

Geotechnical  
Engineering

Environmental  
Engineering

Hydrogeology

Geological  
Engineering

Materials Testing

Building Science

Archaeological Services

## Hydrogeological Assessment

Proposed Residential Development  
3640 Greenbank Road  
Ottawa, Ontario

Prepared For

Tamarack (Nepean) Corporation

April 30, 2018

Report PG3443-2

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## **1.0 INTRODUCTION**

Paterson Group (Paterson) was commissioned by Tamarack (Nepean) Corporation to prepare a hydrogeological assessment for Phases 3 to 5 of the proposed residential development to be located at 3640 Greenbank Road in Ottawa, Ontario (refer to Figure 1 - Key Plan within Appendix 1).

Subsurface information was obtained from the geotechnical investigation carried out to determine the subsoil and groundwater conditions at the site by means of test holes.

The following report has been prepared specifically and solely for the aforementioned project which is described herein. It contains the investigation findings and includes hydrogeological assessments pertaining to the proposed program as understood at the time of writing this report.

### **1.1 Proposed Project**

It is our understanding that Phases 3 to 5 of the proposed residential development, to be located on the west side of Greenbank Road and east of Borrisokane Road, consists of the municipal address 3640 Greenbank Road.

The subject site consists of an approximate 47 hectare undeveloped property consisting of former agricultural field land, active construction sites and forested areas. The majority of the property is relatively flat, with the exception of part of Phase 5 which rises to a ridge approximately 5 to 7 m above the grade of the surrounding areas. It is bordered to the north by residential buildings, forested areas and Cambrian Road, to the east by residential buildings, to the south by residential buildings, forested areas and a sand pit and to the west by forested areas and Borrisokane Road.



## **2.0 SITE CONDITIONS**

### **Physical Setting**

As previously noted, the subject site is located on the west side of Greenbank Road and the east side of Borrisokane Road and contains a mixture of former agricultural land, active construction sites and densely treed areas. Site topography is generally flat with the exception of Phase 5, with average elevations of 95 m above sea level (asl) along the eastern and western portions of the property and average elevations of 100 m asl along the central portion. The general drainage direction is expected to vary locally but travel regionally in a southwest to northeast direction, following topographic trends. There were no named water bodies known to exist on the subject site.

According to available mapping, the subject site is located in the Ottawa Valley Clay Plains physiographic region, which is characterized by relatively flat clay plains interrupted by rock ridges. While the site is relatively flat, several physiographic landforms are present including an esker, till plains and clay plains, all of which were encountered during the various field programs conducted as part of the geotechnical investigations.

## **2.1 Geology**

### **Surficial Geology**

The field programs for the geotechnical investigations were carried out over an extended period of time for the various phases of the project, with the earliest work being completed in April 2004 and the most recent being completed in February 2018. Over the course of the various field programs, total of 18 boreholes and 34 test pits were advanced to a maximum depth of 11.3 m. The test hole locations were distributed in a manner to provide general coverage of the subject site. The approximate locations of the test holes are shown on Drawings PG4242-1, PG3786-1 and PG0214-4 - Test Hole Location Plans included in Appendix 2.

Overburden soils identified during the geotechnical field investigation were generally consistent with available mapping for the area. Within Phase 3 of the proposed development, the overburden generally consisted of topsoil overlying a thin layer of brown silty clay, which was underlain by glacial till comprised of a silty sand/silty clay matrix with gravel, cobbles and boulders.

Within Phase 4 of the proposed development, the overburden materials were variable but generally consisted of topsoil overlying a deposit of silty sand, which was underlain

by a layer of brown silty clay becoming grey with depth. This was further underlain by glacial till comprised of a silty sand/silty clay matrix with gravel, cobbles and boulders.

The overburden materials within Phase 5 of the proposed development were variable but generally consisted of topsoil overlying a deposit of silty sand. This was either underlain by a layer of silty clay or a glacial till deposit comprised of a silty sand/silty clay matrix with gravel, cobbles and boulders.

Specific details of the soil profile at each test hole location are presented on the Soil Profile and Test Data sheets included in Appendix 2.

### **Bedrock**

Based on available geological mapping, the subject site is located in an area where the bedrock consists of dolomite of the Oxford formation, with an estimated overburden thickness ranging from 10 to 25 m.

### **Karst Features**

The term “karst” refers to a geologic formation characterized by the dissolution of carbonate bedrock, such as limestone or dolostone. In order for karstification to occur, precipitation must be allowed to infiltrate the top of the bedrock to dissolutionally enlarge previously existing joints and bedding planes. Given the depth of surficial soils overlying the dolomite bedrock that are non-conductive to groundwater infiltration, it is highly unlikely that karstification is occurring.

## **2.2 Hydrogeology**

### **Existing Aquifer Systems**

Aquifer systems may be defined as geological media, either overburden soils or fractured bedrock, which permit the movement of groundwater under hydraulic gradients. Although groundwater has been observed within the overburden soils, the composition of materials throughout the majority of the site does not allow for the development of significant water supply wells, with the only exception to this being wells that are installed within the esker located south of the site. However, despite the presence of the esker, water supply wells in the vicinity of the study area are generally found to be accessing bedrock aquifers.

Bedrock aquifer mapping, provided by Natural Resources Canada Urban Geology of the National Capital Region mapping, was reviewed as part of this assessment. Using

this tool, the Oxford formation aquifer system was identified as the only bedrock water supply aquifer system in the vicinity of the study area.

The Oxford formation aquifer system is present throughout the study area. While there are no wells extending into this aquifer on the subject site, wells completed within this formation located in proximity to the site reported encountering water-bearing fractures at depths typically ranging from 25 to 35 m bgs.

### **Groundwater Levels**

Groundwater was observed in the piezometers/monitoring wells installed in the overburden at the borehole locations and was also observed in the field during the excavation of the test pits. Based on a review of water well records, groundwater is also present in the bedrock at depth.

Groundwater levels in the overburden at the subject site were observed to vary from 0.1 to 3.2 m bgs at the time of the geotechnical field investigations. It should be noted that groundwater levels may have been influenced by surface water infiltrating the backfilled boreholes. Subsequent groundwater level readings within the piezometers can be also influenced by perched water in the backfill material within the borehole. Groundwater levels are also influenced by seasonal variations in temperature and precipitation. As such, long-term groundwater levels are also estimated based on other factors such as colour and consistency of the recovered soil samples. Based on these observations, the long-term groundwater level at the subject site is expected to range from approximately 0.5 to 2.0 m bgs, with water levels expected to be higher within Phase 4 of the proposed development and slightly lower within Phases 3 and 5.

### **Hydraulic Gradients**

Vertical hydraulic gradients were not measured at the subject site as the previous studies completed did not warrant the installation of monitoring well nests.

With respect to horizontal hydraulic gradients, due to the nature of the water levels obtained from field work conducted at the site (piezometers and groundwater monitoring wells), the absolute direction of horizontal hydraulic gradients was not determined. However, using the available data, it was possible to approximate the horizontal hydraulic gradients in the overburden material given that the horizontal hydraulic gradient between any 2 points is the slope of the hydraulic head between those points:

$$i = (h_2 - h_1) / L$$

Where:       $i$  = horizontal hydraulic gradient  
               $h$  = water level (m bgs)  
               $L$  = horizontal distance between test hole locations

Using the above noted formula, the horizontal hydraulic gradient was observed to have an approximate north-to-northeast orientation and a magnitude ranging from 0.02 to 0.001. Shallow groundwater flow in the vicinity of the subject site is expected to reflect local topography. Regional groundwater flow is considered to be in a northerly direction, towards the Jock River.

### **Hydraulic Conductivity**

The hydraulic conductivity values were conservatively estimated based upon previous experience at similar sites in the area, information obtained from the results of the geotechnical field program, results of slug testing completed at select locations and typical published values for similar stratigraphy. The values are interpreted to be in the order of  $1 \times 10^{-4}$  to  $1 \times 10^{-7}$  m/sec for silty sand,  $1 \times 10^{-6}$  to  $1 \times 10^{-10}$  m/sec for glacial till with a variable matrix composition and  $1 \times 10^{-7}$  to  $1 \times 10^{-10}$  m/sec for silty clay.

### **Groundwater Recharge and Discharge**

In general, groundwater will follow the path of least resistance from areas of higher hydraulic head to areas of lower hydraulic head. While upward and downward hydraulic gradients may be indicative of discharge and recharge respectively, other factors must be considered.

Based on the hydraulic conductivity estimates obtained from previous studies and published literature, the silty clay overburden is generally considered to act as a confining layer. It is our interpretation that groundwater will generally flow laterally through the upper layer of silty sand/weathered brown silty clay, as opposed to vertically upwards or downwards through overburden soils with lower hydraulic conductivity such as the grey silty clay. As such, the volume of recharge occurring within the majority of the site boundaries is expected to be minimal. The only exception to the above is a small portion along the southern boundary within Phase 5 of the proposed development, where available information indicates esker materials such as silty sand and glacial till dominate the overburden material composition in the area. However, given the limited extent of these materials within the confines of the subject site, the volume of recharge expected to occur remains minimal.

With regards to discharge zones, neither the topographical or geological conditions are suitable for discharge to be occurring at the subject site.

## 3.0 POTENTIAL IMPACTS

### 3.1 Adverse Effects on Adjacent Structures

The overburden in the area varies dependant on location but generally consists of topsoil overlying a silty sand layer which is further underlain by either a silty clay deposit or glacial till. The potential dewatering volumes due to groundwater infiltration into potential excavation footprints are anticipated to be low to moderate depending on the majority composition of the materials at a given location, with lower volumes expected within silty clay and higher volumes expected within the silty sand. Given the nature of the development (low lying residential housing and associated servicing), the duration of any excavation on site is expected to be short term in duration. Additionally, the majority of the site is surrounded by undeveloped land, with only the eastern boundary containing existing residential buildings. As such, any effects related to ground surface settlement due to potential groundwater removal as part of construction activities are expected to be negligible.

### 3.2 Adverse Effects on Neighbouring Water Wells

A search of the Ontario Water Well Records online mapping database and the Groundwater Information Network (GIN) indicates there are 11 wells within 500 m of the site as depicted on Drawing PG3443-3 - MOECC Water Well Location Plan included in Appendix 1. However, upon investigation it was determined that these wells are no longer in use due to both their installation dates and the developed nature of the region. Additionally, the developed area surrounding the eastern portion of the site is serviced by municipal water supplies. Construction activities at the site are therefore not expected to cause any interference to the water supply of surrounding properties or other negative impacts.

A series of calculations were carried out on theoretical radii of influence for a typical servicing trench excavation withdrawing water from the upper 3 to 5 m of the saturated zone. These calculations were completed based on Sichardt (1992) using the equation:

$$R = r_e + 3000 \cdot \Delta h (k^{0.5})$$

- R = radius of influence (m)
- $r_e$  = equivalent radius of excavation (m)
- $\Delta h$  = thickness of drawdown within the aquifer (m)
- k = hydraulic conductivity (m/sec)

For the purposes of completing the calculations, the following assumptions were made:

- ❑  $r_e = 7.96 \text{ m}$
- ❑  $k = 1 \times 10^{-4} \text{ m/sec}$  to  $1 \times 10^{-10} \text{ m/sec}$ , based upon our experience in the area, the results of the slug testing analyses and published values.
- ❑  $\Delta h = 2$  to  $4 \text{ m}$ , to review potential minimum/maximum variable conditions.

Using the above equation and assumptions, a radius of influence of approximately 1 to 120 m will develop as a steady state condition, extending from the edge of the excavation, in the area of the subject site.

Given the hydrogeological characteristics of the subject site, the theoretical radii of influence for the potential excavations related to the development and the lack of water supply wells within 500 m, a long-term groundwater monitoring program is not required to be implemented based on our review.

### 3.3 Groundwater

A search of the MOECC Brownfields Environmental Site Registry was conducted as part of the assessment of the site, neighbouring properties and the general area of the site. Using a search radius of 1 km provided no recorded Brownfield sites in that area. No concerns were identified in the review of the MOECC Brownfields database.

It is anticipated that the material on site will be disposed of or re-used as per the MOECC policy, *Management of Excess Soil - A Guide for Best Management Practices* dated January, 2014.

The groundwater that is pumped from site excavations must be managed in an appropriate manner. The contractor will be required to implement a water management program to dispose of the pumped water.

## 4.0 STATEMENT OF LIMITATIONS

The recommendations provided in this report are in accordance with our present understanding of the project.

A hydrogeological review of this nature is a limited sampling of a site. The recommendations are based on information gathered at the specific test locations and can only be extrapolated to an undefined limited area around the test locations. Should any conditions at the site be encountered which differ from those at the test locations, we request notification immediately in order to permit reassessment of our recommendations.

The present report applies only to the project described in this document. Use of this report for purposes other than those described herein or by person(s) other than Tamarack (Nepean) Corporation or their agent(s) is not authorized without review by Paterson Group for the applicability of our recommendations to the altered use of the report.

**Paterson Group Inc.**

Michael Laflamme, GIT

David J. Gilbert, P.Eng.





# **APPENDIX 1**

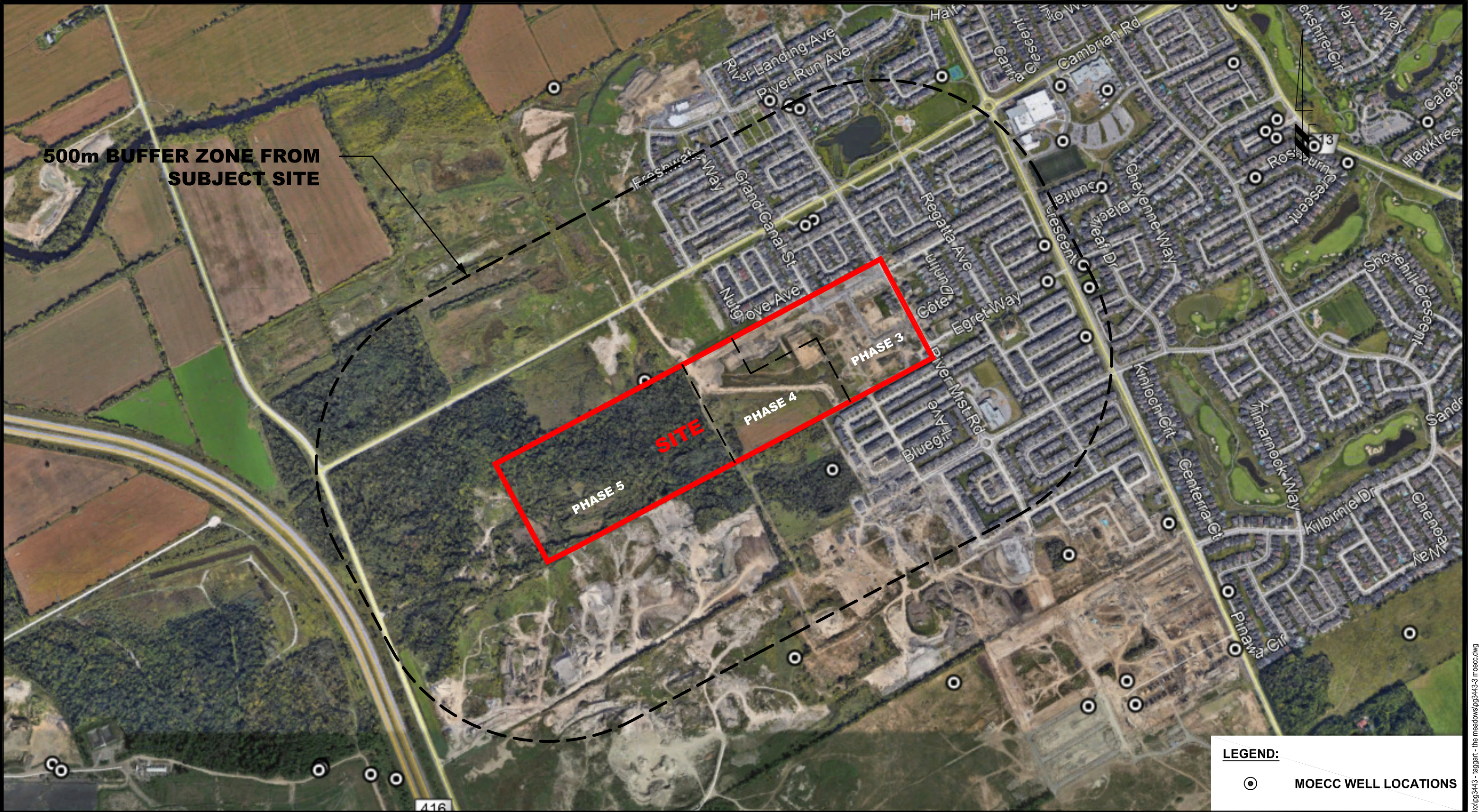
**Figure 1 - Key Plan**

**Drawing PG3443-3 - MOECC Water Well Location Plan**



FIGURE 1  
KEY PLAN





**LEGEND:**

⊙ MOECC WELL LOCATIONS

<div><div>patersongroup</div><div>consulting engineers</div><div>154 Colonnade Road South Ottawa, Ontario K2E 7J5 Tel: (613) 226-7381 Fax: (613) 226-6344</div></div>					TAMARACK (NEPEAN) CORPORATION HYDROGEOLOGICAL ASSESSMENT PROPOSED RESIDENTIAL DEVELOPMENT - 3640 GREENBANK ROAD OTTAWA, ONTARIO	Scale: N.T.S.	Date: 04/2018
						Drawn by: MPG	Report No.: PG3443-2
						Checked by: ML	Dwg. No.: PG3443-3
	0					Approved by: DJG	Revision No.: 0
	NO.	REVISIONS	DATE	INITIAL	MOECC WATER WELL LOCATION PLAN		



# **APPENDIX 2**

## **Soil Profile and Test Data**

**Drawing PG4242-1 - Test Hole Location Plan**

**Drawing PG3786-1 - Test Hole Location Plan**

**Drawing PG0214-4 - Test Hole Location Plan**

**PG3786 - Hydraulic Conductivity Testing Results**

## SOIL PROFILE AND TEST DATA

**Prop. Residential Development - The Meadows Phase 4**  
**Greenbank Road, Ottawa, Ontario**

FILE NO.

PG3786

HOLE NO.

TP 1-18

**DATE** February 27, 2018

[illegible]

## SOIL PROFILE AND TEST DATA

Geotechnical Investigation  
Prop. Residential Development - The Meadows Phase 4  
Greenbank Road, Ottawa, Ontario

**DATUM** Ground surface elevations were provided by Taggart Construction Ltd.

**FILE NO.**  
**PG3786**

**REMARKS**

**HOLE NO.**  
**TP 2-18**

**BORINGS BY** Hydraulic Shovel

**DATE** February 27, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction	
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %					
								20	40	60	80		
GROUND SURFACE						0	93.40						
Loose, brown <b>SILTY SAND</b> , trace clay		G	1										
0.70													
Stiff, brown <b>SILTY CLAY</b> , some sand		G	2			1	92.40						
1.20													
End of Test Pit  (TP dry upon completion)													

## SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

**Prop. Residential Development - The Meadows Phase 4**  
**Greenbank Road, Ottawa, Ontario**

**DATUM** Ground surface elevations were provided by Taggart Construction Ltd.

FILE NO.

PG3786

REMARKS

HOLE NO.

TP 3-18

**BORINGS BY** Hydraulic Shovel

**DATE** February 27, 2018

[illegible]

## SOIL PROFILE AND TEST DATA

Geotechnical Investigation  
Prop. Residential Development - The Meadows Phase 4  
Greenbank Road, Ottawa, Ontario

**DATUM** Ground surface elevations were provided by Taggart Construction Ltd.

**FILE NO.**  
**PG3786**

**REMARKS**

**HOLE NO.**  
**TP 4-18**

**BORINGS BY** Hydraulic Shovel

**DATE** February 27, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone					Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %					
								20	40	60	80		
GROUND SURFACE						0	93.96						
Loose, brown <b>SILTY SAND</b> , trace clay													





## SOIL PROFILE AND TEST DATA

**Geotechnical Investigation  
Prop. Residential Development - The Meadows Phase 4  
Greenbank Road, Ottawa, Ontario**

FILE NO. PG3786

HOLE NO. **TP 5-18**

**DATE** February 27, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction	
		TYPE	NUMBER	% RECOVERY	N VALUE or RQD			○ Water Content %					
								20	40	60	80		
GROUND SURFACE						0	95.23						
<b>FILL:</b> Brown sand and gravel, some silt, cobbles and boulders, trace clay		G	1										
	1.62					1	94.23						
Stiff to very stiff, brown <b>SILTY CLAY</b> , trace sand		G	2										
	2.30					2	93.23						
End of Test Pit													

20406080100

Shear Strength (kPa)

▲ Undisturbed    △ Remoulded

## SOIL PROFILE AND TEST DATA

Geotechnical Investigation

Prop. Residential Development - Borrisokane Road  
Ottawa, Ontario

**DATUM** Ground surface elevation provided by Stantec Geomatics Ltd.

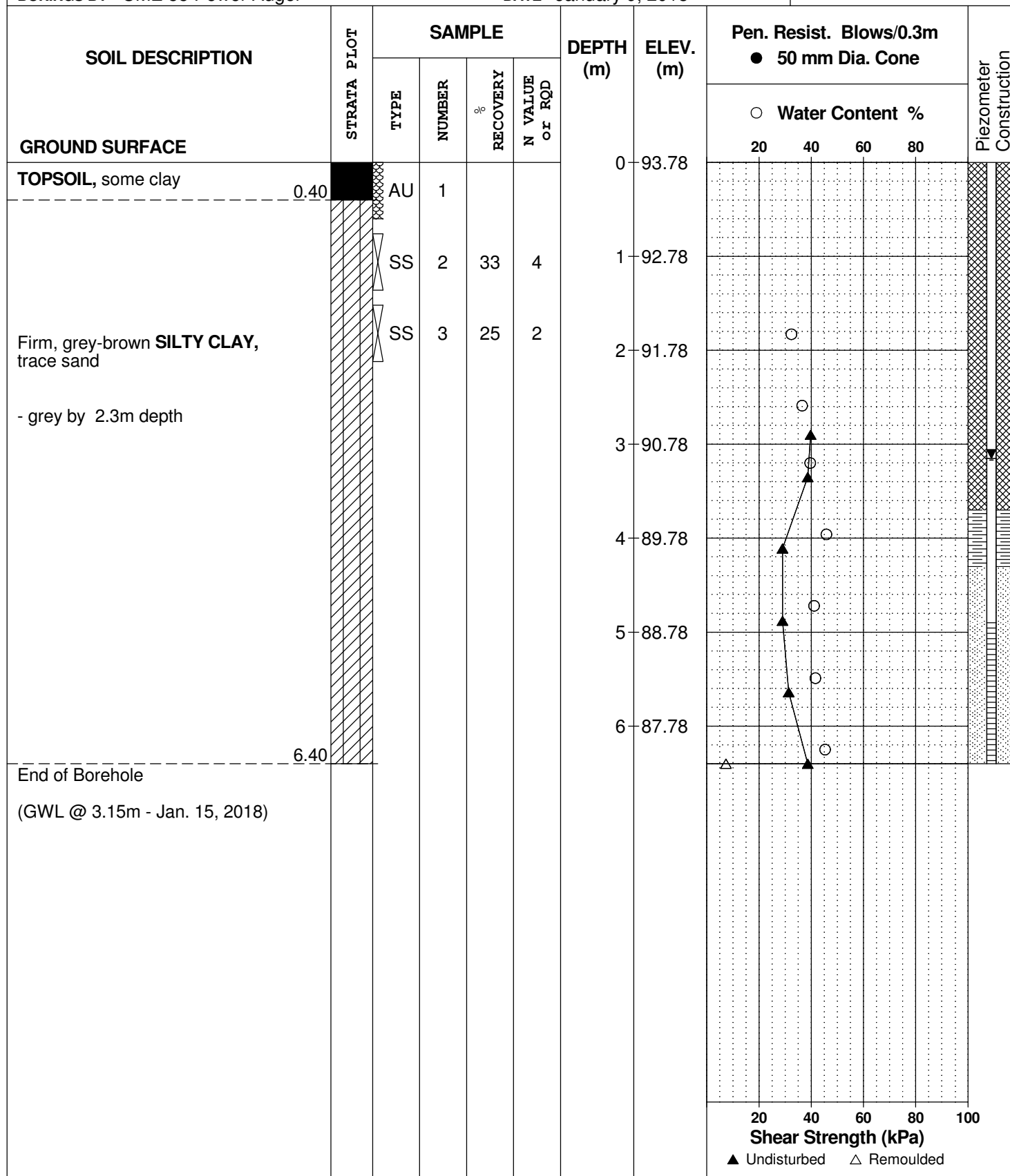
**FILE NO.**  
**PG4242**

**REMARKS**

**HOLE NO.**  
**BH 1-18**

**BORINGS BY** CME 55 Power Auger

**DATE** January 9, 2018



DATUM Ground surface elevation provided by Stantec Geomatics Ltd.

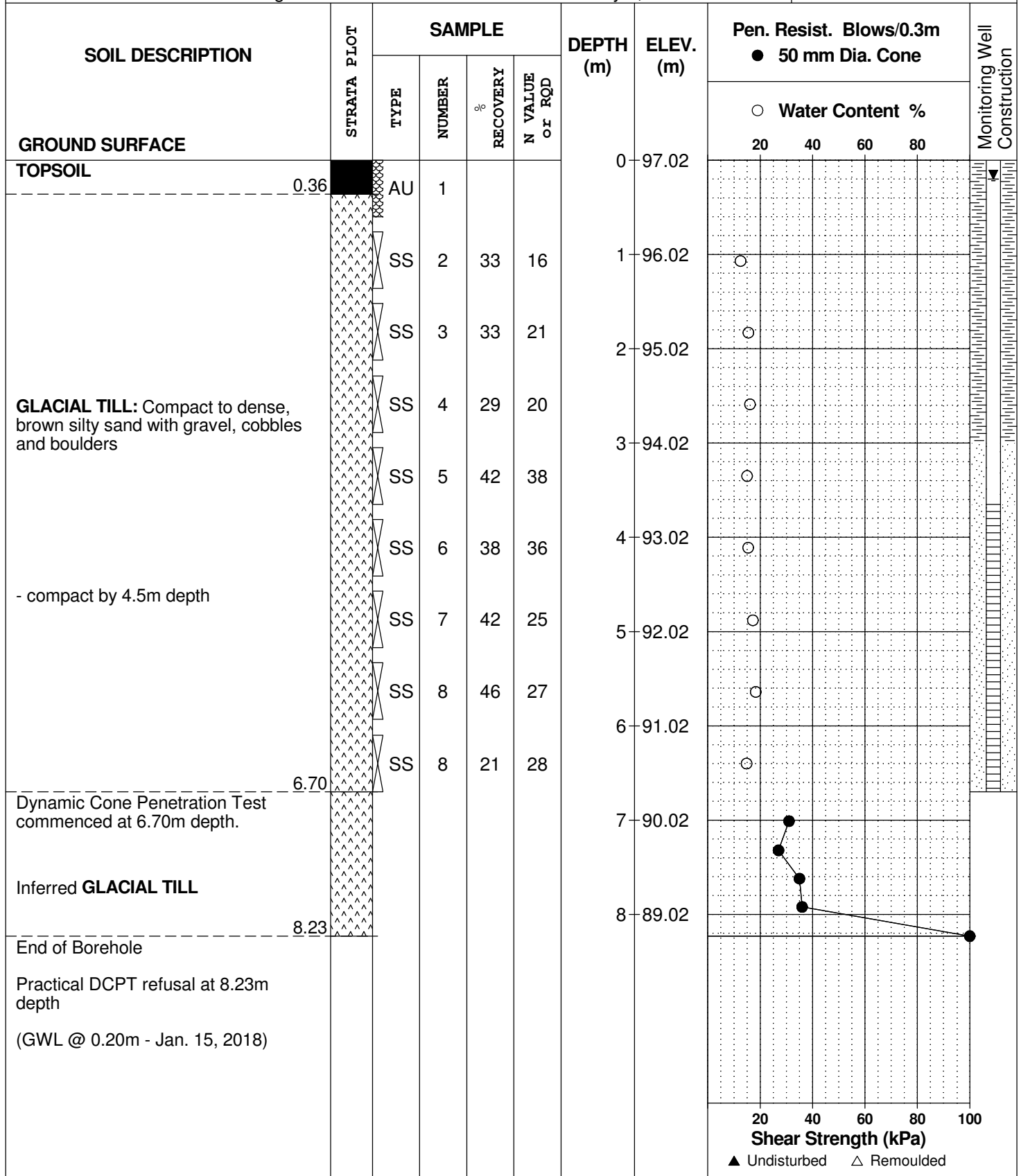
FILE NO.  
**PG4242**

REMARKS

HOLE NO.  
**BH 2-18**

BORINGS BY CME 55 Power Auger

DATE January 9, 2018



## SOIL PROFILE AND TEST DATA

Geotechnical Investigation  
Prop. Residential Development - Borrisokane Road  
Ottawa, Ontario

**DATUM** Ground surface elevation provided by Stantec Geomatics Ltd.

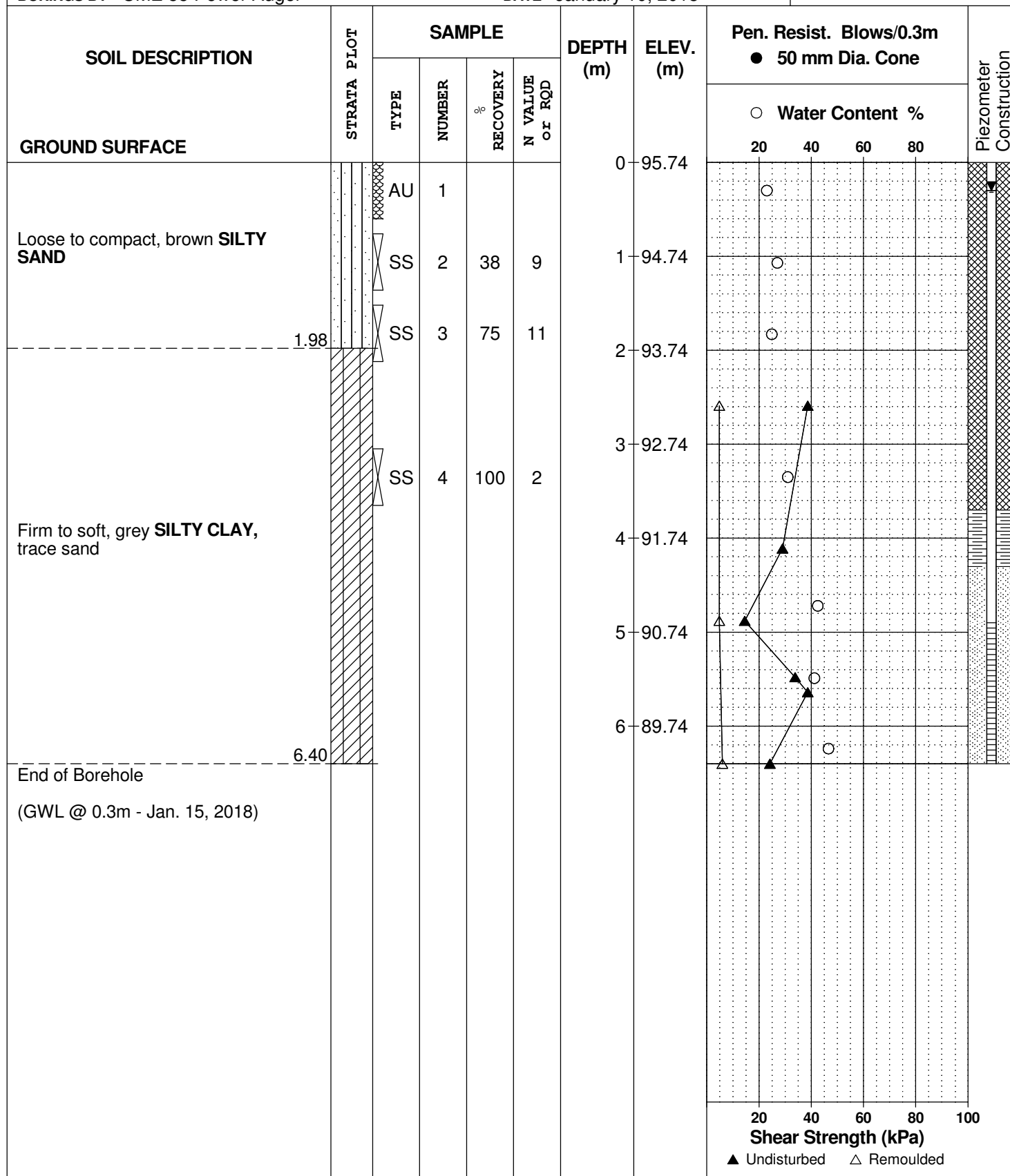
**FILE NO.**  
**PG4242**

**REMARKS**

**HOLE NO.**  
**BH 3-18**

**BORINGS BY** CME 55 Power Auger

**DATE** January 10, 2018



## SOIL PROFILE AND TEST DATA

Geotechnical Investigation  
Prop. Residential Development - Borrisokane Road  
Ottawa, Ontario

**DATUM** Ground surface elevation provided by Stantec Geomatics Ltd.

**FILE NO.**  
**PG4242**

**REMARKS**

**HOLE NO.**  
**TP 1-18**

**BORINGS BY** Backhoe

**DATE** January 8, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE						0	93.42					
TOPSOIL		G	1									
0.30		G	2									
Brown SILTY SAND												
0.60		G	3									
		G	4			1	92.42					
Brown CLAYEY SAND with silt												
- grey by 2.1m depth		G	5			2	91.42					
		G	6									
						3	90.42					
						4	89.42					
End of Test Pit												
(GWL @ 2.1m depth based on field observations)												
								20	40	60	80	100
								Shear Strength (kPa)				
								▲ Undisturbed    △ Remoulded				

**DATUM** Ground surface elevation provided by Stantec Geomatics Ltd.

**FILE NO.**  
**PG4242**

**REMARKS**

**HOLE NO.**  
**TP 2-18**

**BORINGS BY** Backhoe

**DATE** January 8, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction	
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %					
								20	40	60	80		
GROUND SURFACE						0	93.78						
TOPSOIL with clay		G	1										
0.38													
Brown FINE SAND, trace clay		G	2			1	92.78						
1.32													
Grey CLAYEY SAND		G	3										
2.13						2	91.78						
Grey SILTY CLAY with sand		G	4										
		G	5			3	90.78						
4.00						4	89.78						
End of Test Pit													
(GWL @ 1.3m depth based on field observations)													
								20	40	60	80	100	
								Shear Strength (kPa)					
								▲ Undisturbed    △ Remoulded					

**DATUM** Ground surface elevation provided by Stantec Geomatics Ltd.

FILE NO. **PG4242**

REMARKS

HOLE NO. **TP 3-18**

## BORINGS BY Backhoe

**DATE** January 8, 2018

[illegible]

## SOIL PROFILE AND TEST DATA

**Geotechnical Investigation  
Prop. Residential Development - Borrisokane Road  
Ottawa, Ontario**

FILE NO. PG4242

HOLE NO. **TP 4-18**

**DATE** January 8, 2018

[illegible]



## SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

**Prop. Residential Development - Borrisokane Road  
Ottawa, Ontario**

**DATUM** Ground surface elevation provided by Stantec Geomatics Ltd.

FILE NO. PG4242

REMARKS

HOLE NO. **TP 5-18**

**BORINGS BY** Backhoe

**DATE** January 8, 2018

[illegible]

**DATUM** Ground surface elevation provided by Stantec Geomatics Ltd.

**FILE NO.**  
**PG4242**

**REMARKS**

**HOLE NO.**  
**TP 6-18**

**BORINGS BY** Backhoe

**DATE** January 8, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE												
TOPSOIL	0.10		G 1			0	97.26					
GLACIAL TILL: Brown silty sand with gravel, cobbles and boulders			G 2			1	96.26					
			G 3			2	95.26					
			G 4			3	94.26					
						4	93.26					
End of Test Pit	4.00											
(GWL @ 1.2m depth based on field observations)												
								20	40	60	80	100
								Shear Strength (kPa)				
								▲ Undisturbed    △ Remoulded				

## SOIL PROFILE AND TEST DATA

Geotechnical Investigation  
Prop. Residential Development - Borrisokane Road  
Ottawa, Ontario

**DATUM** Ground surface elevation provided by Stantec Geomatics Ltd.

**FILE NO.**  
**PG4242**

**REMARKS**

**HOLE NO.**  
**TP 7-18**

**BORINGS BY** Backhoe

**DATE** January 8, 2018

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE						0	97.89					
Brown <b>SILTY SAND</b>		G	1									
		G	2			1	96.89					
		G	3			2	95.89					
		G	4			3	94.89					
Grey <b>SANDY CLAY</b> with silt	3.66	G	5									
End of Test Pit	4.00					4	93.89					
								20	40	60	80	100
								<b>Shear Strength (kPa)</b>				
								▲ Undisturbed    △ Remoulded				

## SOIL PROFILE AND TEST DATA

Geotechnical Investigation  
Prop. Residential Development - The Meadows Phase 4  
Greenbank Road, Ottawa, Ontario

**DATUM** Ground surface elevations were provided by Stantec Geomatics Limited.

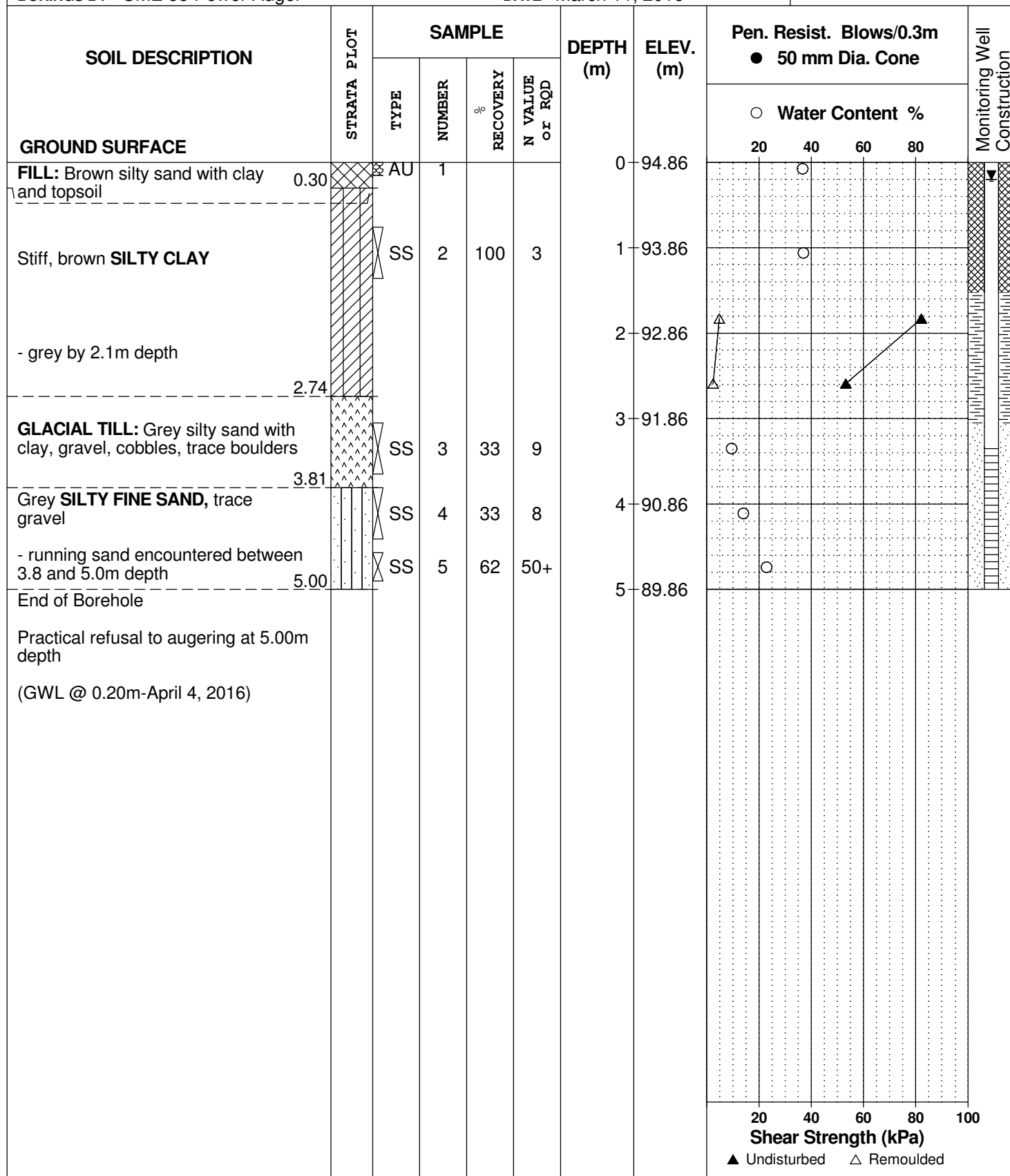
**FILE NO.**  
**PG3786**

**REMARKS**

**HOLE NO.**  
**BH 1-16**

**BORINGS BY** CME 55 Power Auger

**DATE** March 11, 2016



**DATUM** Ground surface elevations were provided by Stantec Geomatics Limited.

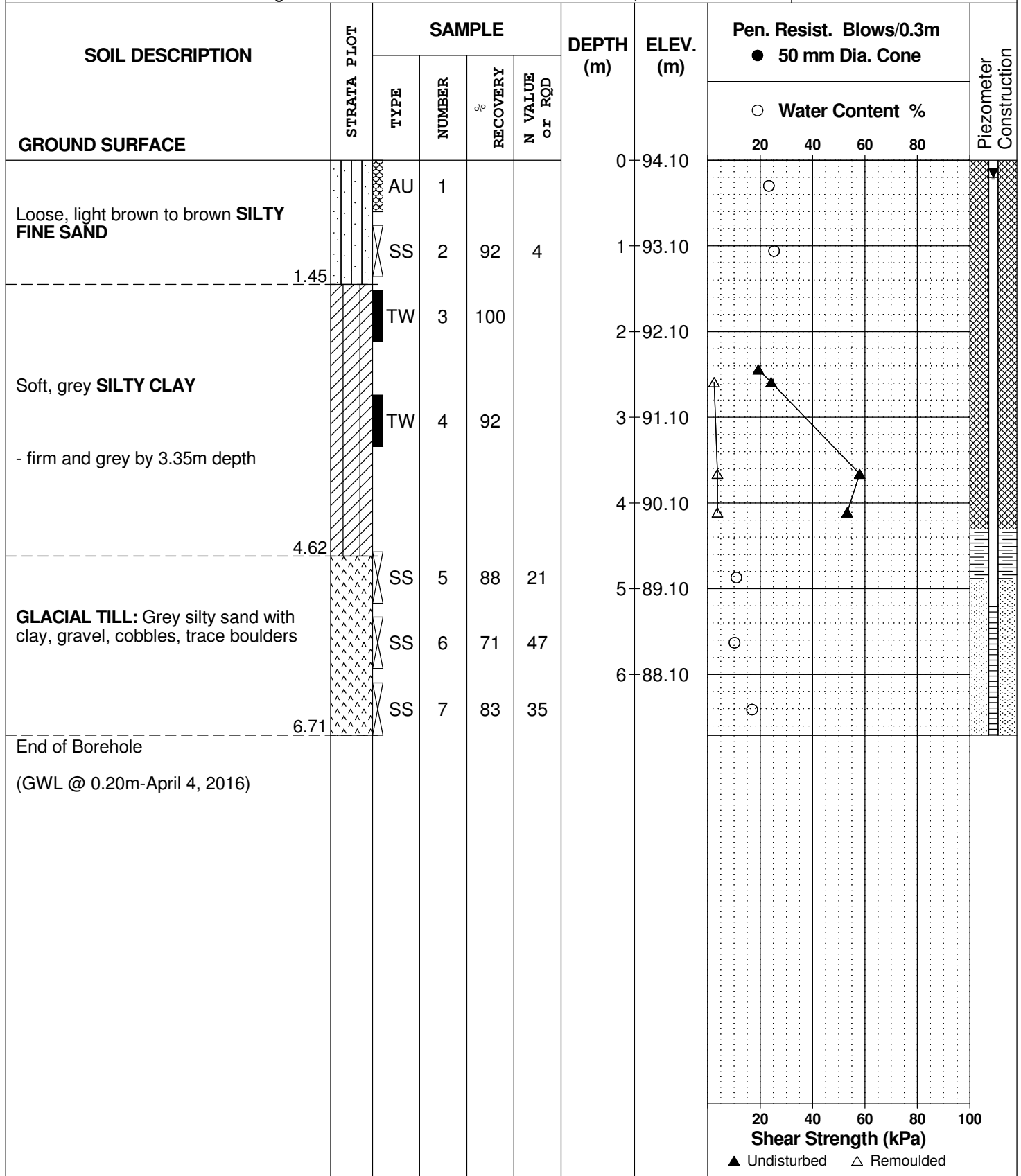
**FILE NO.**  
**PG3786**

**REMARKS**

**HOLE NO.**  
**BH 2-16**

**BORINGS BY** CME 55 Power Auger

**DATE** March 11, 2016



## SOIL PROFILE AND TEST DATA

Geotechnical Investigation

Prop. Residential Development - The Meadows Phase 4  
Greenbank Road, Ottawa, Ontario

**DATUM** Ground surface elevations were provided by Stantec Geomatics Limited.

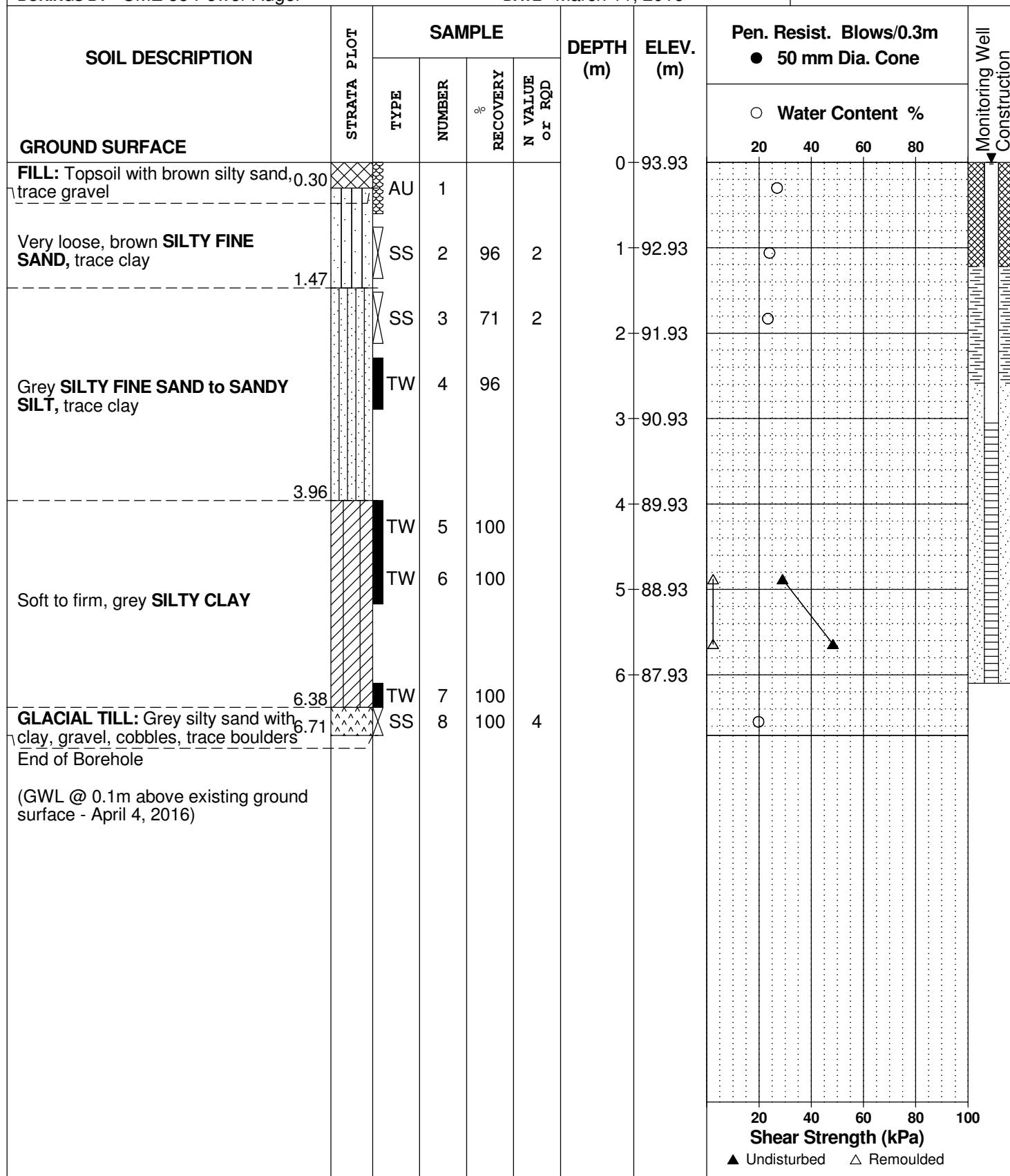
**FILE NO.**  
**PG3786**

**REMARKS**

**HOLE NO.**  
**BH 3-16**

**BORINGS BY** CME 55 Power Auger

**DATE** March 11, 2016



## SOIL PROFILE AND TEST DATA

Geotechnical Investigation

Prop. Residential Development - The Meadows Phase 4  
Greenbank Road, Ottawa, Ontario

**DATUM** Ground surface elevations were provided by Stantec Geomatics Limited.

**FILE NO.**

**PG3786**

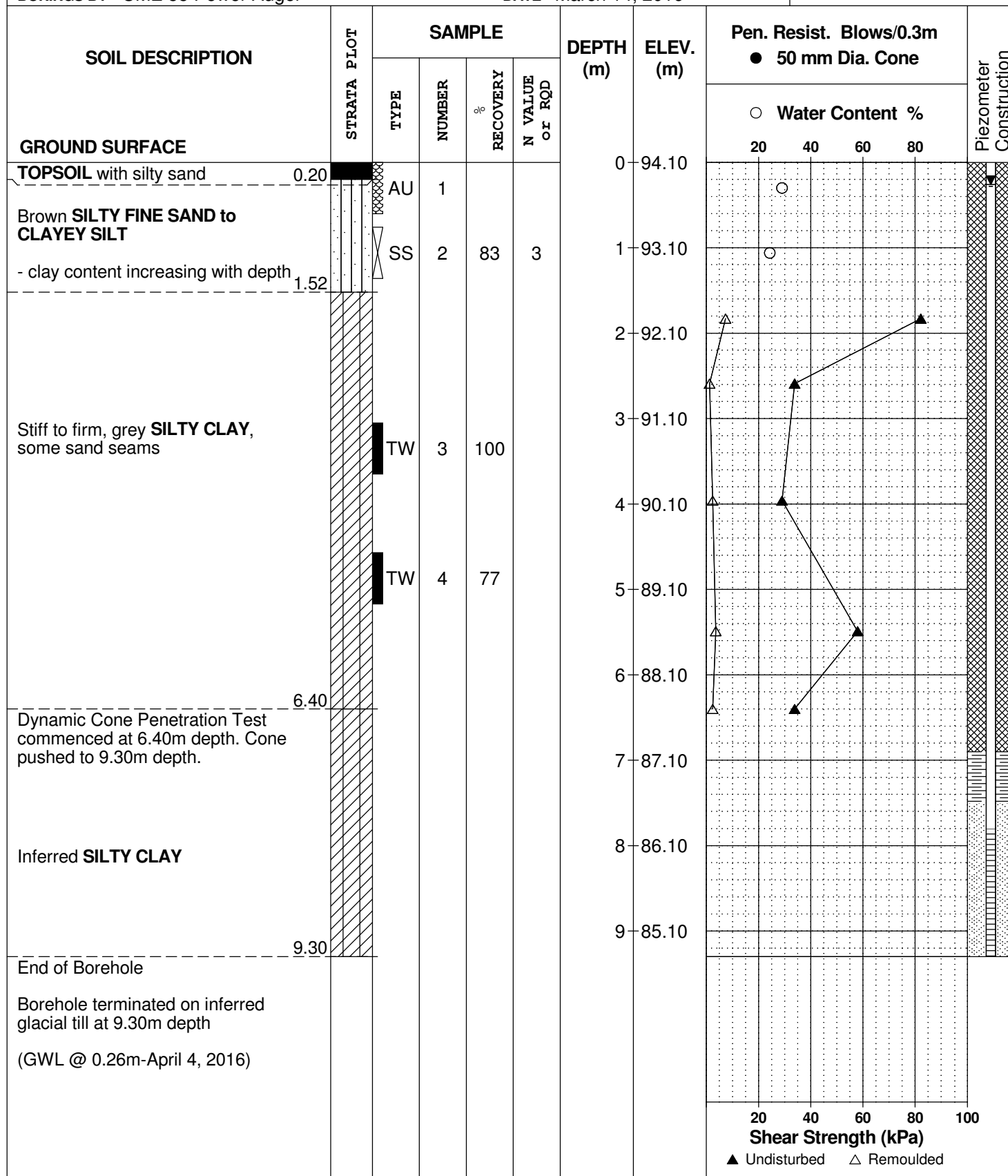
**REMARKS**

**HOLE NO.**

**BH 4-16**

**BORINGS BY** CME 55 Power Auger

**DATE** March 14, 2016



## SOIL PROFILE AND TEST DATA

Geotechnical Investigation

Prop. Residential Development - The Meadows Phase 4  
Greenbank Road, Ottawa, Ontario

**DATUM** Ground surface elevations were provided by Stantec Geomatics Limited.

**FILE NO.**

**PG3786**

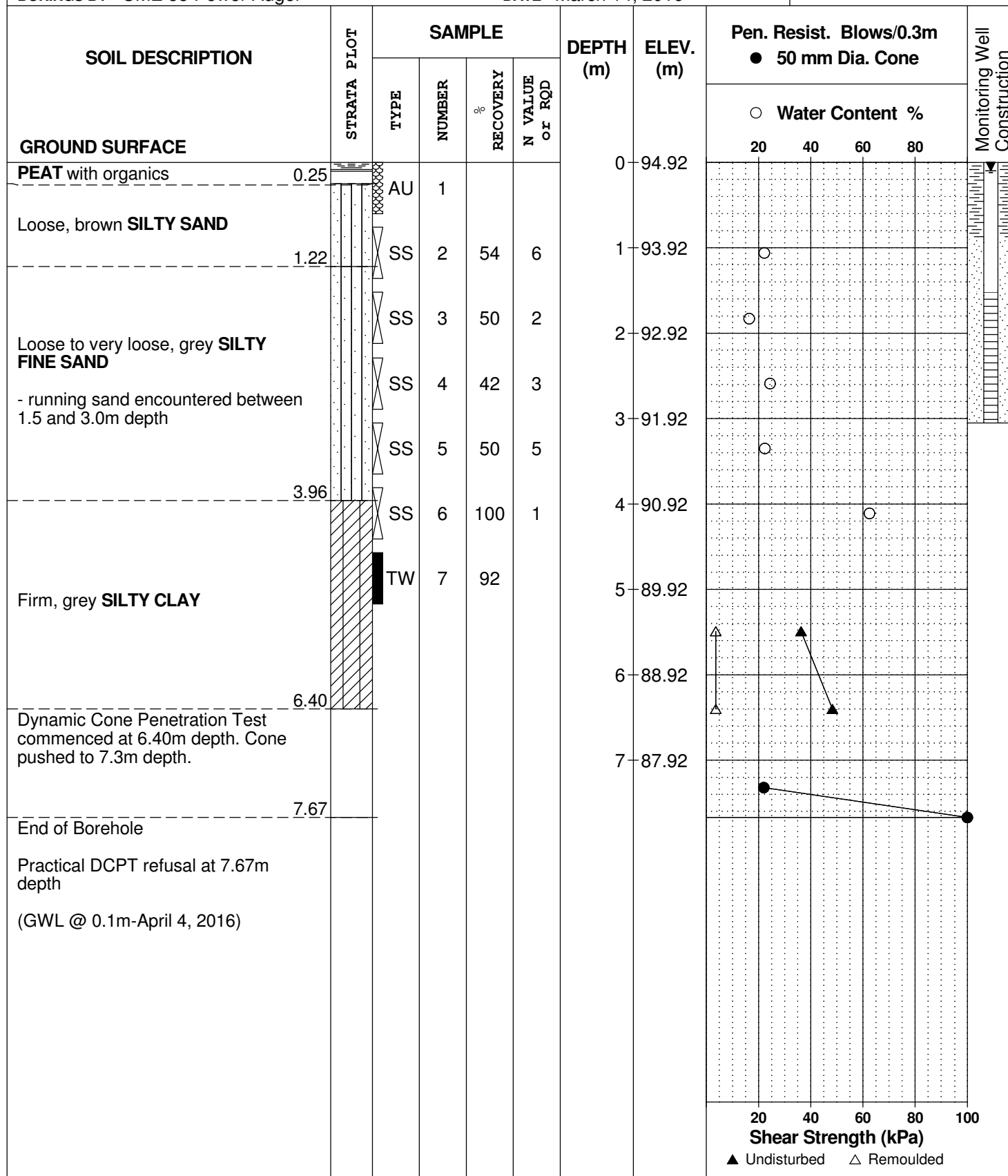
**REMARKS**

**HOLE NO.**

**BH 5-16**

**BORINGS BY** CME 55 Power Auger

**DATE** March 14, 2016





## SOIL PROFILE AND TEST DATA

Geotechnical Investigation

Prop. Residential Development - The Meadows Phase 4  
Greenbank Road, Ottawa, Ontario

**DATUM** Ground surface elevations were provided by Stantec Geomatics Limited.

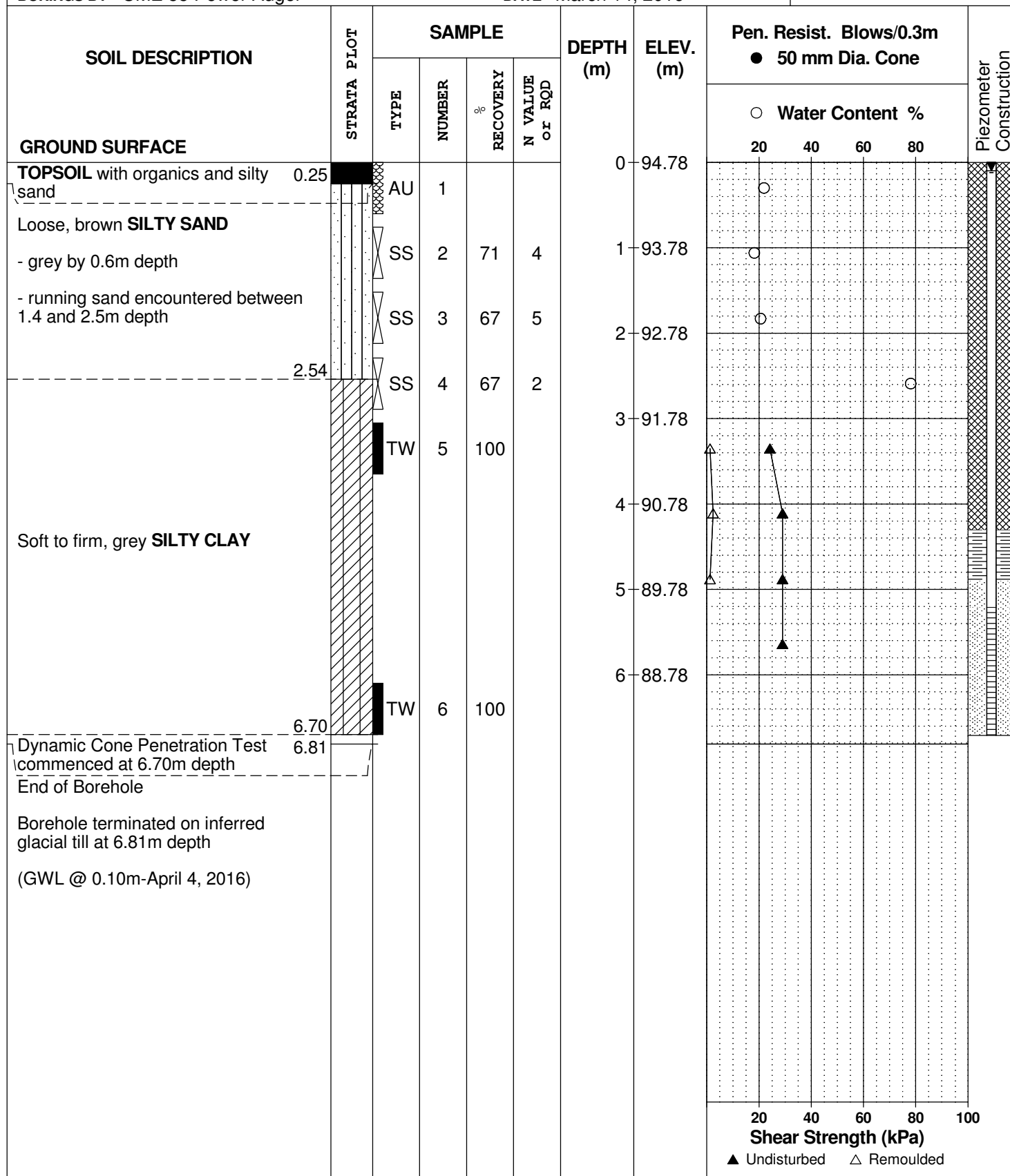
**FILE NO.**  
**PG3786**

**REMARKS**

**HOLE NO.**  
**BH 6-16**

**BORINGS BY** CME 55 Power Auger

**DATE** March 14, 2016



## SOIL PROFILE AND TEST DATA

**Supplemental Geotechnical Investigation  
Prop. Residential Development-Greenbank Road  
Ottawa, Ontario**

**DATUM** Ground surface elevations provided by Taggart Group of Companies

FILE NO. **PG0214**

REMARKS

HOLE NO. **TP 6-09**

### **BORINGS BY** Hydraulic Shovel

DATE December 17, 2009

SOIL DESCRIPTION		STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction	
			TYPE	NUMBER	% RECOVERY	N VALUE or RQD			○ Water Content %  20      40      60      80					
GROUND SURFACE														
TOPSOIL							0							
Brown SILTY CLAY with sand	0.20 0.40													
GLACIAL TILL: Very dense, brown silty sand with clay, gravel, cobbles, trace boulders							1							
GLACIAL TILL: Very dense, grey sandy silt with gravel, cobbles, boulders, trace clay	2.10						2							
End of Test Pit (TP dry upon completion)	3.20						3							

## SOIL PROFILE AND TEST DATA

**Supplemental Geotechnical Investigation  
Prop. Residential Development-Greenbank Road  
Ottawa, Ontario**

**DATUM** Ground surface elevations provided by Taggart Group of Companies

FILE NO. **PG0214**

REMARKS

HOLE NO. **TP 7-09**

### **BORINGS BY** Hydraulic Shovel

DATE December 17, 2009

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	% RECOVERY	N VALUE or RQD			○ Water Content %  20      40      60      80				
GROUND SURFACE						0						
TOPSOIL												
Brown SILTY CLAY, trace sand and gravel												
						1						
						2						
						3						
						4						
						5						
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						61						

## SOIL PROFILE AND TEST DATA

**Supplemental Geotechnical Investigation  
Prop. Residential Development-Greenbank Road  
Ottawa, Ontario**

**DATUM** Ground surface elevations provided by Taggart Group of Companies

FILE NO. **PG0214**

REMARKS

HOLE NO. **TP 8-09**

### **BORINGS BY** Hydraulic Shovel

DATE December 17, 2009

[illegible]

## SOIL PROFILE AND TEST DATA

Supplemental Geotechnical Investigation  
Prop. Residential Development-Greenbank Road  
Ottawa, Ontario

DATUM Ground surface elevations provided by Taggart Group of Companies

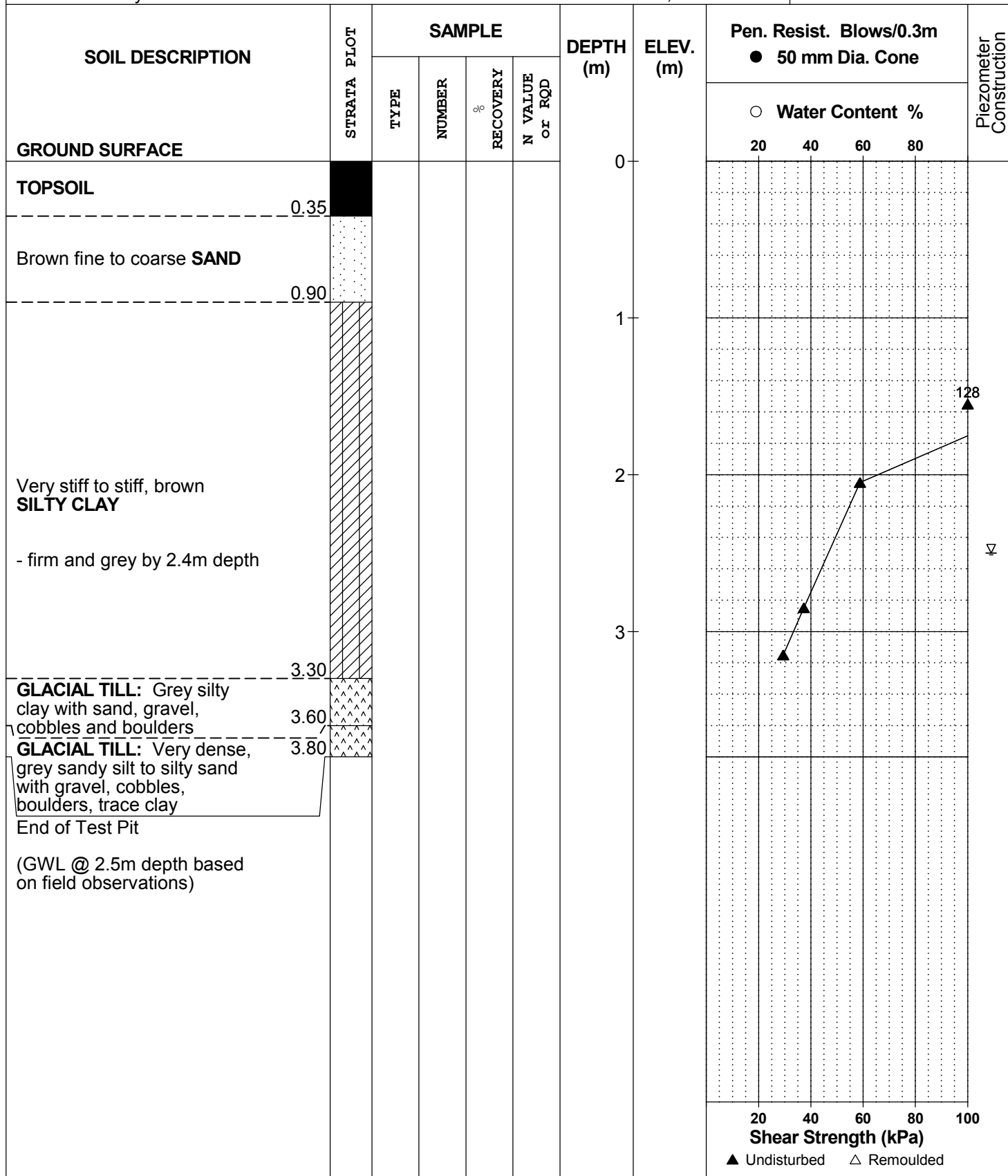
FILE NO. **PG0214**

REMARKS

HOLE NO. **TP 9-09**

BORINGS BY Hydraulic Shovel

DATE December 17, 2009



## SOIL PROFILE AND TEST DATA

Supplemental Geotechnical Investigation  
Prop. Residential Development-Greenbank Road  
Ottawa, Ontario

DATUM Ground surface elevations provided by Taggart Group of Companies

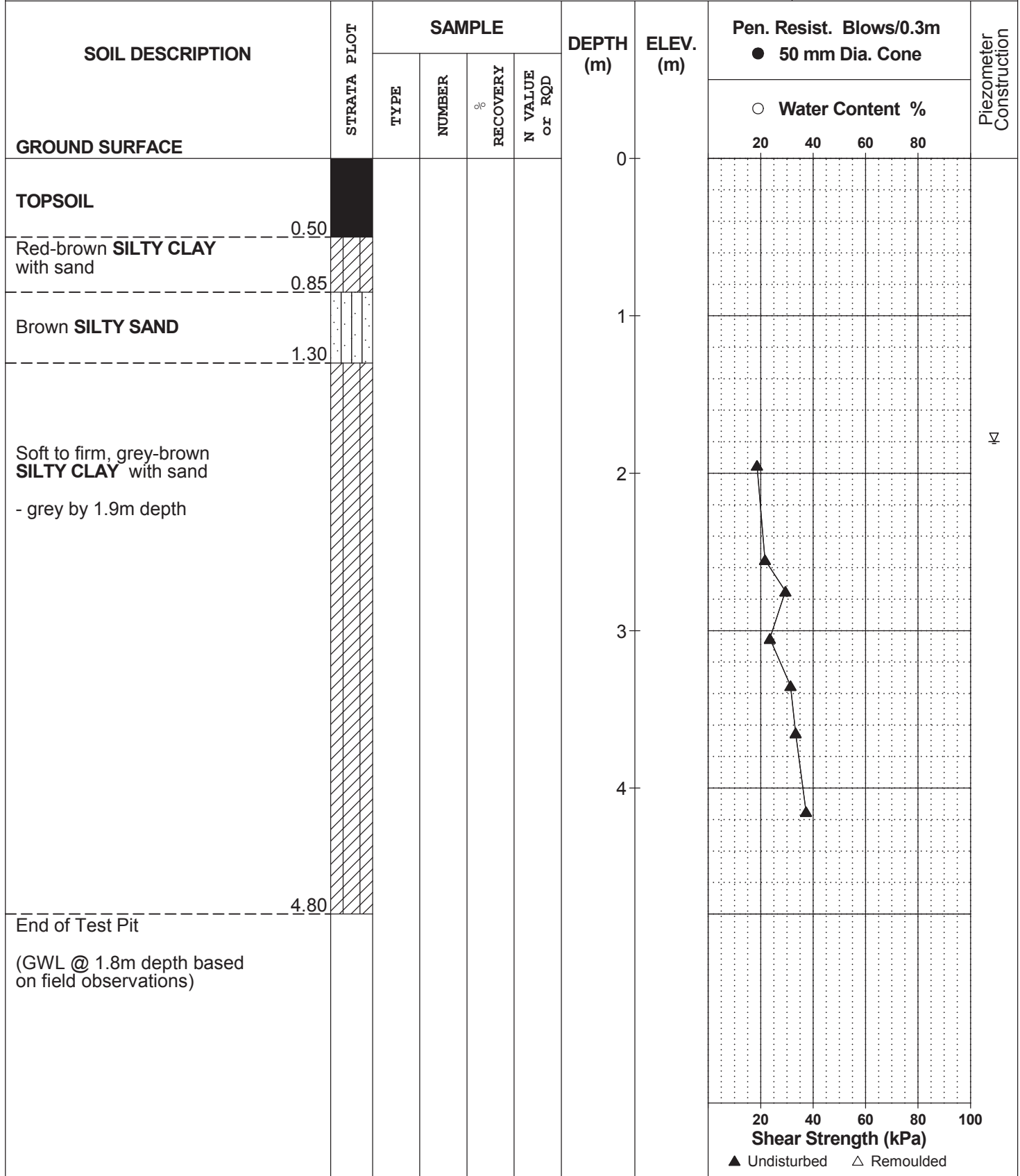
FILE NO. **PG0214**

REMARKS

HOLE NO. **TP10-09**

BORINGS BY Hydraulic Shovel

DATE December 17, 2009



## SOIL PROFILE AND TEST DATA

Supplemental Geotechnical Investigation  
Prop. Residential Development-Greenbank Road  
Ottawa, Ontario

DATUM Ground surface elevations provided by Taggart Group of Companies

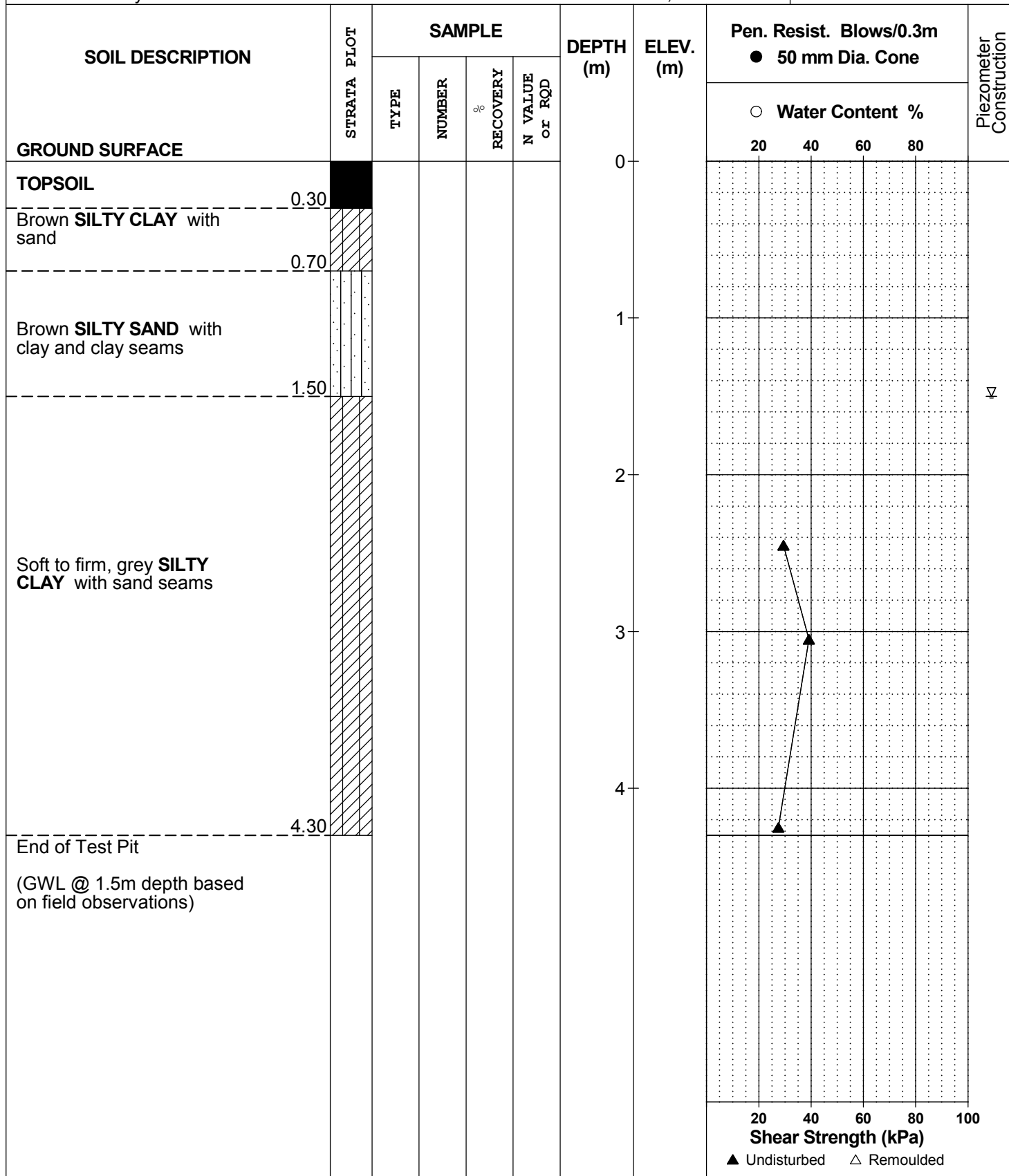
FILE NO. **PG0214**

REMARKS

HOLE NO. **TP11-09**

BORINGS BY Hydraulic Shovel

DATE December 17, 2009



## SOIL PROFILE AND TEST DATA

**Supplemental Geotechnical Investigation  
Prop. Residential Development-Greenbank Road  
Ottawa, Ontario**

**DATUM** Ground surface elevations provided by Taggart Group of Companies

FILE NO. PG0214

REMARKS

HOLE NO. **TP13-09**

## BORINGS BY Hydraulic Shovel

DATE December 17, 2009

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	% RECOVERY	N VALUE or RQD			○ Water Content %				
GROUND SURFACE								20	40	60	80	
TOPSOIL						0						
Red-brown <b>SILTY SAND</b> with gravel						0.25						
<b>GLACIAL TILL:</b> Brown silty clay with sand, gravel, cobbles and boulders						0.50						
						1.00						
<b>GLACIAL TILL:</b> Brown silty sand with gravel, cobbles, boulders, trace clay  - grey by 2.1m depth						2.50						
End of Test Pit												
(GWL @ 1.3m depth based on field observations)												

20406080100

Shear Strength (kPa)

▲ Undisturbed △ Remoulded



## SOIL PROFILE AND TEST DATA

Supplemental Geotechnical Investigation  
Prop. Residential Development-Greenbank Road  
Ottawa, Ontario

**DATUM** Ground surface elevations provided by Taggart Group of Companies

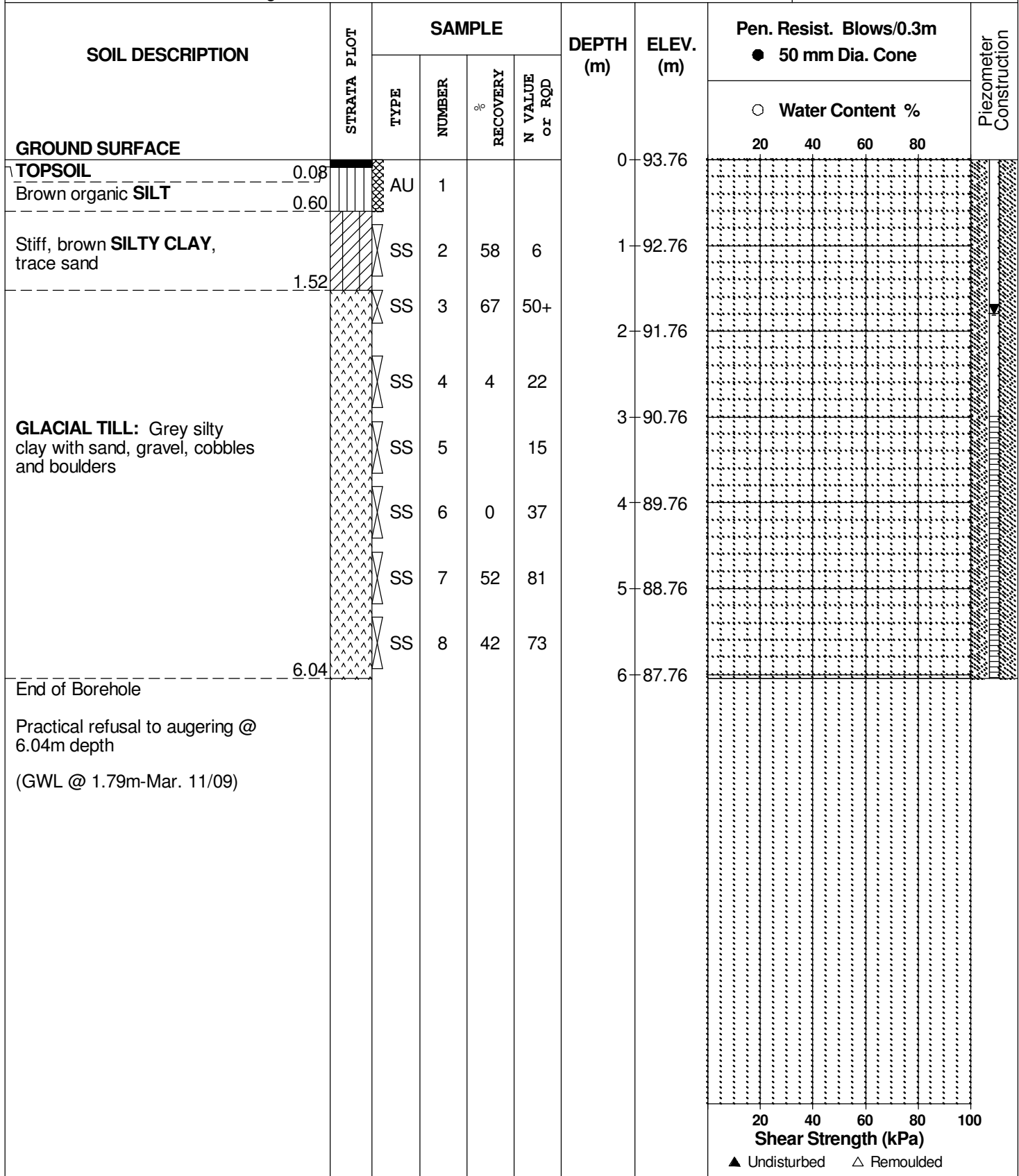
**REMARKS**

**BORINGS BY** CME 55 Power Auger

**DATE** 2 Mar 09

**FILE NO.**  
**PG0214**

**HOLE NO.**  
**BH 2-09**



DATUM Ground surface elevations provided by Taggart Group of Companies

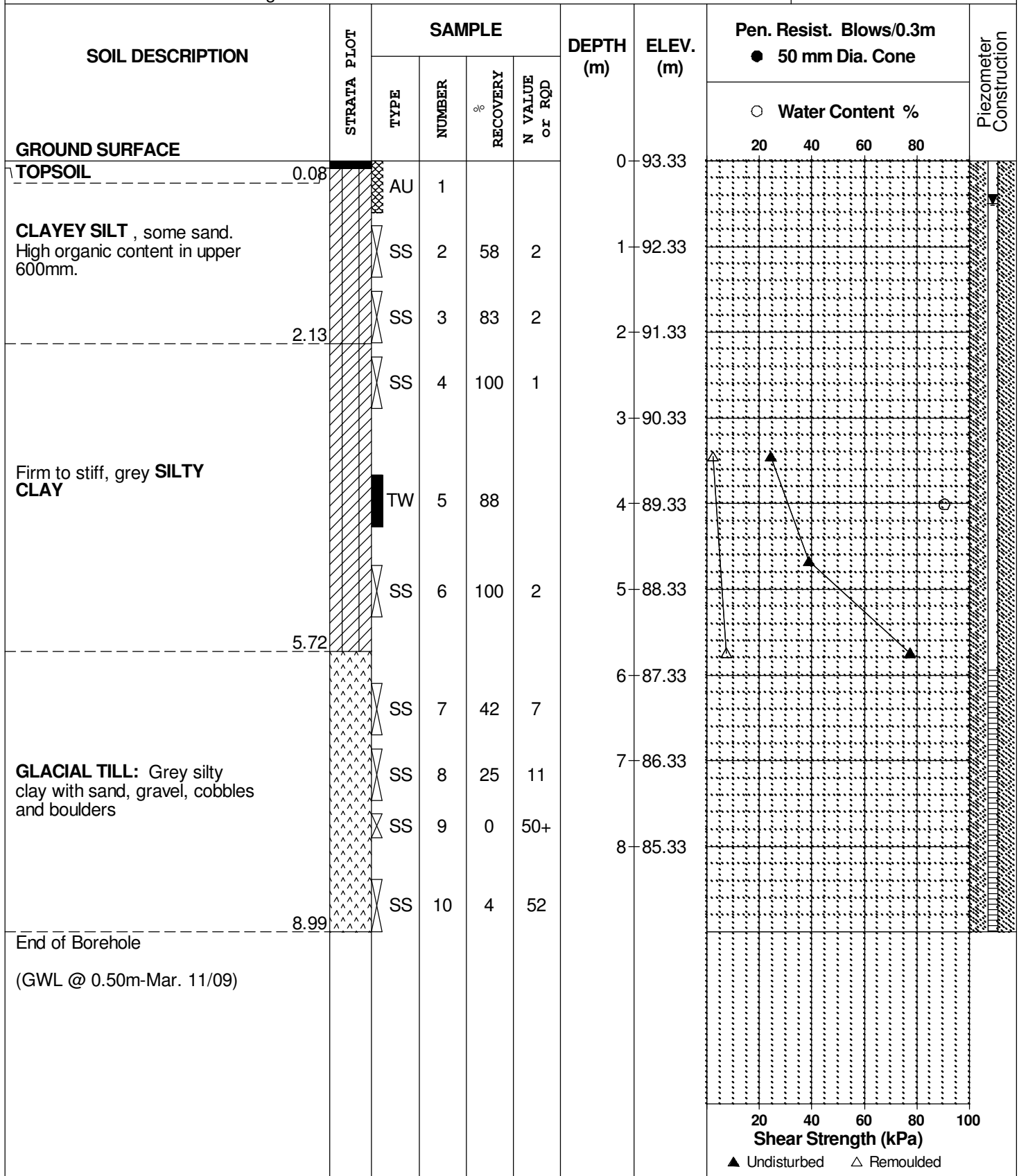
REMARKS

BORINGS BY CME 55 Power Auger

DATE 2 Mar 09

FILE NO. PG0214

HOLE NO. BH 3-09



[illegible]

## SOIL PROFILE AND TEST DATA

**Supplemental Geotechnical Investigation  
Prop. Residential Development-Greenbank Road  
Ottawa, Ontario**

**DATUM** Ground surface elevations provided by Taggart Group of Companies

FILE NO. **PG0214**

REMARKS

HOLE NO. **BH 4-09**

**BORINGS BY** CME 55 Power Auger

**DATE** 3 Mar 09

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE												
TOPSOIL	0.05	AU	1			0	93.44					
Organic SILT, some sand	0.61											
Loose, brown SANDY SILT, some clay		SS	2	25	5	1	92.44					
		SS	3	100	2	2	91.44					
Soft, grey SILTY CLAY		SS	4	0	1	3	90.44					
		SS	5	100	1	4	89.44					
End of Borehole	4.27											
BH terminated due to clay entering augers @ 4m depth. (Open hole GWL @ 1.5m depth)												

## SOIL PROFILE AND TEST DATA

**Supplemental Geotechnical Investigation  
Prop. Residential Development-Greenbank Road  
Ottawa, Ontario**

**DATUM** Ground surface elevations provided by Taggart Group of Companies

FILE NO. PG0214

REMARKS

HOLE NO. **BH 5-09**

**BORINGS BY** CME 55 Power Auger

**DATE** 3 Mar 09

[illegible]

## SOIL PROFILE AND TEST DATA

Supplemental Geotechnical Investigation  
Prop. Residential Development-Greenbank Road  
Ottawa, Ontario

DATUM Ground surface elevations provided by Taggart Group of Companies

REMARKS

BORINGS BY CME 55 Power Auger

DATE 3 Mar 09

FILE NO. PG0214

HOLE NO. BH 6-09

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE												
25mm Topsoil		AU	1			0	94.00					
Compact, brown <b>SILTY SAND</b> with clay and gravel		SS	2	33	13	1	93.00					
		SS	3	42	4	2	92.00					
		SS	4	50	3							
		SS	5	100	2	3	91.00					
Soft, grey <b>SILTY CLAY</b> , some fossiliferous shells		SS	6	100	2	4	90.00					
		SS	7	83	6	5	89.00					
Loose to compact, brown <b>SILTY SAND</b>		SS	8	100	4	6	88.00					
		SS	9	83	4							
		SS	10	100	6	7	87.00					
		SS	11	83	10	8	86.00					
		SS	12	67	13							
						9	85.00					
End of Borehole												
(GWL @ 0.70m-Mar. 11/09)												
								20	40	60	80	100
								Shear Strength (kPa)				
								▲ Undisturbed    △ Remoulded				

## SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation  
Part 1, Lot 10 and Part 1, Lot 9, Concession 3  
Ottawa (Nepean), Ontario

**DATUM** Ground surface elevations provided by Webster and Simmonds Surveying Ltd.

**REMARKS**

**BORINGS BY** Backhoe

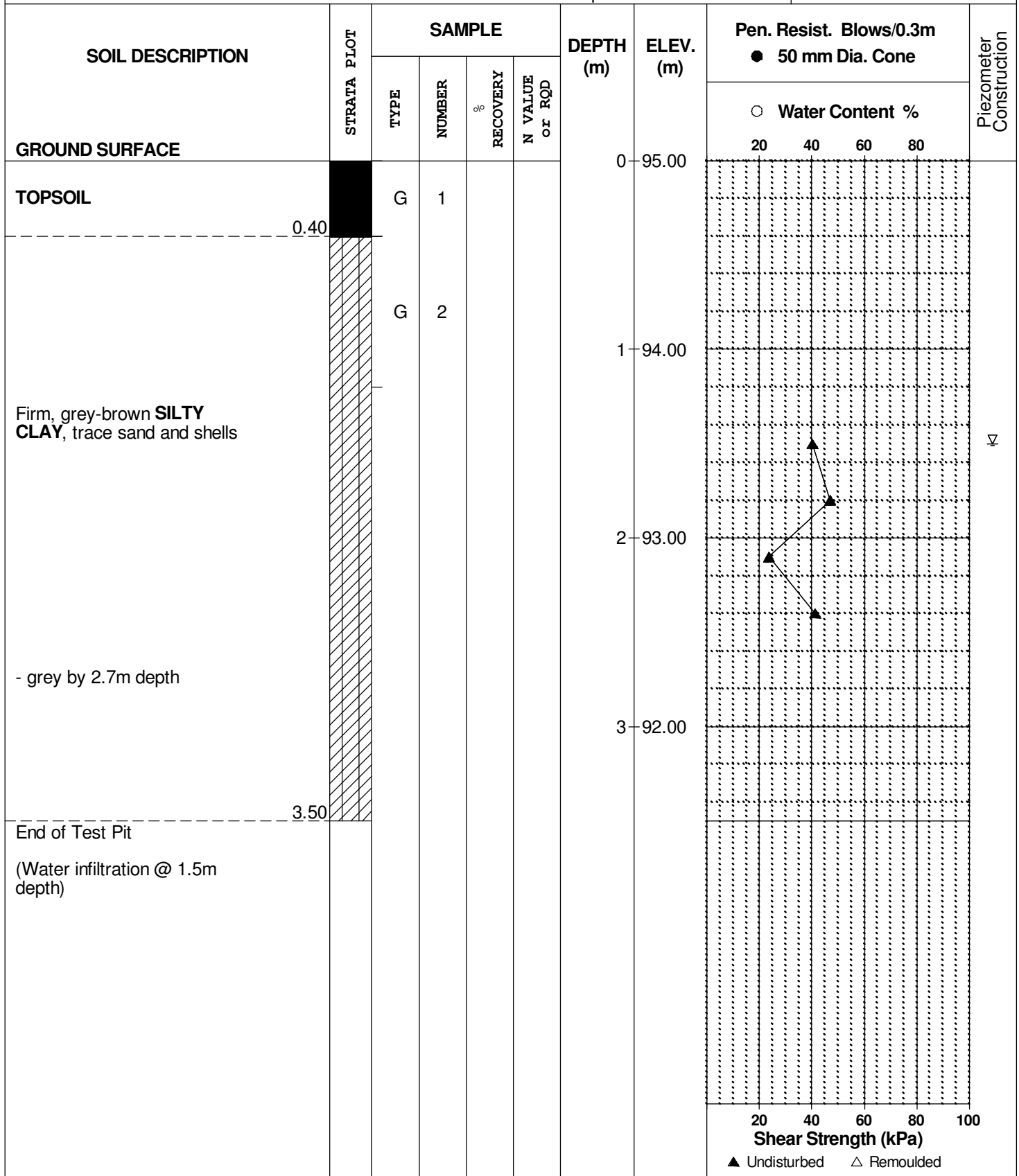
**DATE** 28 Apr 04

**FILE NO.**

**PG0214**

**HOLE NO.**

**TP 1**



SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE						0	97.95					
TOPSOIL												
Red-brown SAND with gravel, cobbles and boulders												
Firm, grey-brown SILTY CLAY, some boulders, trace sand seams and shells						1	96.95					
GLACIAL TILL: Grey silty clay with gravel, cobbles and boulders		G	1			3	94.95					
End of Test Pit  (Water infiltration @ 2.0m depth)						4	93.95					



## SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation  
Part 1, Lot 10 and Part 1, Lot 9, Concession 3  
Ottawa (Nepean), Ontario

**DATUM** Ground surface elevations provided by Webster and Simmonds Surveying Ltd.

**FILE NO.**

**PG0214**

**REMARKS**

**HOLE NO.**

**TP 3**

**BORINGS BY** Backhoe

**DATE** 28 Apr 04

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE						0	103.11					
TOPSOIL	0.20											
GLACIAL TILL: Brown sand with gravel, cobbles and boulders		G	1			1	102.11					
						2	101.11					
		G	2			3	100.11					
						4	99.11					
End of Test Pit (TP dry upon completion)	4.50											
								20	40	60	80	100
								Shear Strength (kPa)				
								▲ Undisturbed    △ Remoulded				

## SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation  
Part 1, Lot 10 and Part 1, Lot 9, Concession 3  
Ottawa (Nepean), Ontario

**DATUM** Ground surface elevations provided by Webster and Simmonds Surveying Ltd.

**FILE NO.**

**PG0214**

**REMARKS**

**HOLE NO.**

**TP 4**

**BORINGS BY** Backhoe

**DATE** 28 Apr 04

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE						0	97.88	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><d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## SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation  
Part 1, Lot 10 and Part 1, Lot 9, Concession 3  
Ottawa (Nepean), Ontario

**DATUM** Ground surface elevations provided by Webster and Simmonds Surveying Ltd.

**REMARKS**

**BORINGS BY** Backhoe

**DATE** 28 Apr 04

**FILE NO.**

**PG0214**

**HOLE NO.**

**TP 5**

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
GROUND SURFACE						0	94.22	20	40	60	80	
TOPSOIL						1	93.22					▽
Firm, grey-brown <b>SILTY CLAY</b> , trace sand seams						2	92.22					
						3	91.22					
Very loose, grey <b>SANDY SILT</b>						4	90.22					
End of Test Pit  (Water infiltration @ 1.0m depth)												

20 40 60 80 100  
**Shear Strength (kPa)**  
▲ Undisturbed △ Remoulded

[illegible]

## SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation  
Part 1, Lot 10 and Part 1, Lot 9, Concession 3  
Ottawa (Nepean), Ontario

**DATUM** Ground surface elevations provided by Webster and Simmonds Surveying Ltd.

**FILE NO.**  
**PG0214**

**REMARKS**

**HOLE NO.**  
**TP 7**

**BORINGS BY** Backhoe

**DATE** 28 Apr 04

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE						0	97.75	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><d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## SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation  
Part 1, Lot 10 and Part 1, Lot 9, Concession 3  
Ottawa (Nepean), Ontario

**DATUM** Ground surface elevations provided by Webster and Simmonds Surveying Ltd.

**FILE NO.**  
**PG0214**

**REMARKS**

**HOLE NO.**  
**TP 8**

**BORINGS BY** Backhoe

**DATE** 28 Apr 04

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE						0	99.50					
TOPSOIL												
0.40												
Red-brown SAND with gravel												
0.80												
						1	98.50					
								</				

## SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation  
Part 1, Lot 10 and Part 1, Lot 9, Concession 3  
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**FILE NO.**  
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**DATE** 28 Apr 04

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE						0	98.73	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><d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## SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation  
Part 1, Lot 10 and Part 1, Lot 9, Concession 3  
Ottawa (Nepean), Ontario

**DATUM** Ground surface elevations provided by Webster and Simmonds Surveying Ltd.

**FILE NO.**

**PG0214**

**REMARKS**

**HOLE NO.**

**TP11**

**BORINGS BY** Backhoe

**DATE** 28 Apr 04

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE						0	98.98					
TOPSOIL	0.20											
Red-brown SAND, some gravel	0.50											
Brown SAND with gravel, cobbles and boulders	1.50					1	97.98					
Brown SAND, some gravel	3.50	G	1			2	96.98					▽
End of Test Pit (Water infiltration @ 2.5m depth)						3	95.98					

## SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation  
Part 1, Lot 10 and Part 1, Lot 9, Concession 3  
Ottawa (Nepean), Ontario

**DATUM** Ground surface elevations provided by Webster and Simmonds Surveying Ltd.

**FILE NO.**

**PG0214**

**REMARKS**

**HOLE NO.**

**TP12**

**BORINGS BY** Backhoe

**DATE** 28 Apr 04

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE						0	96.33	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><d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## SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation  
Part 1, Lot 10 and Part 1, Lot 9, Concession 3  
Ottawa (Nepean), Ontario

**DATUM** Ground surface elevations provided by Webster and Simmonds Surveying Ltd.

**FILE NO.**

**PG0214**

**REMARKS**

**HOLE NO.**

**TP13**

**BORINGS BY** Backhoe

**DATE** 28 Apr 04

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE						0	95.48	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><d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## SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation  
Part 1, Lot 10 and Part 1, Lot 9, Concession 3  
Ottawa (Nepean), Ontario

**DATUM** Ground surface elevations provided by Webster and Simmonds Surveying Ltd.

**FILE NO.**

**PG0214**

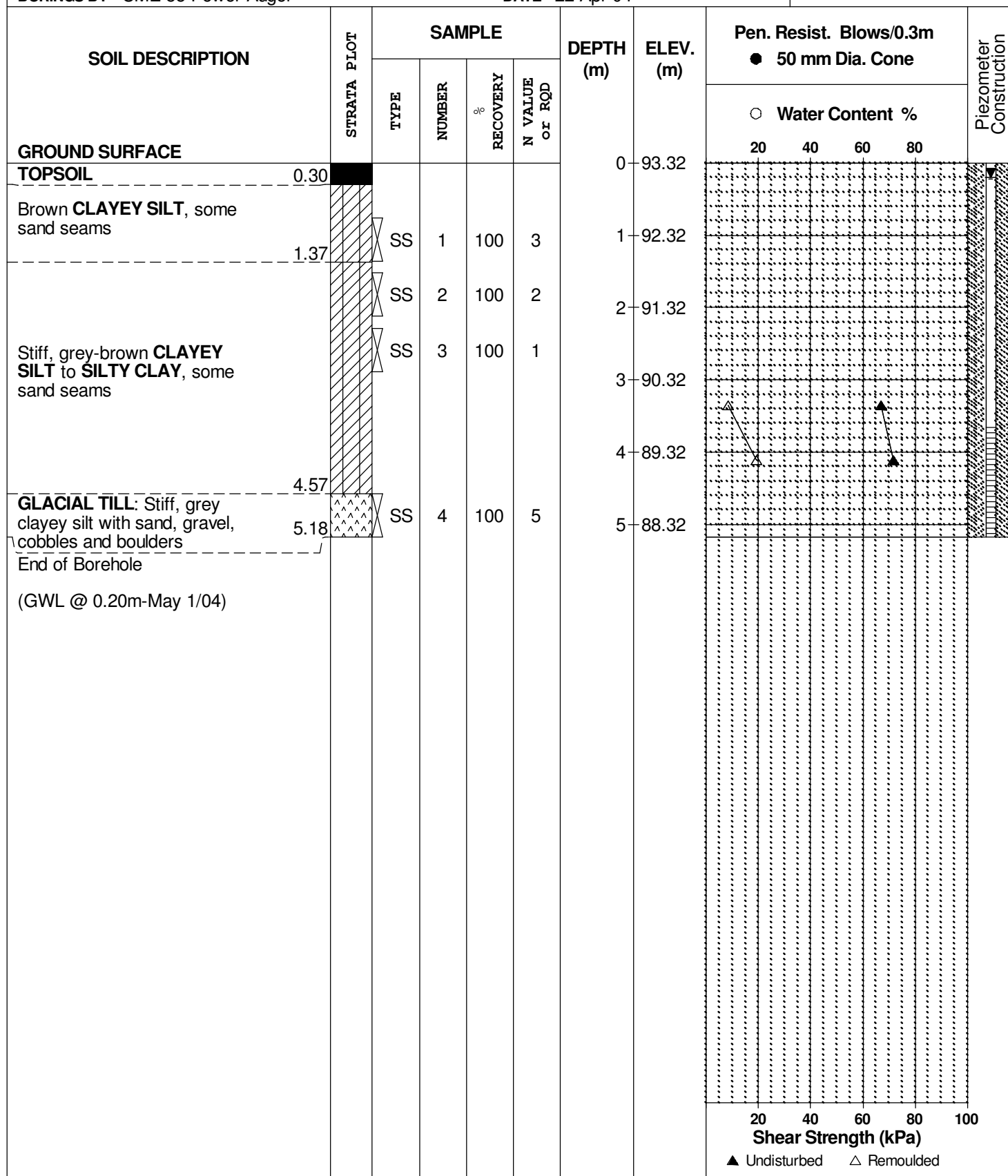
**REMARKS**

**HOLE NO.**

**BH 1**

**BORINGS BY** CME 55 Power Auger

**DATE** 22 Apr 04



## SOIL PROFILE AND TEST DATA

Preliminary Geotechnical Investigation  
Part 1, Lot 10 and Part 1, Lot 9, Concession 3  
Ottawa (Nepean), Ontario

**DATUM** Ground surface elevations provided by Webster and Simmonds Surveying Ltd.

**REMARKS**

**BORINGS BY** CME 55 Power Auger

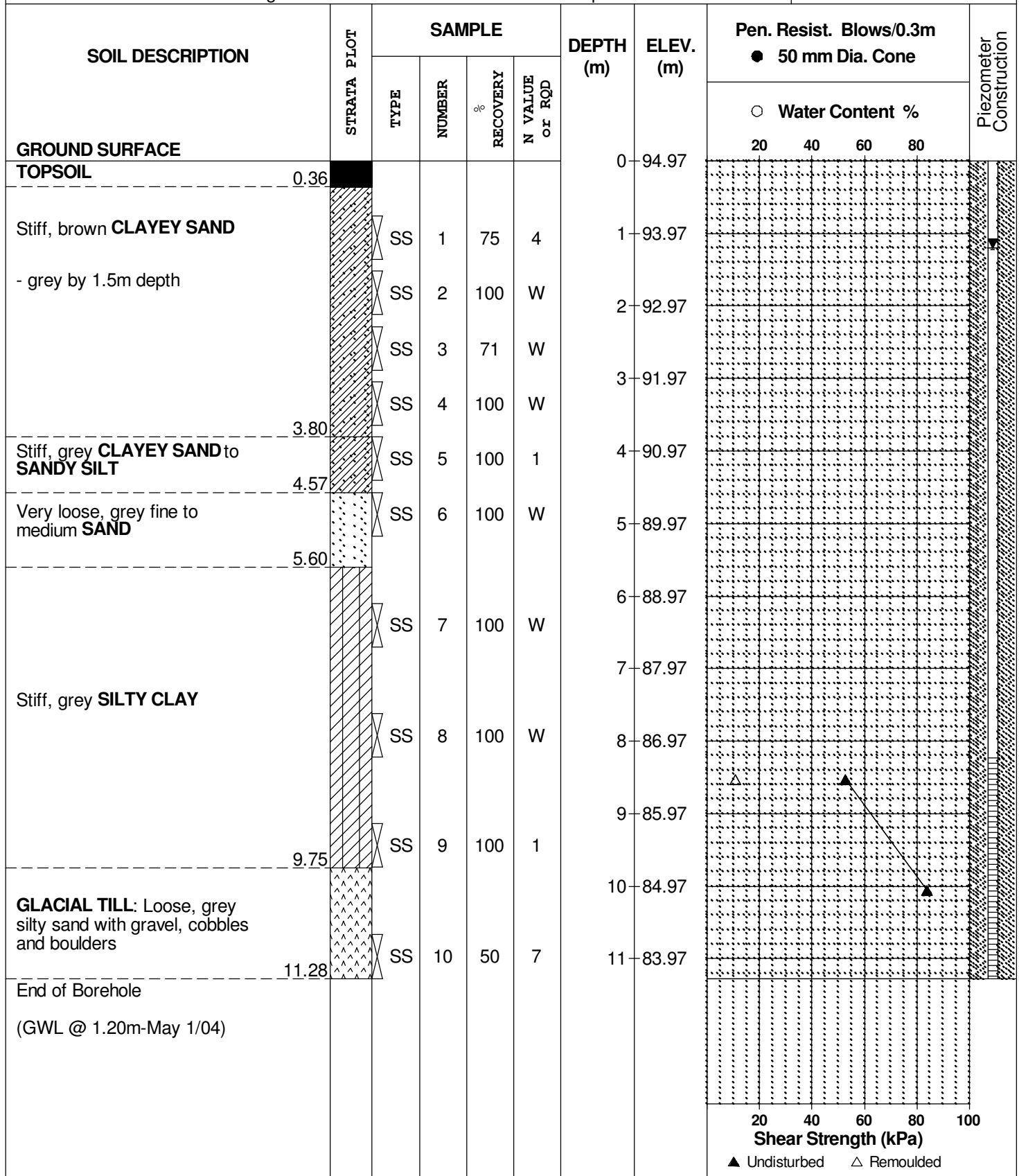
**DATE** 22 Apr 04

**FILE NO.**

**PG0214**

**HOLE NO.**

**BH 3**



## SOIL PROFILE AND TEST DATA

Geotechnical Investigation  
Francis Lands-Cambrian Road @ Greenbank Road  
Ottawa (Nepean), Ontario

DATUM

REMARKS

BORINGS BY Backhoe

DATE 1 Apr 04

FILE NO.

PG0177

HOLE NO.

TP11

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE						0						
TOPSOIL												
	0.40											
Very stiff, grey-brown <b>SILTY CLAY</b> , trace roots						1						
	1.80											
<b>GLACIAL TILL:</b> Grey sandy silt with gravel, cobbles and boulders						2						
	2.50											
End of Test Pit												
(Open hole GWL @ 1.6m depth)												
			</									

## SOIL PROFILE AND TEST DATA

**Geotechnical Investigation  
Francis Lands-Cambrian Road @ Greenbank Road  
Ottawa (Nepean), Ontario**

**DATUM**

REMARKS

## BORINGS BY Backhoe

DATE 1 Apr 04

FILE NO.

PG0177

HOLE NO.

TP12

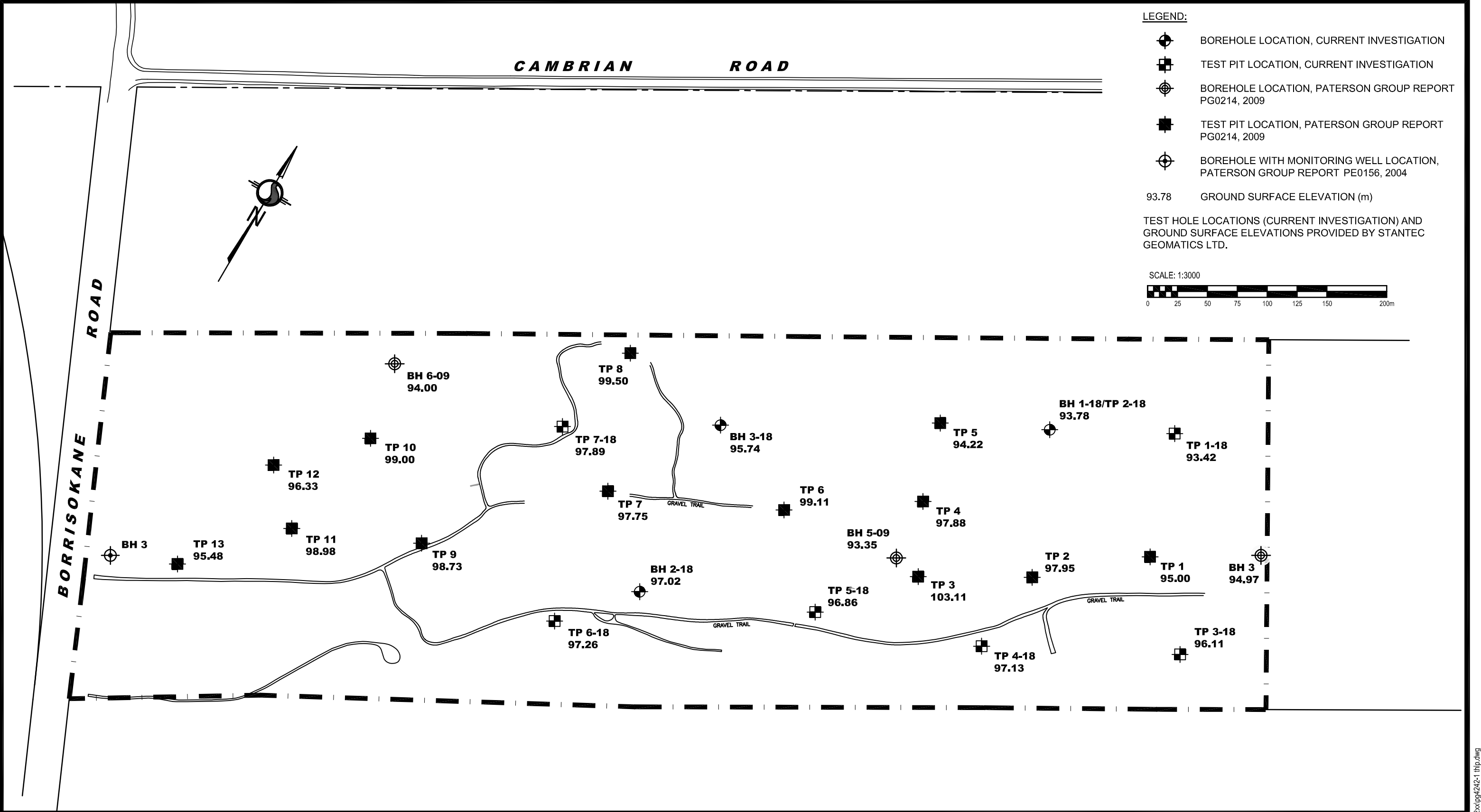
SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE						0						
TOPSOIL  0.40 ----- Reddish brown fine to medium <b>SAND</b>  - coarse sand with some gravel and shells by 1.0m depth		G	1			1						
		G	2			2						
3.00 ----- End of Test Pit  (Open hole GWL @ 1.0m depth)						3						

20 40 60 80 100

**Shear Strength (kPa)**

▲ Undisturbed    △ Remoulded

20 40 60 80 100



**patersongroup**  
consulting engineers

154 Colonnade Road South  
Ottawa, Ontario K2E 7J5  
Tel: (613) 226-7381 Fax: (613) 226-6344

0			
NO.	REVISIONS	DATE	INITIAL

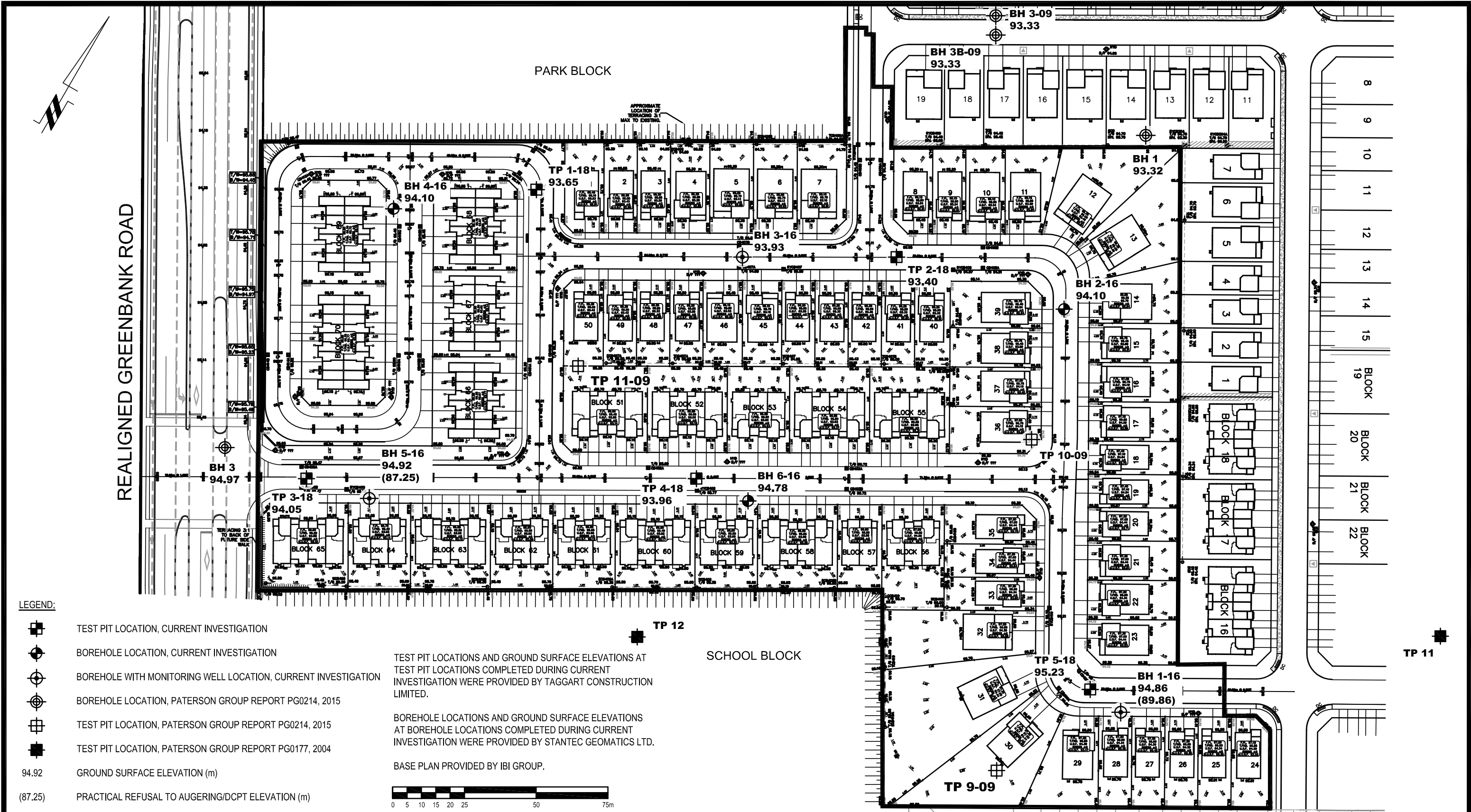
TAMARACK DEVELOPMENTS  
GEOTECHNICAL INVESTIGATION  
PROP. RESIDENTIAL DEVELOPMENT - THE MEADOWS - BORRISOKANE RD.  
OTTAWA, ONTARIO

Title: **TEST HOLE LOCATION PLAN**

Scale:	1:3000
Drawn by:	MPG
Checked by:	CB
Approved by:	DJG

Date:	01/2018
Report No.:	PG4242-1
Dwg. No.:	<b>PG4242-1</b>
Revision No.:	0





LEGEND:

- TEST PIT LOCATION, CURRENT INVESTIGATION
- BOREHOLE LOCATION, CURRENT INVESTIGATION
- BOREHOLE WITH MONITORING WELL LOCATION, CURRENT INVESTIGATION
- BOREHOLE LOCATION, PATERSON GROUP REPORT PG0214, 2015
- TEST PIT LOCATION, PATERSON GROUP REPORT PG0214, 2015
- TEST PIT LOCATION, PATERSON GROUP REPORT PG0177, 2004
- 94.92 GROUND SURFACE ELEVATION (m)
- (87.25) PRACTICAL REFUSAL TO AUGERING/DCPT ELEVATION (m)

TEST PIT LOCATIONS AND GROUND SURFACE ELEVATIONS AT TEST PIT LOCATIONS COMPLETED DURING CURRENT INVESTIGATION WERE PROVIDED BY TAGGART CONSTRUCTION LIMITED.

BOREHOLE LOCATIONS AND GROUND SURFACE ELEVATIONS AT BOREHOLE LOCATIONS COMPLETED DURING CURRENT INVESTIGATION WERE PROVIDED BY STANTEC GEOMATICS LTD.

BASE PLAN PROVIDED BY IBI GROUP.



**patersongroup**  
consulting engineers

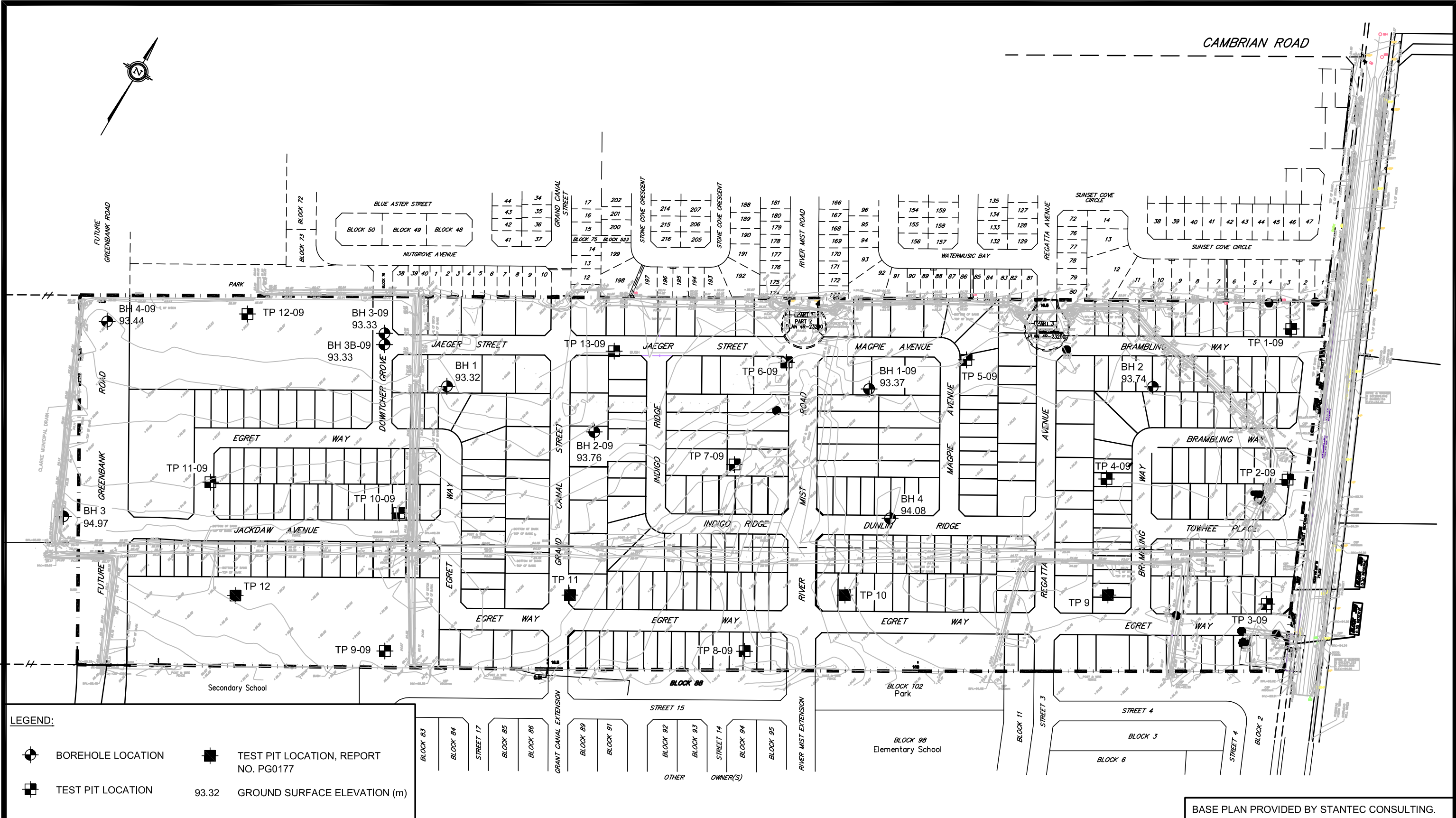
154 Colonnade Road South  
Ottawa, Ontario K2E 7J5  
Tel: (613) 226-7381 Fax: (613) 226-6344

1	GRADING PLAN UPDATED AND 2018 TEST PITS ADDED	05/03/2018	RG
NO.	REVISIONS	DATE	INITIAL

TAMARACK (NEPEAN) CORPORATION  
GEOTECHNICAL INVESTIGATION  
PROP. RESIDENTIAL DEVELOPMENT - THE MEADOWS PHASE 4  
OTTAWA, ONTARIO

Title:  
**TEST HOLE LOCATION PLAN**

Scale:	:1250	Date:	04/2016
Drawn by:	MPG	Report No.:	PG3786-1
Checked by:	RG	Dwg. No.:	<b>PG3786-1</b>
Approved by:	DJG	Revision No.:	1



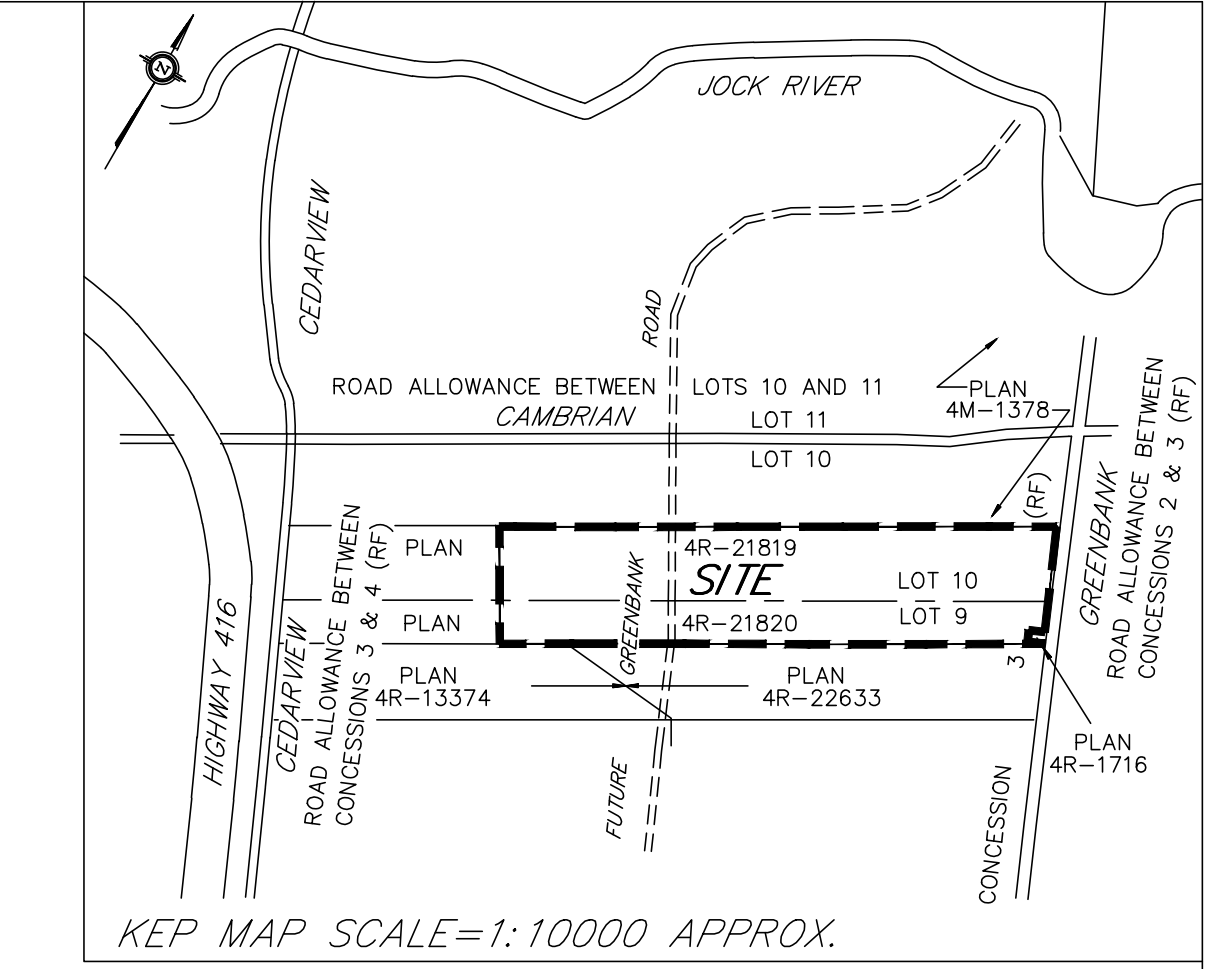
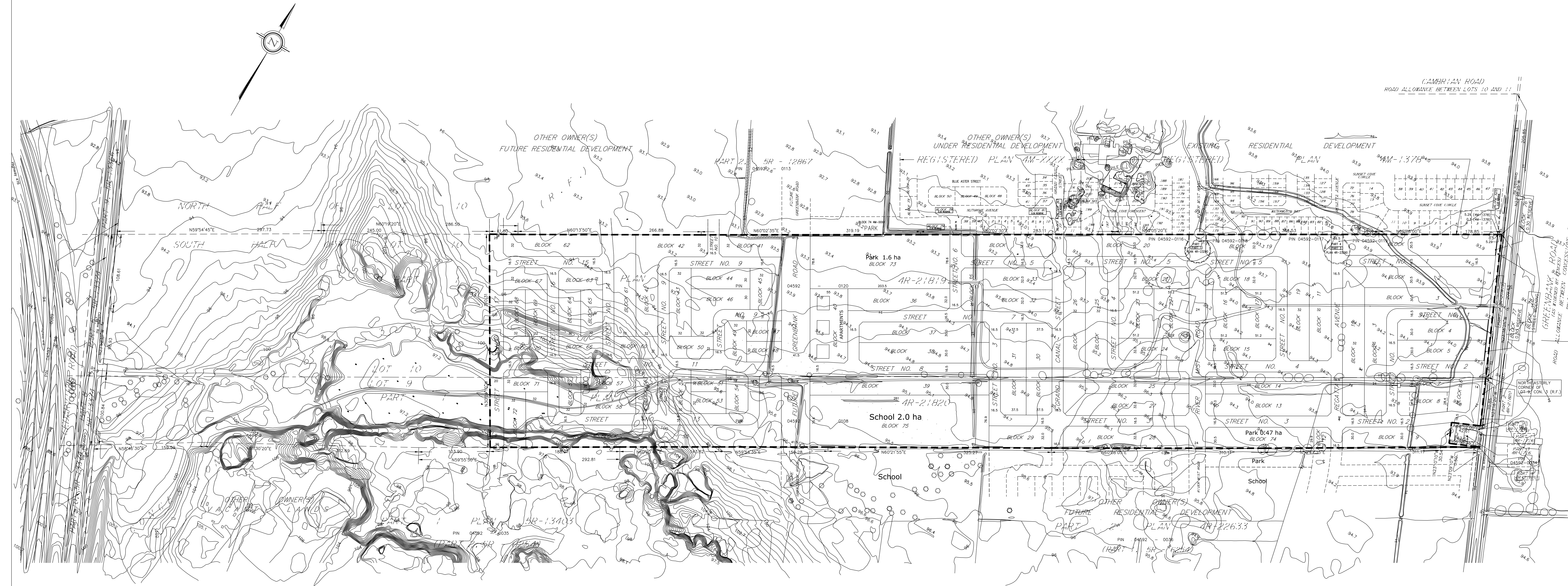
<b>patersongroup</b> consulting engineers 28 Concourse Gate, Unit 1, Ottawa, Ontario K2E 7T7	<b>Scale:</b> 1:3000	TAGGART GROUP OF COMPANIES GEOTECHNICAL INVESTIGATION PROP. RESIDENTIAL DEVELOPMENT—THE MEADOWS, PHASE I OTTAWA, ONTARIO	<b>TEST HOLE LOCATION PLAN</b>	<b>Dwg. No.</b> PG0214-4
	<b>Des.:</b> DG			<b>Report No.</b> PG0214-2
	<b>Dwn:</b> MPG			<b>Date:</b> 12/2009
<b>Chkd:</b> CDS				

Table 9: Hydraulic Conductivity Test Results				
Well ID	Depth of Well (mbgs)	Depth to Water Level (mbgs)	Test Type	Hydraulic Conductivity (m/sec)
BH1-16	3.1	0.4	Falling Head	4.02E-07
BH3-16	6.1	0.1	Falling Head	5.59E-06
			Rising Head	2.52E-06
BH5-16	4.5	0.6	Falling Head	9.90E-05
			Rising Head	6.20E-05
			Falling Head	8.48E-05
			Rising Head	5.94E-05
Maximum				9.90E-05
Minimum				4.02E-07
Geometric Mean				1.51E-05

# **APPENDIX 3**

**Stantec Geomatics Limited - Draft Plan of Subdivision With Contours**

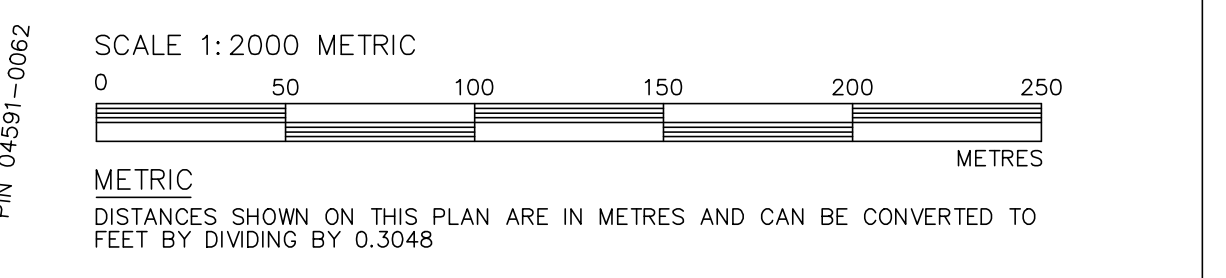




KEEP MAP SCALE=1:10000 APPROX.  
SITE AREA = 45.0 Ha± (111.2 Acres±)

DRAFT PLAN OF SUBDIVISION  
OF  
PART OF LOTS 9 AND 10  
CONCESSION 3 (RIDEAU FRONT)  
GEOGRAPHIC TOWNSHIP OF NEPEAN  
CITY OF OTTAWA  
FORMERLY IN THE CITY OF NEPEAN


STANTEC GEOMATICS LTD.  
2009



SURVEYOR'S CERTIFICATE :  
I HEREBY CERTIFY THAT THE BOUNDARIES OF THE SUBJECT LANDS AND  
THEIR RELATIONSHIP TO ADJOINING LANDS HAVE BEEN ACCURATELY AND  
CORRECTLY SHOWN.  
DATE : \_\_\_\_\_  
BRIAN J. WEBSTER  
ONTARIO LAND SURVEYOR

ADDITIONAL INFORMATION :  
d) RESIDENTIAL  
h) CITY WATER AVAILABLE  
i) SEE SOIL REPORT  
j) SEE TOPOGRAPHICAL INFORMATION  
k) ALL CITY SERVICES AVAILABLE  
l) NONE KNOWN

NOTE:  
THE PLAN DATA IS COMPILED FROM OFFICE RECORDS OF STANTEC GEOMATICS LTD.  
AND HAS NOT BEEN VERIFIED BY FIELD MEASUREMENTS. ALL DISTANCES ARE  
APPROXIMATE, TO BE VERIFIED BY FINAL REGISTERED PLAN(S).

Sept 18/09	add topo info from office maps, dwg & pdf to FP for review	CS
Sept 8-09	Prep Draft Plan per FP/GS, print for review	revl.dwg CS
DATE	REVISIONS	BY
FROM THE OFFICE OF		
		
STANTEC GEOMATICS LTD.		
Ontario Land Surveyors OTTAWA - ONTARIO (613)722-4430 FAX: (613)722-0769 E-Mail: brian.webster@stantec.com Website: www.stantec.com		
161610681v-131-Curkovic-Lands-Greenbank_rev1.dwg		
P.M.: fp	DRAWN: CS	FIELD: _____
CHECKED: fp	JOB No.: 161610681-131	Sept 18-09