesium (Mg)			103.6		%		80-120	03-MAY-21
WG3527315-1 MB								
Calcium (Ca)			<0.50		mg/L		0.5	03-MAY-21
Sodium (Na)			<0.50		mg/L		0.5	03-MAY-21
Magnesium (Mg)			<0.50		mg/L		0.5	03-MAY-21
MET-SPLP-WT	**Waste**							
Batch R5458020								
WG3534815-4 DUP		**WG3534815-3**						
Antimony (Sb)		<5.0	<5.0	RPD-NA	ug/L	N/A	25	14-MAY-21
Arsenic (As)		<5.0	<5.0	RPD-NA	ug/L	N/A	25	14-MAY-21
Barium (Ba)		180	180		ug/L	1.2	25	14-MAY-21
Beryllium (Be)		<2.0	<2.0	RPD-NA	ug/L	N/A	25	14-MAY-21
Boron (B)		<500	<500	RPD-NA	ug/L	N/A	25	14-MAY-21
Cadmium (Cd)		<0.10	<0.10	RPD-NA	ug/L	N/A	25	14-MAY-21
Chromium (Cr)		<5.0	<5.0	RPD-NA	ug/L	N/A	25	14-MAY-21
Cobalt (Co)		<2.0	<2.0	RPD-NA	ug/L	N/A	25	14-MAY-21
Copper (Cu)		<10	<10	RPD-NA	ug/L	N/A	25	14-MAY-21
Lead (Pb)		<2.0	<2.0	RPD-NA	ug/L	N/A	25	14-MAY-21
Molybdenum (Mo)		<10	<10	RPD-NA	ug/L	N/A	25	14-MAY-21
Nickel (Ni)		<20	<20	RPD-NA	ug/L	N/A	25	14-MAY-21
Selenium (Se)		<1.0	<1.0	RPD-NA	ug/L	N/A	25	14-MAY-21
Silver (Ag)		<0.25	<0.25	RPD-NA	ug/L	N/A	25	14-MAY-21
Thallium (Tl)		<0.80	<0.80	RPD-NA	ug/L	N/A	25	14-MAY-21
Uranium (U)		<15	<15	RPD-NA	ug/L	N/A	25	14-MAY-21

Quality Control Report

Workorder: L2579964 Report Date: 17-MAY-21

Client: TORONTO INSPECTION
110 KONRAD CRESCENT #16
MARKHAM ON L3R 9X1

Contact: Andrew Wood

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-SPLP-WT	**Waste**							
Batch R5458020								
WG3534815-4 DUP		**WG3534815-3**						
Vanadium (V)		6.8	6.6		ug/L	4.0	25	14-MAY-21
Zinc (Zn)		<30	<30	RPD-NA	ug/L	N/A	25	14-MAY-21
WG3534815-2 LCS								
Antimony (Sb)			103.2		%		70-130	14-MAY-21
Arsenic (As)			101.7		%		70-130	14-MAY-21
Barium (Ba)			111.2		%		70-130	14-MAY-21
Beryllium (Be)			102.6		%		70-130	14-MAY-21
Boron (B)			95.9		%		70-130	14-MAY-21
Cadmium (Cd)			99.1		%		70-130	14-MAY-21
Chromium (Cr)			97.9		%		70-130	14-MAY-21
Cobalt (Co)			100.5		%		70-130	14-MAY-21
Copper (Cu)			94.9		%		70-130	14-MAY-21
Lead (Pb)			101.2		%		70-130	14-MAY-21
Molybdenum (Mo)			103.8		%		70-130	14-MAY-21
Nickel (Ni)			96.5		%		70-130	14-MAY-21
Selenium (Se)			95.6		%		70-130	14-MAY-21
Silver (Ag)			107.5		%		70-130	14-MAY-21
Thallium (Tl)			100.8		%		70-130	14-MAY-21
Uranium (U)			99.6		%		70-130	14-MAY-21
Vanadium (V)			101.3		%		70-130	14-MAY-21
Zinc (Zn)			96.1		%		70-130	14-MAY-21
WG3534815-1 MB								
Antimony (Sb)			<5.0		ug/L		5	14-MAY-21
Arsenic (As)			<5.0		ug/L		5	14-MAY-21
Barium (Ba)			<100		ug/L		100	14-MAY-21
Beryllium (Be)			<2.0		ug/L		2	14-MAY-21
Boron (B)			<500		ug/L		500	14-MAY-21
Cadmium (Cd)			<0.10		ug/L		0.1	14-MAY-21
Chromium (Cr)			<5.0		ug/L		5	14-MAY-21
Cobalt (Co)			<2.0		ug/L		2	14-MAY-21
Copper (Cu)			<10		ug/L		10	14-MAY-21
Lead (Pb)			<2.0		ug/L		2	14-MAY-21
Molybdenum (Mo)			<10		ug/L		10	14-MAY-21
Nickel (Ni)			<20		ug/L		20	14-MAY-21

Quality Control Report

Workorder: L2579964 Report Date: 17-MAY-21

Client: TORONTO INSPECTION
110 KONRAD CRESCENT #16
MARKHAM ON L3R 9X1

Contact: Andrew Wood

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-SPLP-WT	**Waste**							
Batch R5458020								
WG3534815-1 MB								
Selenium (Se)			<1.0		ug/L		1	14-MAY-21
Silver (Ag)			<0.25		ug/L		0.25	14-MAY-21
Thallium (Tl)			<0.80		ug/L		0.8	14-MAY-21
Uranium (U)			<15		ug/L		15	14-MAY-21
Vanadium (V)			<5.0		ug/L		5	14-MAY-21
Zinc (Zn)			<30		ug/L		30	14-MAY-21
WG3534815-5 MS		**WG3534815-3**						
Antimony (Sb)			113.2		%		50-140	14-MAY-21
Arsenic (As)			110.7		%		50-140	14-MAY-21
Barium (Ba)			111.3		%		50-140	14-MAY-21
Beryllium (Be)			112.4		%		50-140	14-MAY-21
Boron (B)			101.5		%		50-140	14-MAY-21
Cadmium (Cd)			107.8		%		50-140	14-MAY-21
Chromium (Cr)			106.5		%		50-140	14-MAY-21
Cobalt (Co)			108.6		%		50-140	14-MAY-21
Copper (Cu)			103.3		%		50-140	14-MAY-21
Lead (Pb)			113.3		%		50-140	14-MAY-21
Molybdenum (Mo)			114.4		%		50-140	14-MAY-21
Nickel (Ni)			104.4		%		50-140	14-MAY-21
Selenium (Se)			109.1		%		50-140	14-MAY-21
Silver (Ag)			135.6		%		50-140	14-MAY-21
Thallium (Tl)			108.5		%		50-140	14-MAY-21
Uranium (U)			107.0		%		70-130	14-MAY-21
Vanadium (V)			109.1		%		50-140	14-MAY-21
Zinc (Zn)			105.2		%		50-140	14-MAY-21

Quality Control Report

Workorder: L2579964 Report Date: 17-MAY-21

Client: TORONTO INSPECTION
110 KONRAD CRESCENT #16
MARKHAM ON L3R 9X1
Contact: Andrew Wood

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
DUP-H,J	Duplicate results outside ALS DQO, due to sample heterogeneity. Duplicate results and limits are expressed in terms of absolute difference.
E	Matrix Spike recovery outside ALS DQO due to heterogeneous analyte background in sample.
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

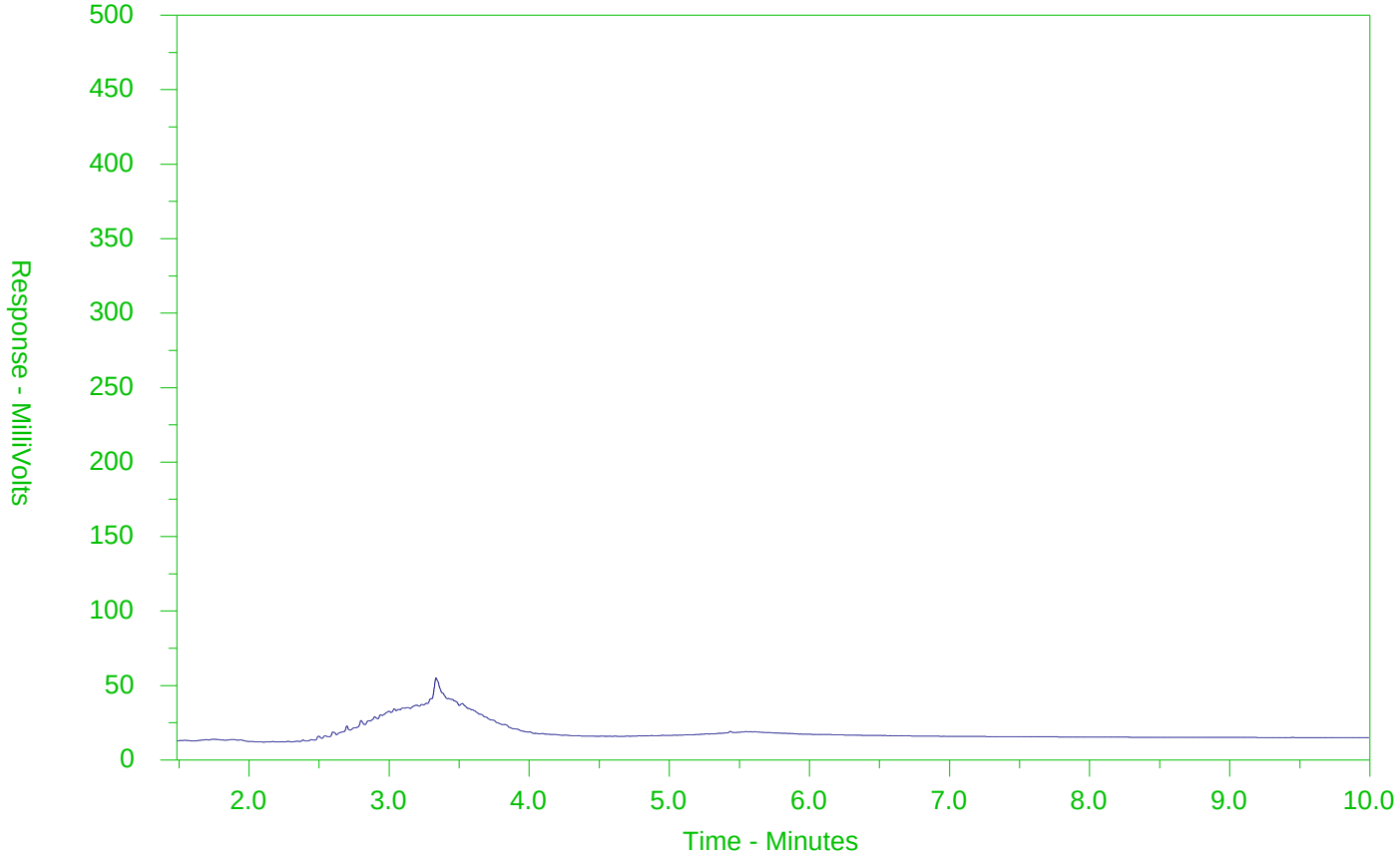
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2579964-1
Client Sample ID: 5625W- 21BH-4/S1



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →		← Motor Oils/Lube Oils/Grease →	
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

ALS www.alsglobal.com

Chain of Custody (COC) / A

Canada Toll Free: 1

L2579964-COFC

C Number: 20 - 891009

Page 1 of 1

Report To	Contact and company name below will appear on the final report	Reports / Recipients	Turnaround Time (TAT) Requested
Company:	TORONTO INSPECTION LTD	Select Report Format: ☑ PDF ☐ EXCEL ☐ EDD (DIGITAL)	☑ Routine [R] if received by 3pm M-F - no surcharges apply
Contact:	Andrew	Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
Phone:	905-604-8911	☐ Compare Results to Criteria on Report - provide details below if box checked	☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
Company address below will appear on the final report		Select Distribution: ☐ EMAIL ☐ MAIL ☐ FAX	☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
Street:	110 Konrad Crescent U-16	Email 1 or Fax	☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
City/Province:	Markham ON	Email 2 andrew@tilvan.com	☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests
Postal Code:	L3R 9X2	Email 3 rick@tilvan.com	Date and Time Required for all E&P TATs:
Invoice To	Same as Report To ☑ YES ☐ NO	Invoice Recipients	For all tests with rush TATs requested, please contact your AM to confirm availability.
	Copy of Invoice with Report ☐ YES ☐ NO	Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX	
Company:		Email 1 or Fax	
Contact:		Email 2	

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#
Job #:		Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:	65 Grace St. Toronto	Location:	
ALS Lab Work Order # (ALS use only):	L2579964	ALS Contact:	Sampler:

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Metals & Hexavalent Cr	PHC F-PCB, BTEX	PAHs	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	TP25W-21BH-1/S1	16/04/21	pm	Soil	4	✓	✓	✓			

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	O/Reg 406/19
Are samples for human consumption/ use? ☐ YES ☐ NO	

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			6.1		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by:	Date: 23/04/21	Time:	Received by:	Date:	Time:	Received by:	Date: APR 23/21	Time: 7:10

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

AUG 2020 FORM