

**PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT
PROPOSED EMS STATION
107 - 111 GLEN CAMERON ROAD
MARKHAM, ONTARIO**

Prepared for:

THE REGIONAL MUNICIPALITY OF YORK

**PATRIOT ENGINEERING LTD.
Consulting Engineers**

Project 37129
May 11, 2017

80 Nashdene Road, Unit 62
Toronto, Ontario
M1V 5E4
416-293-7716

TABLE OF CONTENTS

TEXT	Page
1.0 EXECUTIVE SUMMARY	1
2.0 INTRODUCTION	3
2.1 Phase Two Property Information	3
3.0 BACKGROUND INFORMATION	3
3.1 Physical Setting	3
4.0 SCOPE OF INVESTIGATION	4
4.1 Overview and Rationale	4
4.2 Phase One Conceptual Site Model	6
5.0 INVESTIGATION METHOD	6
5.1 Subsurface Conditions	7
5.2 Methodology	9
5.3 Laboratory	9
5.4 Applicable Criteria	9
6.0 REVIEW AND EVALUATION	10
6.1 Soils	10
6.2 Groundwater	10
6.3 Quality Assurance / Quality Control	10
7.0 CONCLUSIONS	10
8.0 STATEMENT OF QUALIFICATIONS	11
TABLE 1: Measured Short Term Groundwater Levels Upon Completion of Drilling	8
TABLE 2: Measured Short Term Groundwater Levels Obtained on April 19, 2017, 8 days After the Completion of Drilling	8
TABLE A: Concentrations of General Metals and Inorganics in Soil	
TABLE B: Concentrations of Hydrocarbons in Soil	
TABLE C: Concentrations of Volatile Organic Compounds in Soil	
TABLE D: Concentrations of Pesticides in Soil	
TABLE E: Concentrations of General Metals and Inorganics in Groundwater	
TABLE F: Concentrations of Hydrocarbons in Groundwater	
TABLE G: Concentrations of Volatile Organic Compounds in Groundwater	
TABLE H: Concentrations of Pesticides in Groundwater	

DRAWINGS

Site Plan Showing the Approximate Borehole Locations
Borehole Logs
Grain Size Distribution Curve

Figure
1
2 to 6
7

APPENDICES

Appendix 1: Certificate of Analysis of Chemical Testing on Soil and Groundwater Samples



**PATRIOT
ENGINEERING LTD.**
Consulting Engineers

Project 37129

May 11, 2017

The Regional Municipality of York
17252 Yonge Street
Newmarket, Ontario
L3Y 6Z1

Attention: Mr. Victor Chau, B.ArchSc., PMP, CCCA, LEED AP

**Phase Two - Environmental Site Assessment
Proposed EMS Station
107 - 111 Glen Cameron Road
Markham, Ontario**

1.0 EXECUTIVE SUMMARY

As requested, Patriot Engineering Ltd. has carried out a Phase Two - Environmental Site Assessment (ESA) for the above project site. The subject property does not contain any buildings and is currently being used as a storage yard for a landscaping company. The property is located in Markham, Ontario. Authorization to carry out the Phase Two - ESA was provided by Mr. Victor Chau of The Regional Municipality of York, on March 20, 2017. This assessment was carried out in accordance with the Ontario Regulation 153/04.

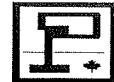
The objective of this assessment was to evaluate the soil and groundwater conditions at the Phase Two property to determine whether they have been affected by the potential environmental concerns that were provided in the Phase One - ESA. The potential environmental concerns stated in the Phase One - ESA arise from activities within the above property, as well as, the properties within 250m radius of the property (Phase One study area). The potential contaminants of concern from activities within the property and the surrounding properties within the Phase One study area consisted of general metal and inorganic parameters, Total Petroleum Hydrocarbons (TPH F1 to F4), Benzene, Toluene, Ethylbenzene and Xylene (BTEX), Volatile Organic Compounds (VOCs) and Pesticides.

In light of this, a total of five (5) boreholes (BH1 to BH5) were advanced to an approximate depth of 8.1m each. These boreholes were drilled at strategic locations for the purpose of obtaining soil samples for chemical analysis to determine whether the above mentioned potential contaminants of concern are present within the property. Also, three monitoring wells were installed in three of these five boreholes (BH1, BH3 and BH5) for the purpose of collecting groundwater samples for chemical analysis in order to assess whether the groundwater is affected by the potential contaminants of concern. The drilling and soil sampling activity was carried out on April 11, 2017, while the groundwater sampling took place on April 19, 2017.



The soil and groundwater samples selected for chemical analysis from the subject property were submitted to AGAT Laboratories in Mississauga, Ontario for analysis of general metals and inorganic parameters, Total Petroleum Hydrocarbons (TPH F1 to F4), Benzene, Toluene, Ethylbenzene and Xylene (BTEX), Volatile Organic Compounds (VOCs), and Pesticides. AGAT Laboratories is accredited by the Canadian Association of Environmental Analytical Laboratories (CAEAL).

The analytical results of the soil and groundwater samples collected from the site do not exceed the applicable Part XV.1 of the EPA Table 2 criteria for Residential / Parkland / Institutional Property Use for the environmental items of concern. Therefore, the site is considered suitable for Residential / Parkland / Institutional Property Use. In light of this, further environmental action is not required.



2.0 INTRODUCTION

As requested, Patriot Engineering Ltd. has carried out a Phase Two - Environmental Site Assessment (ESA) for the above project site. The subject property does not contain any buildings and is currently being used as a storage yard for a landscaping company. The property is located in Markham, Ontario. Authorization to carry out the Phase Two - ESA was provided by Mr. Victor Chau of The Regional Municipality of York, on March 20, 2017. This assessment was carried out in accordance with the Ontario Regulation 153/04.

The objective of this assessment was to evaluate the soil and groundwater conditions at the Phase Two property to determine whether they have been affected by the potential environmental concerns that were provided in the Phase One - ESA. The potential environmental concerns stated in the Phase One - ESA arise from activities within the above property, as well as, the properties within 250m radius of the property (Phase One study area). These potential environmental concerns are provided in detail in Section 4.1. The potential contaminants of concern from activities within the property and the surrounding properties within the Phase One study area consisted of general metal and inorganic parameters, Total Petroleum Hydrocarbons (TPH F1 to F4), Benzene, Toluene, Ethylbenzene and Xylene (BTEX), Volatile Organic Compounds (VOCs) and Pesticides.

In order to evaluate the soil and groundwater conditions for the Phase Two - ESA, a total of five boreholes were drilled at strategic locations for the purpose of collecting soil and groundwater samples. The samples were collected to carry out chemical analysis of the above potential contaminants of concern and determine whether any were present within the Phase Two property.

2.1 Phase Two Property Information

The subject property is located on the south side of Glen Cameron Road, at approximately 850m north and 900m east of the intersection of Yonge Street and Steeles Avenue East, in Markham, Ontario. The municipal address of the Phase One property is 107 - 111 Glen Cameron Road, Markham, Ontario. A Site Plan is provided in Figure 1.

The owner of the property is Hunster Corp. However, this Phase Two - ESA was carried out for Mr. Victor Chau of The Regional Municipality of York.

3.0 BACKGROUND INFORMATION

3.1 Physical Setting

The property currently has no buildings. However, this property used to have a one storey building, which was demolished at sometime after 2007. At this time, the property contains one shed and a shipping container. It also contains several trailers, landscaping equipment and snow plowing equipment used by the landscaping company.



Surface runoff water is drained into catch basins on Glen Cameron Road and the ditch at the south section of the property. Groundwater is not used as a source of potable water.

Based on maps and satellite images reviewed, the nearest water body is a creek located approximately 350m southeast of the property. This creek terminates at the Don River located approximately 2500m southeast of the property. No areas of natural significance were observed within the 250m radius of the Phase Two property.

4.0 SCOPE OF INVESTIGATION

4.1 Overview and Rationale

This Phase two ESA was recommended in the Patriot Engineering Ltd. Phase One - ESA Report No. 37110 dated February 27, 2017. The general environmental concerns that were stated in this report are as follows:

1. Subject Property:

A) Above Ground Storage Tank:

- (i) An above ground pesticides storage tank was observed at the property. This tank is on a trailer and it is anticipated that it is transported out of the property during landscaping work. No staining was observed around this storage tank.

It is possible that leaks and/or spills may have infiltrated into the soil within the subject site.

2. Surrounding Properties:

A) Waste Generation Code:

- (i) 97 Glen Cameron Road, located west of the subject property is registered as a waste generator under Ontario Regulation 347. This regulation states that any property that produced, collected, handled, or stored regulated waste has to be registered. The type of waste generated, handled and/or stored include waste oils and lubricants.
- (ii) 89 Glen Cameron Road, located west of the subject property is registered as a waste generator under Ontario Regulation 347. The type of waste generated, handled and/or stored include petroleum distillates, paint/pigment/coating residues, photo processing wastes.
- (iii) 120 Doncaster Avenue, located south of the subject property is registered as a waste generator under Ontario Regulation 347. The type of waste generated, handled and/or stored include light fuels, petroleum distillates, aliphatic solvents, waste oils & lubricants and oil skimmings & sludges.



- (iv) 134 Doncaster Avenue, located south of the subject property is registered as a waste generator under Ontario Regulation 347. The type of waste generated, handled and/or stored include waste oils & lubricants.
- (v) 140 Doncaster, located southeast of the subject property is registered as a waste generator under Ontario Regulation 347. The type of waste generated, handled and/or stored include halogenated solvents.
- (vi) 99 Henderson Avenue, located east of the subject property is registered as a waste generator under Ontario Regulation 347. The type of waste generated, handled and/or stored include photo processing wastes, pharmaceuticals and pathological wastes.

There is a potential environmental risk from a spill and/or a leak of any of the chemicals mentioned above that may migrate to the subject property.

B) Spills in surrounding properties:

- i) 83 Glen Cameron Road, located west of the subject property is a site where a spill of KOH (Potassium Hydroxide) occurred.
- ii) 89 Henderson Avenue, located east of the subject property is a site where a spill of raw sewage occurred.
- iii) 120 Glen Cameron Road, located south of the subject property is a site where a spill of diesel fuel has occurred from an underground storage tank leak.

It is possible that the spilled chemicals at the above mentioned sites may have migrated onto the subject property.

C) Fuel Tank

- i) 120 Doncaster Avenue, located south of the subject property has underground gasoline and diesel fuel tanks
- ii) 140 Doncaster Avenue, located southeast of the subject property has a retail fuel tank. It is not specified whether the tank is underground or above ground.

D) Pesticides

- i) 112 Glen Cameron Road, located north of the subject property is a site occupied by a pesticide operator.
- ii) 124 Glen Cameron Road, located northeast of the subject property is a site occupied by a pesticide operator.



- iii) 104 Morgan Avenue, located northwest of the subject property is a site occupied by a pesticide operator.
- iv) 134 Doncaster Avenue, located south of the subject property is a site occupied by a pesticide operator.
- v) 111 Henderson Avenue, located east of the subject property is a site occupied by a pesticide operator.

In light of this, five (5) boreholes were drilled and three wells were installed in three of these boreholes, in order to assess whether the soil and groundwater within the Phase Two property are affected by the above mentioned environmental concerns.

4.2 Phase One Conceptual Site Model

The property is currently being used as a storage yard by a landscaping company. There are no buildings present at the property. A shed, a shipping container, various trailers, landscaping equipment and snow plowing equipment were stored at the site. A portable pesticide above ground tank was present on site. A leak or a spill of the pesticides may have infiltrated the soil. As a result, these may cause potential environmental concerns.

The neighboring properties within the Phase One study area are industrial, commercial and residential. There are various properties within the Phase One study area, located to the east, west and south of the property registered as a waste generator under Ontario Regulation 347. Also, three properties to the east, west and south of the Phase One property are areas, where spills has taken place. There are two sites within the Phase One study area, where underground storage tanks (USTs) are present. Furthermore, various properties within the Phase One study area, located to the east, north and south of the property are pesticide operators. There is a potential environmental risk from a spill and/or a leak of chemicals from any of these properties that may migrate to the subject property. Therefore, these are potential environmental concerns to the Property.

5.0 INVESTIGATION METHOD

The borehole drilling activity for the Phase Two ESA was carried out on April 11, 2017. During this activity a total of five boreholes (BH1 to BH5) were advanced to a depth of 8.1m each. DBW Drilling Limited was contracted to carry out drilling of the boreholes. A CME 55 Ford Track Mount rig was used to perform the drilling activity. Monitoring wells were also installed in three of the above five boreholes (BH1, BH3 and BH5) for the purpose of groundwater sampling. The approximate locations of the boreholes are shown on the Site Plan, Figure 1.

The ground surface elevations for the boreholes were determined by members of our field engineering staff and referenced at:

Top of Manhole on Glen Cameron Road. The location of the manhole is also shown on the Site Plan, Figure 1.



The elevation at this point is understood to be at Elev. 163.87m.

5.1 Subsurface Conditions

The detailed stratigraphy encountered in the boreholes along with the monitoring well construction details are presented on Drawings 2 to 6.

In general, Boreholes 1 and 3 were drilled from above asphalt paved regions and advanced through asphalt with a thickness that ranged from 40mm to 50mm. Boreholes 4 and 5, were drilled from grass covered areas and initially advanced through a topsoil layer that ranged in thickness from 125mm to 150mm.

Borehole 2 initially, encountered a granular fill layer that consisted of compact, brown, moist to very moist, Crusher Run Limestone, with a thickness of 60mm. Underlying, the granular fill layer at Boreholes 2, earth fill composed of very stiff, brown, very moist, clayey silt fill was next encountered. Traces of sand, gravel, cobbles and topsoil were also observed within this layer.

At Boreholes 1 and 3, beneath the asphalt layer, the granular fill components of the paved areas were present, largely consisting of loose to compact, brown, moist to very moist, Crusher Run Limestone. The thickness of the granular fill component was 50mm.

Beneath the granular fill layer at Borehole 1 and the clayey silt fill layer at Borehole 2, a buried topsoil layer with thickness that varied from 100mm to 350mm was detected.

Underneath the topsoil layer at Boreholes 1, 4 and 5 and the granular fill layer at Borehole 3, fill material composed of very stiff, brown, moist to slightly moist, clayey silt fill was next encountered. Traces of sand, gravel, cobbles and topsoil were also observed within this layer. The depth of the fill layers ranged from 0.5m to 1.6m below the existing grade.

Underlying the clayey silt fill at Boreholes 1, 3, 4 and 5 and the topsoil layer at Borehole 2, a native layer consisting of very stiff to soft, brown/grey, moist to very moist, clayey sandy silt till was present. This layer also contained traces of gravel, cobbles and shale fragments. The results of a grain size distribution test performed on a sample obtained from this layer is shown on Figure 7.

All boreholes next encountered, dense to very dense, grey, slightly moist to very moist, sandy silt till. Traces of clay, gravel and cobbles were also present within this material.

The final layer encountered in all boreholes consisted of compact to very dense, grey, moist to saturated, silt. Also present in this layer were traces of clay and sand.

Soil sampling during the drilling activity was carried out every 0.75m for the first 3m depth of each borehole and every 1.5m past the 3m depth.



Groundwater levels were obtained upon the completion of drilling. The short term groundwater levels that were recorded inside the boreholes upon the completion of drilling are indicated below on Table 1. Water level readings were also obtained on April 19, 2017, 8 days after the completion of drilling, from the boreholes containing wells. These short term groundwater levels are shown on Table 2. The groundwater level readings are also shown on the individual borehole logs.

Table 1:
Measured Short Term Groundwater Levels Upon Completion of Drilling

Borehole No.	Depth of Borehole (m)	Borehole Surface Elevation (m)	Approximate Depth of Groundwater Level Below Existing Ground (m)	Approximate Groundwater Elevation (m)
BH1	8.1	164.9	DRY	-
BH2	8.1	164.9	4.7	160.2
BH3	8.1	164.7	6.7	158
BH4	8.1	164.1	6.6	157.5
BH5	8.1	163.6	DRY	-

Table 2:
Measured Short Term Groundwater Levels Obtained on April 19, 2017, 8 Days After the Completion of Drilling

Borehole No.	Depth of Borehole (m)	Borehole Surface Elevation (m)	Approximate Depth of Groundwater Level Below Existing Ground (m)	Approximate Groundwater Elevation (m)
BH1	8.1	164.9	6.2	158.7
BH2	8.1	164.7	2.4	162.3
BH5	8.1	163.6	6.7	156.9

Long term groundwater levels have not been established and some seasonal fluctuations and higher water levels should be anticipated. Groundwater is anticipated to flow in the general southeast direction.



5.2 Methodology

Our field personnel collected soil samples from each borehole at specific intervals using a split spoon sampler. All soil samples were collected in accordance to accepted industry practice. Each sample was field-screened for combustible soil vapours (CSVs), using a Gastechtor 1238ME organic vapour meter and worst case soil samples were obtained from each borehole. Soil sample BH2 SS2 and BH3 SS1 were selected for analysis of metals and general inorganic parameters. Soil samples BH1 SS3, BH2 SS4, BH4 SS4 and BH5 SS3 were obtained for analysis of Total Petroleum Hydrocarbons (TPH F1 to F4) and Benzene, Toluene, Ethylbenzene and Xylene (BTEX), as well as, Volatile Organic Compounds (VOCs). Also, soil samples BH4 SS1 and BH5 SS1 were obtained for the analysis of Pesticides.

Prior to collecting groundwater samples, the monitoring wells were developed by purging a minimum of three well volumes of groundwater using a bailer dedicated for each well. Groundwater samples were then taken at Boreholes 1 and 3 for the analysis of general metal and inorganic parameters. Groundwater samples were also obtained from all three wells for the analysis of Total Petroleum Hydrocarbons (TPH F1 to F4) and Benzene, Toluene, Ethylbenzene and Xylene (BTEX) parameters and Volatile Organic Compounds (VOCs) parameters. Additionally, groundwater samples were collected from Boreholes 3 and 5 for the analysis of Pesticide parameters.

The site personnel wore a new pair of latex gloves for the collection of each sample. Soil samples were placed in laboratory prepared jars and stored in coolers for transport to the project laboratory.

5.3 Laboratory

The soil and groundwater samples selected for chemical analysis from the subject property were submitted to AGAT Laboratories in Mississauga, Ontario for analysis of general metal and inorganic parameters, Total Petroleum Hydrocarbons (TPH F1 to F4), Benzene, Toluene, Ethylbenzene and Xylene (BTEX), Volatile Organic Compounds (VOCs), and Pesticides. AGAT Laboratories is accredited by the Canadian Association of Environmental Analytical Laboratories (CAEAL).

5.4 Applicable Criteria

In the Province of Ontario, soil and groundwater quality data are referenced to the criteria contained in the *Soil, Ground Water and Sediment Standards for use Under Part XV.1 of the Environmental Protection Act (EPA), April 15, 2011*.

The site is a vacant property currently being used as a yard by a landscaping company and located in Markham, Ontario and is in an area considered to be a potable groundwater area. We encountered various types of soil texture such as clayey sandy silt till, sandy silt till and silt. The applicable remedial criteria based on site conditions would therefore be Residential/Parkland / Institutional Property Use in a fine grained soils condition using a full depth generic approach, in a potable groundwater situation. These criteria are referenced in Table 2 of Part XV.1 of the Environmental Protection Act (EPA).



6.0 REVIEW AND EVALUATION

6.1 Soils

The analytical results for the soil samples are shown on the attached Tables A, B, C and D. The results show that the concentrations of general metal and inorganic parameters, Total Petroleum Hydrocarbons (TPH F1 to F4), Benzene, Toluene, Ethylbenzene and Xylene (BTEX), Volatile Organic Compounds (VOCs) and Pesticides were either below the laboratory detection limit or were below the relevant EPA Part XV.1 Table 2 criteria for Residential/Parkland / Institutional Property Use in the potable water condition. Therefore, the site is considered suitable for Residential/ Parkland / Institutional Property Use. Copies of the soils laboratory analytical reports are attached in Appendix 1.

6.2 Groundwater

The analytical results for the groundwater samples are shown on the attached Tables E, F, G and H. The results show that the concentrations of general metal and inorganic parameters, Total Petroleum Hydrocarbons (TPH F1 to F4), Benzene, Toluene, Ethylbenzene and Xylene (BTEX), Volatile Organic Compounds (VOCs) and Pesticides were either below the laboratory detection limit or were below the relevant EPA Part XV.1 Table 2 criteria in the potable water condition. Copies of the groundwater laboratory analytical reports are attached in Appendix 1.

6.3 Quality Assurance / Quality Control

All soil samples were collected from the boreholes using a new pair of latex gloves for each sample. Representative soil samples were placed in laboratory prepared glass containers. All samples were stored in coolers with cold packs, for transfer to AGAT Laboratories. All sampling implements were cleaned and rinsed with distilled water between samples in order to minimize the potential for cross contamination.

All groundwater samples were collected from new disposable bailers and field staff used a new pair of latex gloves for each sample. Groundwater samples were collected in laboratory prepared glass and plastic containers. Prior to sample collection, the monitoring wells were purged of a minimum three well volumes.

A quality assurance/quality control program (QA/QC) was conducted concurrently with the chemical analysis of soil samples. The QA/QC program consisted of the analysis of blanks, spike recovery, and standard reference materials, where applicable.

7.0 CONCLUSIONS

The analytical results of the soil and groundwater samples collected from the site do not exceed the applicable Part XV.1 of the EPA Table 2 criteria for Residential / Parkland / Institutional Property Use for the environmental items of concern. Therefore, the site is considered suitable for Residential / Parkland / Institutional Property Use. In light of this, further environmental action is not required.



The assessment work at the subject property was carried out by Patriot Engineering Ltd., according to generally accepted engineering and environmental practices. Environmental sampling is based on the results obtained from a series of specific locations and can only be extrapolated to an undefined limited area around these locations. The extent of the limited area depends on the soil and groundwater conditions, as well as, the history of the site reflecting natural, construction and other activities. The sampling frequency meets the requirements outlined in the MOE Guidelines. In addition, analysis has been carried out for a limited number of chemical parameters and it should not be inferred that other chemical species are not present. No other warranty or representation, expressed or implied, as to the accuracy of the information or recommendations is included or intended in this report.

Patriot Engineering Ltd., disclaims any liability or responsibility to any person or party for loss, damage, expense, fine, or penalty which may arise or result from the use of any information or recommendations contained in this report. This report is intended for use by our client Mr. Victor Chau of The Regional Municipality of York. Any use which any other parties make of this report, or any reliance on or decisions made based on it, are the sole responsibilities of these other parties.

Based on our visual observations we are not aware of the presence of any deleterious substances elsewhere on this site and with depth which require special attention. Should any conditions at the site be encountered which differ from those at the sampling locations, we request to be notified immediately in order to assess the additional information and its effects on the above conclusions.

8.0 STATEMENT OF QUALIFICATIONS

Mr. Milkias Woldegiorgis, P.Eng.

Mr. Milkias Woldegiorgis is a graduate of the University of Waterloo with a degree in Geological/Geotechnical Engineering. He is licensed as a Professional Engineer with the Professional Engineers Ontario (PEO). In addition to various geotechnical projects, he has been involved in the completion of several Phase One and Phase Two ESAs, remediation work, as well as, chemical testing and sampling of soil and groundwater. Mr. Milkias Woldegiorgis meets the requirements of a qualified person under the Ontario Regulation 153/04, Section 5 definition of "Qualified Person".

Mr. Larry Galimanis, P.Eng, Principal/Consulting Engineer

Mr. Larry Galimanis is the President of Patriot Engineering Ltd. He is licensed as a Professional Engineer with the Professional Engineers Ontario (PEO), and also designated as a Consulting Engineer. He has over 30 years of experience in the engineering profession, including multiple projects involving environmental site assessments and remediation work. Mr. Larry Galimanis meets the requirements of a qualified person under the Ontario Regulation 153/04, Section 5 definition of "Qualified Person".



Project 37129

Page 12

Should you have any questions, please do not hesitate to contact our office.

Sincerely,
PATRIOT ENGINEERING LTD.

A handwritten signature in black ink.

Milkias Woldegiorgis, P.Eng.

A handwritten signature in black ink.

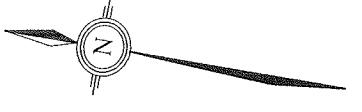
Larry Galimanis, P.Eng.
Principal/Consulting Engineer



Distribution: Mr. Victor Chau, The Regional Municipality of York

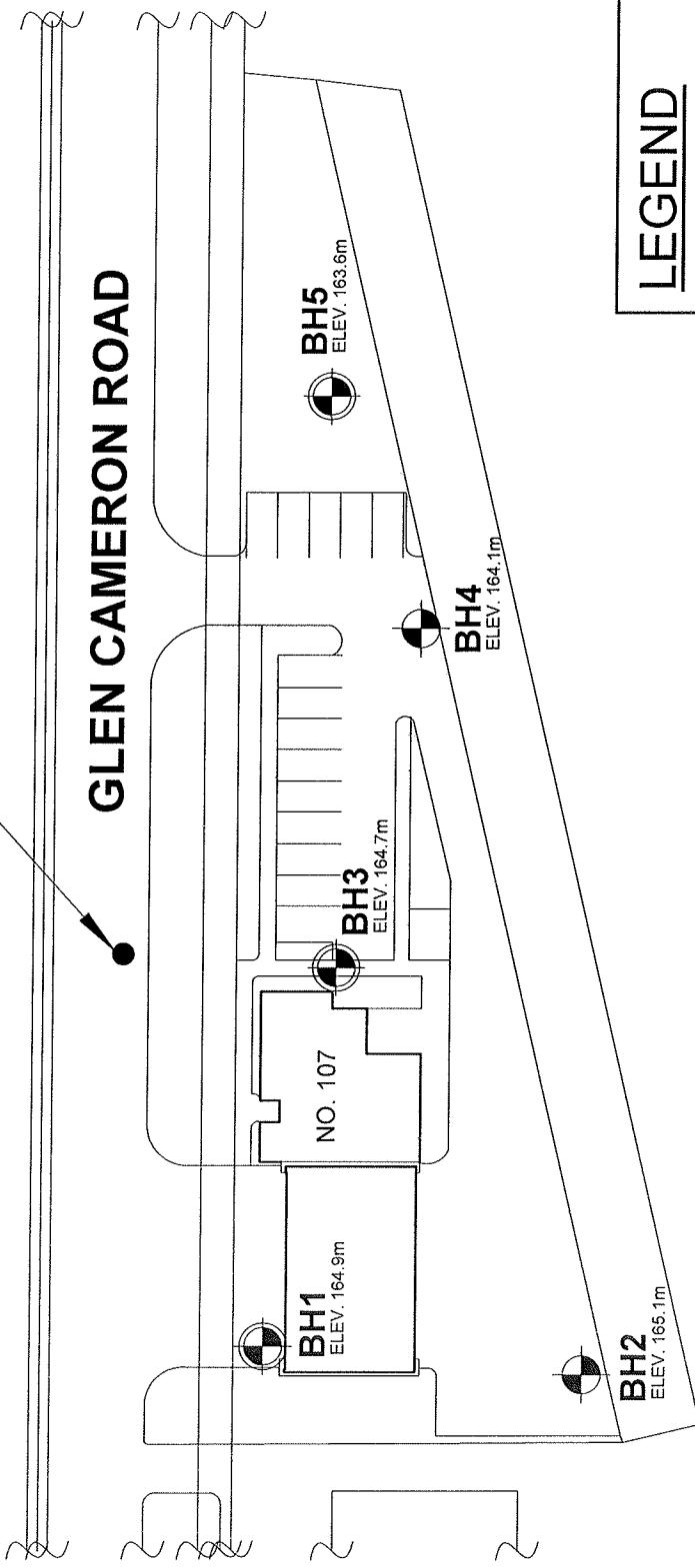
(4)

**FIGURE 1: SITE PLAN SHOWING THE APPROXIMATE BOREHOLE LOCATIONS
PROPOSED EMS STATION
PHASE TWO - ENVIRONMENTAL SITE ASSESSMENT
107 GLEN CAMERON ROAD, MARKHAM, ROAD**



TEMPORARY
BENCHMARK
TOP OF MANHOLE
ELEV. 163.87m

GLEN CAMERON ROAD



LEGEND

- BOREHOLE
- BOREHOLE WITH WELL

REFERENCE:
SITE PLAN INFORMATION ADAPTED FROM
BOREHOLE PLAN DRAWING NO. BH 01
PREPARED BY THOMAS BROWN ARCHITECTS INC.,
DATED NOVEMBER 2, 2015.

Drawn By	M.W.	Date	Apr '17
Checked By	L.G.		Apr '17
Revisions			
Scale	REDUCED FROM ORIGINAL		

PATRIOT ENGINEERING LTD.
Consulting Engineers

F * **T**

Project: 37129 Figure: 1

Project No: 37129

Borehole #: BH1

Project: Proposed EMS Station

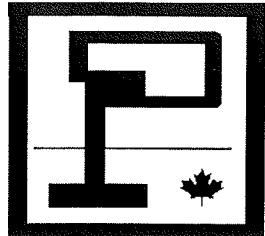
Borehole Location: See Figure 1

Location: 107 Glen Cameron Road, Markham, Road

Project Engineer: L.G.

Client: The Regional Municipality of York

Drawing No.: 2



		SUBSURFACE PROFILE		SAMPLE				U/Wt.(kg/m³)	Moisture	Piezometer Data	Remarks
Depth (m)	Symbol	Description	Elevation (m)	Type	N = Blows/300mm	Recovery (%)	O/C (ppm)				
0		Ground Surface	164.9								
0		ASPHALT - 50mm	164.7								
0.5		GRANULAR FILL - 50mm									
1		SAND AND GRAVEL loose, brown, very moist									
1		TOPSOIL - 100mm									
1.5		FILL - CLAYEY SILT	163.3	SS1	9	40	25				
1.5		stiff to very stiff, very moist to moist, trace sand, trace gravel, trace cobbles, trace topsoil		SS2	17	40	25				
2		CLAYEY SANDY SILT TILL		SS3	34	90	100				
2		very stiff to soft, brown becoming grey with depth, moist to very moist, trace gravel, trace cobble, trace shale fragments, isolated wet sand seams		SS4	23	85	100				
3				SS5	21	80	100				
4				SS6	16	95	75				
5			159.4	SS7	52	95	50				
6		SANDY SILT TILL		SS8	59	80	25				
6		very dense, grey, slightly moist to very moist, trace clay, trace gravel, trace cobbles									
7		SILT	157.9								
7		very dense, grey, very moist to saturated, trace clay, trace sand, minor dilation									
8		END OF BOREHOLE	156.8								
9		See next page for notes.....									
10											

Drill Method: S/S Auger

PATRIOT ENGINEERING LTD.
80 Nashdene Road., Unit 62, Toronto, ON, M1V 5E4
Phone: (416) 293-7716 Fax: (416) 293-6722
e-mail: info@patrioteng.ca

Datum: Geodetic

Drill Date: April 11, 2017

Checked by: L.G.

Project No: 37129

Project: Proposed EMS Station

Location: 107 Glen Cameron Road, Markham, Road

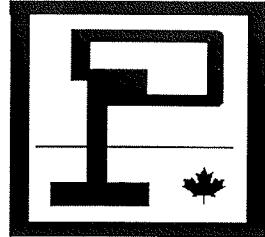
Client: The Regional Municipality of York

Borehole #: BH1

Borehole Location: See Figure 1

Project Engineer: L.G.

Drawing No.: 2



SUBSURFACE PROFILE			SAMPLE				Standard Penetration 'N'				Moisture			Piezometer Data	Remarks
Depth (m)	Symbol	Description	Elevation (m)	Type	N = Blows/300mm	Recovery (%)	OVC (ppm)	U.Wt.(kg/m³)	○ SPT Blows/300mm ○ 20 40 60 80	▲ Shera Str. Cu kPa ▲ 50 100 150 200	x Moisture% x 10 20 30				
11		Notes: 1. Borehole advanced to 8.1m depth using solid stem augers on April 11, 2017. 2. Borehole was found to be dry upon completion of drilling. 3. Short term groundwater level measured at 6.2m depth on April 19, 2017, 8 days after the completion of drilling.													
12															
13															
14															
15															
16															
17															
18															
19															
20															

Drill Method: S/S Auger

Drill Date: April 11, 2017

PATRIOT ENGINEERING LTD.
80 Nashdene Road., Unit 62, Toronto, ON, M1V 5E4
Phone: (416) 293-7716 Fax: (416) 293-6722
e-mail: info@patrioteng.ca

Datum: Geodetic

Checked by: L.G.

Project No: 37129

Borehole #: BH2

Project: Proposed EMS Station

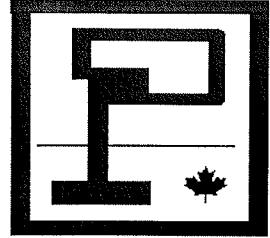
Borehole Location: See Figure 1

Location: 107 Glen Cameron Road, Markham, Road

Project Engineer: L.G.

Client: The Regional Municipality of York

Drawing No.: 3



		SUBSURFACE PROFILE		SAMPLE				Standard Penetration 'N'	Moisture	Piezometer Data	Remarks
Depth (m)	Symbol	Description	Elevation (m)	Type	N = Blows/300mm	Recovery (%)	O/C (ppm)	U.Wt.(kg/m³)	x Moisture% x 10 20 30		
0		Ground Surface	164.9								
		GRANULAR FILL - 60mm SAND AND GRAVEL compact, brown, very moist	164.3	SS1	15	40	25				
		FILL - CLAYEY SILT very stiff, brown, very moist, trace sand, trace gravel, trace topsoil	164.0	SS2	19	55	25				
		TOP SOIL - 350mm		SS3	34	65	100				
		CLAYEY SANDY SILT TILL very stiff to firm, brown becoming grey with depth, very moist to moist, trace gravel, trace cobble, isolated wet sand seems, oxidized, minor dilation at SS6		SS4	31	85	150				
				SS5	32	85	50				
				SS6	20	100	50				
		SANDY SILT TILL very dense, grey, slightly moist to very moist, trace clay, trace gravel, trace cobbles	159.4	SS7	50	100	25				
		SILT very dense, grey, very moist to saturated, trace clay, trace sand, minor dilation	157.8	SS8	73	100	25				
8		END OF BOREHOLE									
		Notes:									
		1. Borehole advanced to 8.1m depth using solid stem augers on April 11, 2017.									
		2. Short term groundwater level measured at 4.7m depth upon completion of drilling.									

Drill Method: S/S Auger

PATRIOT ENGINEERING LTD.
80 Nashdene Road., Unit 62, Toronto, ON, M1V 5E4
Phone: (416) 293-7716 Fax: (416) 293-6722
e-mail: info@patrioteng.ca

Datum: Geodetic

Drill Date: April 11, 2017

Checked by: L.G.

Project No: 37129

Borehole #: BH3

Project: Proposed EMS Station

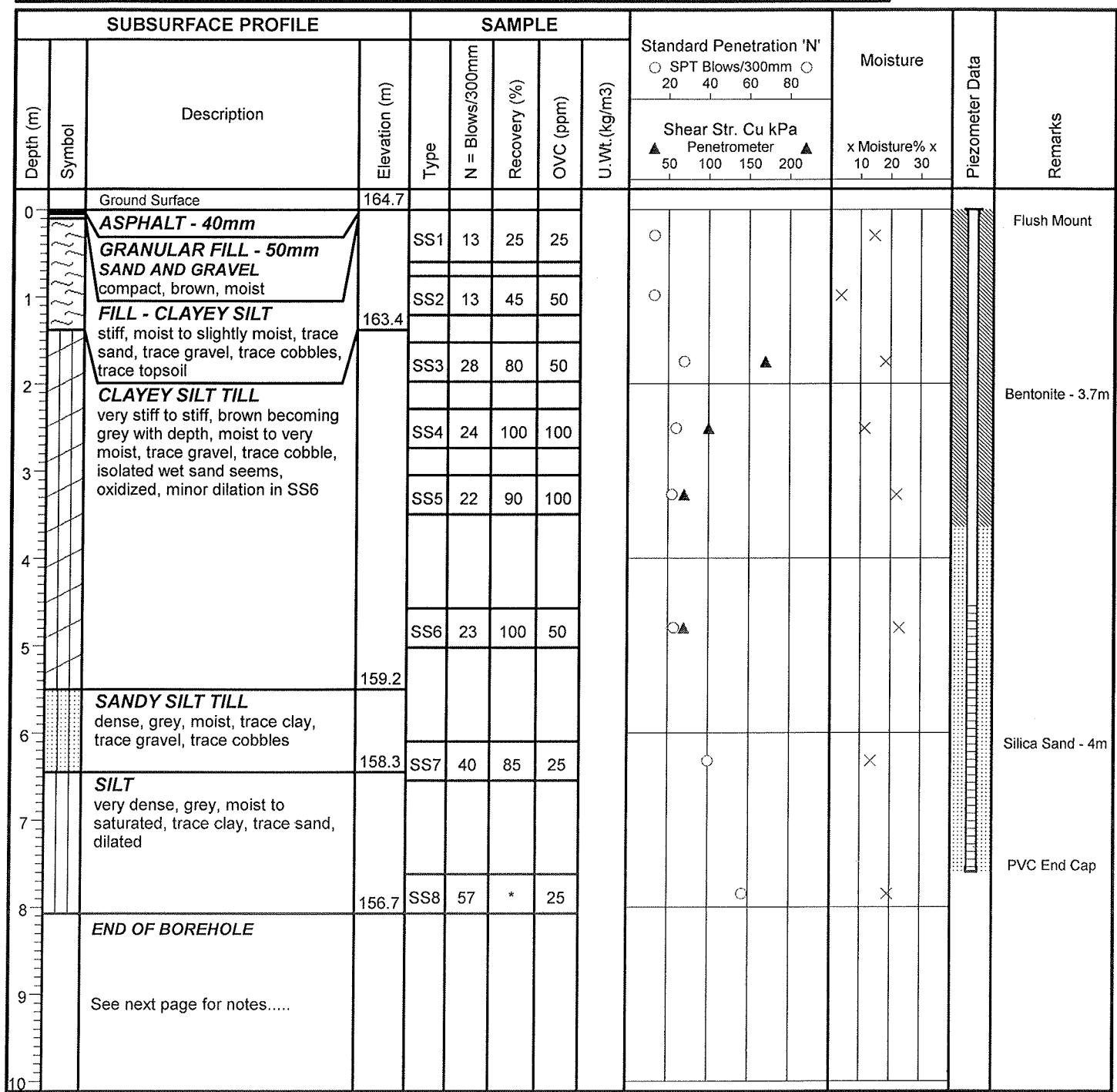
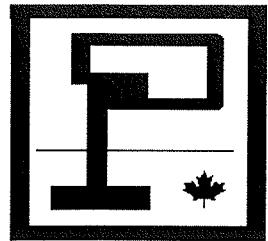
Borehole Location: See Figure 1

Location: 107 Glen Cameron Road, Markham, Road

Project Engineer: L.G.

Client: The Regional Municipality of York

Drawing No.: 4



Drill Method: S/S Auger

PATRIOT ENGINEERING LTD.
80 Nashdene Road., Unit 62, Toronto, ON, M1V 5E4
Phone: (416) 293-7716 Fax: (416) 293-6722
e-mail: info@patrioteng.ca

Datum: Geodetic

Drill Date: April 11, 2017

Checked by: L.G.

Project No: 37129

Borehole #: BH3

Project: Proposed EMS Station

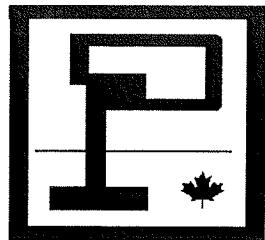
Borehole Location: See Figure 1

Location: 107 Glen Cameron Road, Markham, Road

Project Engineer: L.G.

Client: The Regional Municipality of York

Drawing No.: 4



SUBSURFACE PROFILE			SAMPLE				Standard Penetration 'N'				Moisture			Piezometer Data	Remarks
Depth (m)	Symbol	Description	Elevation (m)	Type	N = Blows/300mm	Recovery (%)	OVC (ppm)	U.Wt.(kg/m³)	○ SPT Blows/300mm 20 40 60 80	▲ Shera Str. Cu kPa 50 100 150 200	x Moisture% x 10 20 30				
11		Notes: 1. Borehole advanced to 8.1m depth using solid stem augers on April 11, 2017. 2. Short term groundwater level measured at 6.7m depth upon completion of drilling. 3. Short term groundwater level measured at 2.4m depth on April 19, 2017, 8 days after the completion of drilling. *There was no sample recovered in the spoon, therefore an auger sample was obtained.													
12															
13															
14															
15															
16															
17															
18															
19															
20															

Drill Method: S/S Auger

Drill Date: April 11, 2017

PATRIOT ENGINEERING LTD.
80 Nashdene Road., Unit 62, Toronto, ON, M1V 5E4
Phone: (416) 293-7716 Fax: (416) 293-6722
e-mail: info@patrioteng.ca

Datum: Geodetic

Checked by: L.G.

Project No: 37129

Borehole #: BH4

Project: Proposed EMS Station

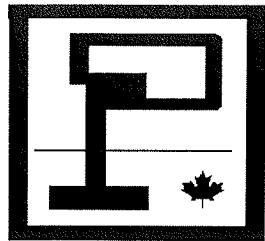
Borehole Location: See Figure 1

Location: 107 Glen Cameron Road, Markham, Road

Project Engineer: L.G.

Client: The Regional Municipality of York

Drawing No.: 5



		SUBSURFACE PROFILE		SAMPLE				Standard Penetration 'N' ○ SPT Blows/300mm 20 40 60 80	Moisture x Moisture% x 10 20 30	Piezometer Data	Remarks
Depth (m)	Symbol	Description	Elevation (m)	Type	N = Blows/300mm	Recovery (%)	OVC (ppm)	U.Wt.(kg/m³)			
0		Ground Surface	164.1								
		TOPSOIL - 125mm		SS1	13	35	50				
1		FILL - CLAYEY SILT very stiff, brown, very moist, trace sand, trace gravel, trace topsoil	163.0	SS2	23	20	50				
2		CLAYEY SANDY SILT TILL very stiff to stiff, brown becoming grey with depth, very moist to moist, trace gravel, trace cobble, isolated wet sand seens, oxidized, minor dilation at SS6		SS3	30	55	75				
3				SS4	26	85	100				
4				SS5	20	65	100				
5		SANDY SILT TILL dense, grey, moist to very moist, trace clay, trace gravel, trace cobbles	159.2	SS6	30	80	100				
6				SS7	31	90	25				
7		SILT compact, grey, very moist to saturated, some clay, trace sand, isolated pockets of clay, dilated	157.0								
8		END OF BOREHOLE Notes: 1. Borehole advanced to 8.1m depth using solid stem augers on April 11, 2017. 2. Shortterm groundwater level measured at 6.6m depth upon completion of drilling.	156.1	SS8	20	65	50				
9											
10											

Drill Method: S/S Auger

PATRIOT ENGINEERING LTD.
80 Nashdene Road., Unit 62, Toronto, ON, M1V 5E4
Phone: (416) 293-7716 Fax: (416) 293-6722
e-mail: info@patrioteng.ca

Datum: Geodetic

Drill Date: April 11, 2017

Checked by: L.G.

Project No: 37129

Borehole #: BH5

Project: Proposed EMS Station

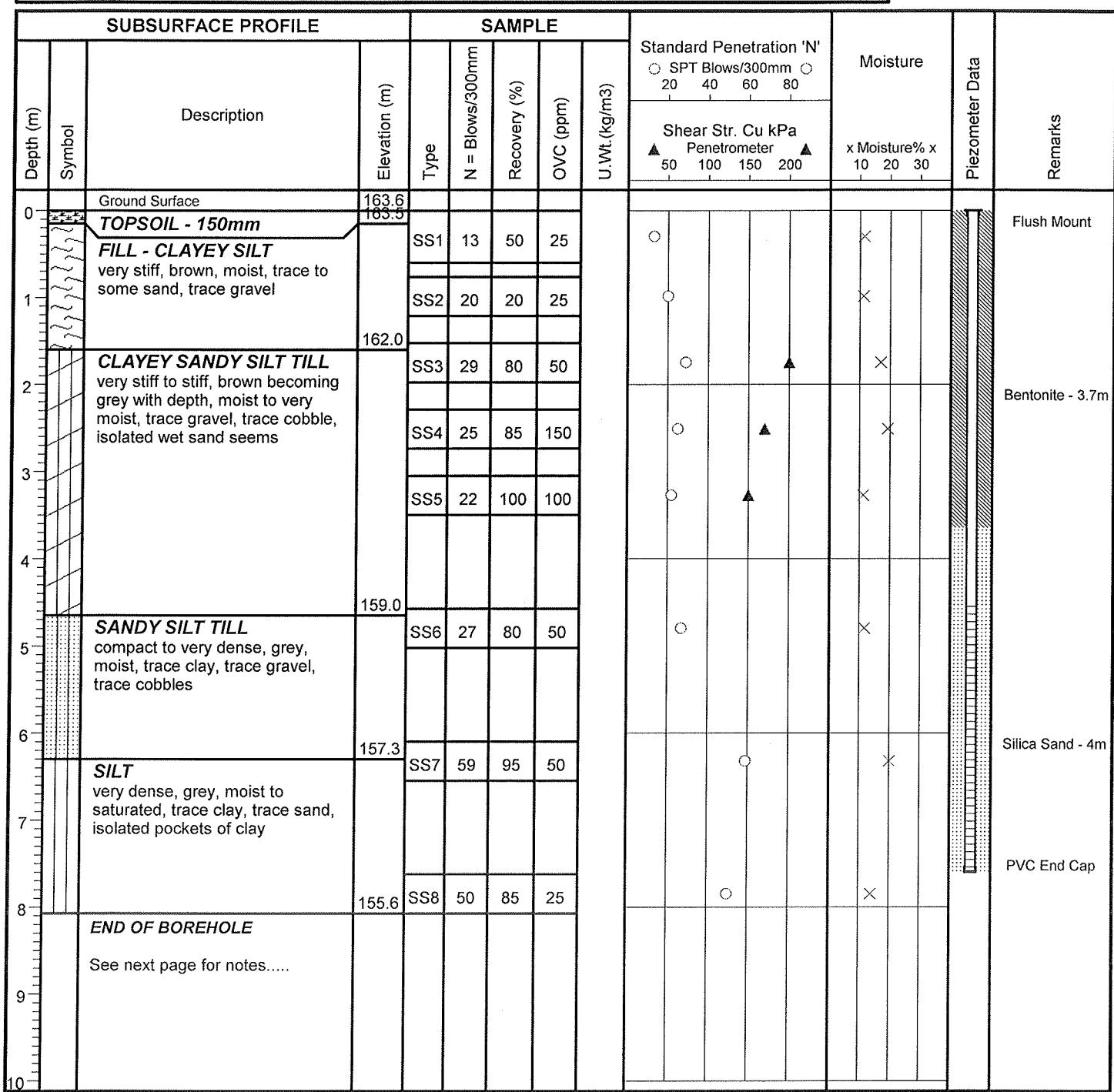
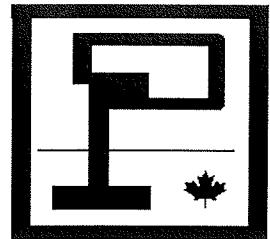
Borehole Location: See Figure 1

Location: 107 Glen Cameron Road, Markham, Road

Project Engineer: L.G.

Client: The Regional Municipality of York

Drawing No.: 6



Drill Method: S/S Auger

Drill Date: April 11, 2017

PATRIOT ENGINEERING LTD.
 80 Nashdene Road., Unit 62, Toronto, ON, M1V 5E4
 Phone: (416) 293-7716 Fax: (416) 293-6722
 e-mail: info@patrioteng.ca

Datum: Geodetic

Checked by: L.G.

Project No: 37129

Borehole #: BH5

Project: Proposed EMS Station

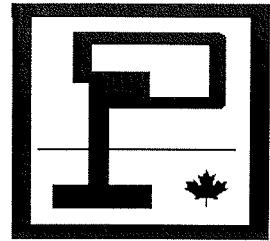
Borehole Location: See Figure 1

Location: 107 Glen Cameron Road, Markham, Road

Project Engineer: L.G.

Client: The Regional Municipality of York

Drawing No.: 6



SUBSURFACE PROFILE			SAMPLE				Standard Penetration 'N'				Moisture	Piezometer Data	Remarks
Depth (m)	Symbol	Description	Elevation (m)	Type	N = Blows/300mm	Recovery (%)	OVC (ppm)	U.Wt.(kg/m³)	○ SPT Blows/300mm ○ 20 40 60 80	▲ Shera Str. Cu kPa ▲ 50 100 150 200	x Moisture% x 10 20 30		
11		Notes: 1. Borehole advanced to 8.1m depth using solid stem augers on April 11, 2017. 2. Borehole was found to be dry upon completion of drilling. 3. Short term groundwater level measured at 6.7m depth on April 19, 2017, 8 days after the completion of drilling.											
12													
13													
14													
15													
16													
17													
18													
19													
20													

Drill Method: S/S Auger

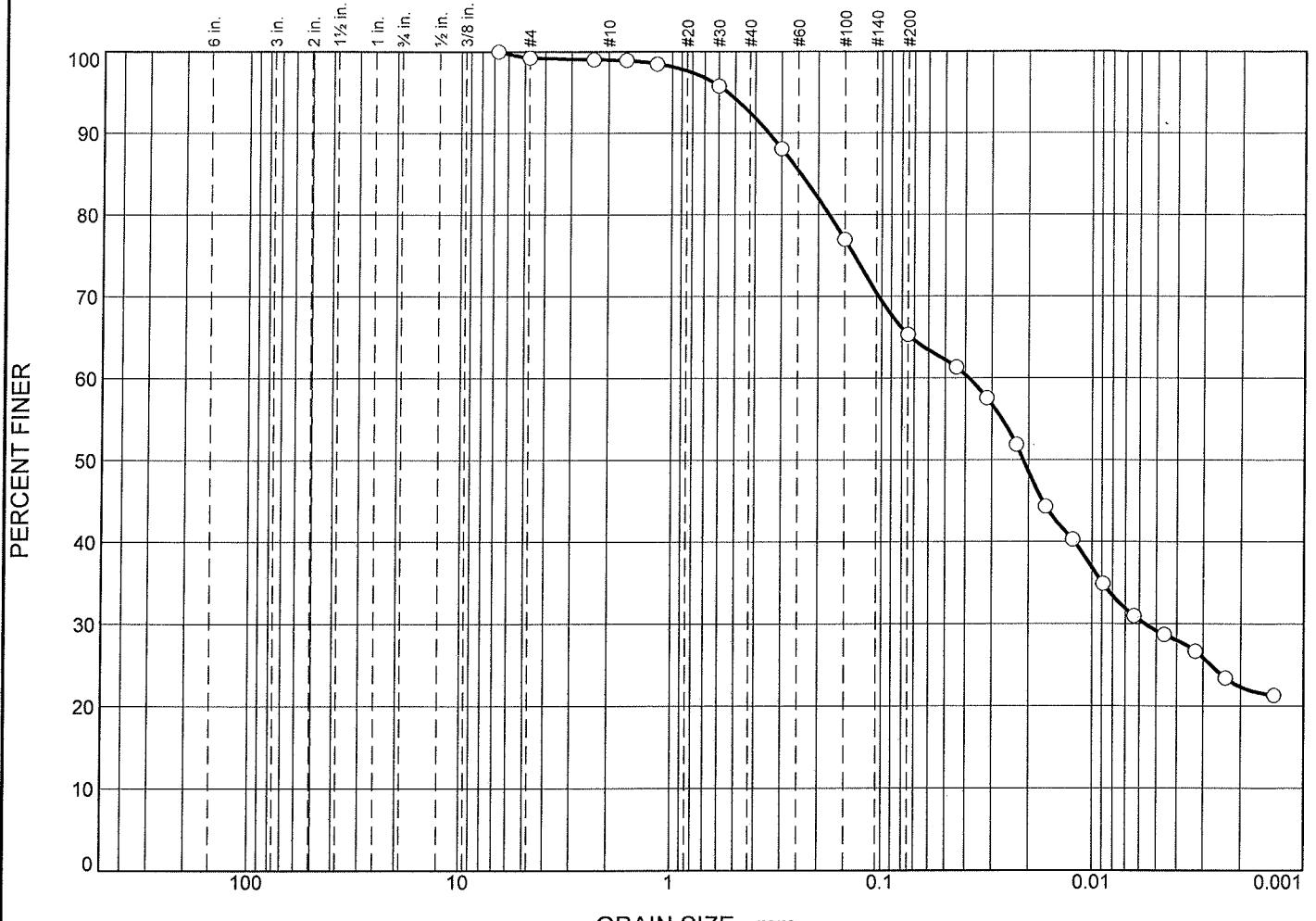
Drill Date: April 11, 2017

PATRIOT ENGINEERING LTD.
80 Nashdene Road., Unit 62, Toronto, ON, M1V 5E4
Phone: (416) 293-7716 Fax: (416) 293-6722
e-mail: info@patrioteng.ca

Datum: Geodetic

Checked by: L.G.

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0.0	0.0	0.8	0.2	6.5	27.2	43.0	22.3

Material Description	USCS	AASHTO
○ Clayey sandy silt, trace gravel		

Project No. 37129	Client: The Regional Municipality of York	Remarks: <input type="radio"/> Date of Sampling: April 11, 2017
Project: Proposed EMS Station, 107 Glen Cameron Road, Markham, Ontario		
<input type="radio"/> Source: BH3 SS4	Depth: 7.5' to 9'	Sample No.: R3822

PATRIOT ENGINEERING LTD. - CONSULTING ENGINEERS

Project No.: 37129
 Project: Proposed EMS Station
 107-111 Glen Cameron Road
 Markham, Ontario



TABLE A
 CONCENTRATION OF GENERAL METALS AND INORGANICS IN SOIL
 ug/g

PARAMETER	Part XV.1 Table 2 Residential / Parkland / Institutional Property Use	Sample ID	
		BH2 SS2	BH3 SS1
		Date Sampled	
		Apr 11/17	Apr 11/17
Antimony	7.5	<0.8	<0.8
Arsenic	18	3	3
Barium	390	164	75
Beryllium	5	1.1	0.6
Boron	120	11	7
Boron (Hot Water Soluble)	1.5	0.21	0.27
Cadmium	1.2	<0.5	<0.5
Chromium	160	31	17
Cobalt	22	11.6	7.1
Copper	180	22	11
Lead	120	12	8
Molybdenum	6.9	<0.5	<0.5
Nickel	130	26	14
Selenium	2.4	<0.4	<0.4
Silver	25	<0.2	<0.2
Thallium	1	<0.4	<0.4
Uranium	23	0.6	<0.5
Vanadium	86	43	31
Zinc	340	65	48
Chromium VI	10	<0.2	<0.2
Cyanide	0.051	<0.040	<0.040
Mercury	1.8	<0.10	<0.10
EC (mS/cm)	0.7	0.265	0.364
S.A.R.	5	0.699	1.28
pH	NC	7.80	7.60

NOTES:

NC - denotes no criteria

denotes exceeds MOE Part XV.1 Table 2 criteria

Part XV.1 - Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act
 Residential/Parkland/Institutional Property Use'

Project No.: 37129

Project: Proposed EMS Station
107-111 Glen Cameron Road
Markham, Ontario



TABLE B
CONCENTRATIONS OF HYDROCARBONS IN SOIL
ug/g

PARAMETER	Part XV.1 Table 2 Residential / Parkland / Institutional Property Use	Sample ID			
		BH1 SS3	BH2 SS4	BH4 SS4	BH5 SS3
		Date Sampled			
		Apr 11/17	Apr 11/17	Apr 11/17	Apr 11/17
Total Petroleum Hydrocarbons					
Petroleum Hydrocarbons F1 (C6-C10)	65	<5	<5	<5	<5
Petroleum Hydrocarbons F2 (>C10-C16)	150	<10	<10	<10	<10
Petroleum Hydrocarbons F3 (>C16-C34)	1300	<50	<50	<50	<50
Petroleum Hydrocarbons F4 (>C34)	5600	<50	<50	<50	<50
Monocyclic Aromatic Hydrocarbons					
Benzene	0.17	<0.02	<0.02	<0.02	<0.02
Toluene	6	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	1.6	<0.05	<0.05	<0.05	<0.05
Xylenes	25	<0.05	<0.05	<0.05	<0.05

NOTES:

NC - denotes no criteria

denotes exceeds MOE Part XV.1 Table 2 criteria
Part XV.1 - Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act
Residential/Parkland/Institutional Property Use'

Project No.: 37129
 Project: Proposed EMS Station
 107-111 Glen Cameron Road
 Markham, Ontario



TABLE C
 CONCENTRATION OF VOLATILE ORGANIC COMPOUNDS (VOCs) IN SOIL
 ug/g

PARAMETER	Part XV.1 Table 2 Residential / Parkland / Institutional Property Use	Sample ID			
		BH1 SS3	BH2 SS4	BH4 SS4	BH5 SS3
		Date Sampled			
		Apr 11/17	Apr 11/17	Apr 11/17	Apr 11/17
Dichlorodifluoromethane	25	<0.05	<0.05	<0.05	<0.05
Vinyl Chloride	0.022	<0.02	<0.02	<0.02	<0.02
Bromomethane	0.05	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	5.8	<0.05	<0.05	<0.05	<0.05
Acetone	28	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	0.05	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	0.96	<0.05	<0.05	<0.05	<0.05
Trans- 1,2-Dichloroethylene	0.75	<0.05	<0.05	<0.05	<0.05
Methyl tert-butyl Ether	1.4	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	0.6	<0.02	<0.02	<0.02	<0.02
Methyl Ethyl Ketone	44	<0.50	<0.50	<0.50	<0.50
Cis- 1,2-Dichloroethylene	2.5	<0.02	<0.02	<0.02	<0.02
Chloroform	0.18	<0.04	<0.04	<0.04	<0.04
1,2-Dichloroethane	0.05	<0.03	<0.03	<0.03	<0.03
1,1,1-Trichloroethane	3.4	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.12	<0.05	<0.05	<0.05	<0.05
Benzene	0.17	<0.02	<0.02	<0.02	<0.02
1,2-Dichloropropane	0.085	<0.03	<0.03	<0.03	<0.03
Trichloroethylene	0.52	<0.03	<0.03	<0.03	<0.03
Bromodichloromethane	1.9	<0.05	<0.05	<0.05	<0.05
Methyl Isobutyl Ketone	4.3	<0.50	<0.50	<0.50	<0.50
1,1,2-Trichloroethane	0.05	<0.04	<0.04	<0.04	<0.04
Toluene	6	<0.05	<0.05	<0.05	<0.05
Dibromochloromethane	2.9	<0.05	<0.05	<0.05	<0.05
Ethylene Dibromide	0.05	<0.04	<0.04	<0.04	<0.04
Tetrachloroethylene	2.3	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.05	<0.04	<0.04	<0.04	<0.04
Chlorobenzene	2.7	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	1.6	<0.05	<0.05	<0.05	<0.05
m & p-Xylene		<0.05	<0.05	<0.05	<0.05
Bromoform	0.26	<0.05	<0.05	<0.05	<0.05
Styrene	2.2	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	0.05	<0.05	<0.05	<0.05	<0.05
o-Xylene		<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	6	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.097	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	1.7	<0.05	<0.05	<0.05	<0.05
Xylene Mixture	25	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene	0.081	<0.04	<0.04	<0.04	<0.04
n-Hexane	34	<0.05	<0.05	<0.05	<0.05

NOTES:

NC - denotes no criteria

##

denotes exceeds MOE Part XV.1 Table 2 criteria

Part XV.1 - Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act
 Residential/Parkland/Institutional Property Use'

Project No.: 37129
 Project: Proposed EMS Station
 107-111 Glen Cameron Road
 Markham, Ontario



TABLE D
 CONCENTRATION OF PESTICIDES IN SOIL
 ug/g

PARAMETER	Part XV.1 Table 2 Residential / Parkland / Institutional Property Use	Sample ID	
		BH4 SS1	BH5 SS1
		Date Sampled	
		Apr 11/17	Apr 11/17
Hexachloroethane	0.07	<0.01	<0.01
Gamma-Hexachlorocyclohexane	0.063	<0.005	<0.005
Heptachlor	0.15	<0.005	<0.005
Aldrin	0.05	<0.005	<0.005
Heptachlor Epoxide	0.05	<0.005	<0.005
Endosulfan	0.04	<0.005	<0.005
Chlordane	0.05	<0.007	<0.007
DDE	0.33	<0.007	<0.007
DDD	3.3	<0.007	<0.007
DDT	1.4	<0.007	<0.007
Dieldrin	0.05	<0.005	<0.005
Endrin	0.04	<0.005	<0.005
Methoxychlor	0.13	<0.005	<0.005
Hexachlorobenzene	0.52	<0.005	<0.005
Hexachlorobutadiene	0.014	<0.01	<0.01

NOTES:

NC - denotes no criteria

denotes exceeds MOE Part XV.1 Table 2 criteria

Part XV.1 - Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act
 Residential/Parkland/Institutional Property Use'

Project No.: 37129

Project: Proposed EMS Station
107-111 Glen Cameron Road
Markham, Ontario



TABLE E
CONCENTRATION OF GENERAL METALS AND INORGANICS IN GROUNDWATER
ug/L

PARAMETER	Part XV.1 Table 2	Sample ID	
		BH1	BH3
		Date Sampled	
		Apr 19/17	Apr 19/17
Antimony	6	<1.0	<1.0
Arsenic	25	<1.0	1.1
Barium	1000	129	324
Beryllium	4.0	<0.5	<0.5
Boron	5000	22.5	18.9
Cadmium	2.7	<0.2	<0.2
Chromium	50	3	3.9
Cobalt	3.8	1.1	1.1
Copper	87	<1.0	2.6
Lead	10	<0.5	<0.5
Molybdenum	70	1.6	1.2
Nickel	100	3.2	5.4
Selenium	10	1.9	1.7
Silver	1.5	<0.2	<0.2
Thallium	2	<0.3	<0.3
Uranium	20	6.3	3.2
Vanadium	6.2	2.0	2.6
Zinc	1100	<5.0	<5.0
Mercury	0.29	<0.02	<0.02
Chromium VI	25	<5	<5
Cyanide	66	<2	<2
Sodium	490000	24100	84400
Chloride	790000	257000	115000
Electrical Conductivity	NC	1690	1480
pH	NC	8.12	8.03

NOTES:

NC - denotes no criteria

denotes exceeds MOE Part XV.1 Table 2 criteria

Part XV.1 - Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act

Project No.: 37129
 Project: Proposed EMS Station
 107-111 Glen Cameron Road
 Markham, Ontario



TABLE F
 CONCENTRATIONS OF HYDROCARBONS IN GROUNDWATER
 ug/L

PARAMETER	Part XV.1 Table 2	Sample ID			
		BH1	BH3	BH5	
		Date Sampled			
		Apr 19/17	Apr 19/17	Apr 19/17	
Total Petroleum					
Hydrocarbons					
Petroleum Hydrocarbons F1 (C6-C10)	750	<25	<25	<25	
Petroleum Hydrocarbons F2 (>C10-C16)	150	<100	<100	<100	
Petroleum Hydrocarbons F3 (>C16-C34)	500	<100	460	<100	
Petroleum Hydrocarbons F4 (>C34)	500	<100	<100	<100	
Monocyclic Aromatic					
Hydrocarbons					
Benzene	5.0	<0.20	<0.20	<0.20	
Toluene	24	<0.20	<0.20	<0.20	
Ethylbenzene	2.4	<0.10	<0.10	<0.10	
Xylenes	300	<0.20	<0.20	<0.20	

NOTES:

NC - denotes no criteria

denotes exceeds MOE Part XV.1 Table 2 criteria
 Part XV.1 - Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act

Project No.: 37129

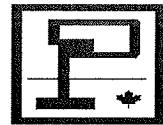
Project: Proposed EMS Station
107-111 Glen Cameron Road
Markham, Ontario

TABLE G
CONCENTRATION OF VOLATILE ORGANIC COMPOUNDS (VOCs) IN GROUNDWATER
ug/L

PARAMETER	Part XV.1 Table 2	Sample ID		
		BH1	BH3	BH5
		Date Sampled		
		Apr 19/17	Apr 19/17	Apr 19/17
Dichlorodifluoromethane	590	<0.20	<0.20	<0.20
Vinyl Chloride	0.5	<0.17	<0.17	<0.17
Bromomethane	0.89	<0.20	<0.20	<0.20
Trichlorofluoromethane	150	<0.40	<0.40	<0.40
Acetone	2700	<1.0	<1.0	<1.0
1,1-Dichloroethylene	0.5	<0.30	<0.30	<0.30
Methylene Chloride	5	<0.30	<0.30	<0.30
Trans- 1,2-Dichloroethylene	1.6	<0.20	<0.20	<0.20
Methyl tert-butyl Ether	15	<0.20	<0.20	<0.20
1,1-Dichloroethane	0.5	<0.30	<0.30	<0.30
Methyl Ethyl Ketone	400	<1.0	<1.0	<1.0
Cis- 1,2-Dichloroethylene	1.6	<0.20	<0.20	<0.20
Chloroform	2	<0.20	<0.20	<0.20
1,2-Dichloroethane	0.5	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	0.5	<0.30	<0.30	<0.30
Carbon Tetrachloride	0.2	<0.20	<0.20	<0.20
Benzene	0.5	<0.20	<0.20	<0.20
1,2-Dichloropropane	0.5	<0.20	<0.20	<0.20
Trichloroethylene	0.5	<0.20	<0.20	<0.20
Bromodichloromethane	2	<0.20	<0.20	<0.20
Methyl Isobutyl Ketone	640	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	0.5	<0.20	<0.20	<0.20
Toluene	0.8	<0.20	<0.20	<0.20
Dibromochloromethane	2	<0.10	<0.10	<0.10
Ethylene Dibromide	0.2	<0.10	<0.10	<0.10
Tetrachloroethylene	0.5	<0.20	<0.20	<0.20
1,1,1,2-Tetrachloroethane	1.1	<0.10	<0.10	<0.10
Chlorobenzene	0.5	<0.10	<0.10	<0.10
Ethylbenzene	0.5	<0.10	<0.10	<0.10
m & p-Xylene	NC	<0.20	<0.20	<0.20
Bromoform	5	<0.10	<0.10	<0.10
Styrene	0.5	<0.10	<0.10	<0.10
1,1,2,2-Tetrachloroethane	0.5	<0.10	<0.10	<0.10
o-Xylene	NC	<0.10	<0.10	<0.10
1,3-Dichlorobenzene	0.5	<0.10	<0.10	<0.10
1,4-Dichlorobenzene	0.5	<0.10	<0.10	<0.10
1,2-Dichlorobenzene	0.5	<0.10	<0.10	<0.10
Xylene Mixture	0.5	<0.30	<0.30	<0.30
1,3-Dichloropropene	72	<0.20	<0.20	<0.20
n-Hexane	5	<0.20	<0.20	<0.20

NOTES:

NC - denotes no criteria

#

denotes exceeds MOE Part XV.1 Table 2 criteria

Project No.: 37129
 Project: Phase II - Environmental Site Assessment
 11225 Leslie Street
 Richmond Hill, Ontario

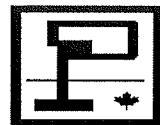


TABLE H
 CONCENTRATION OF PESTICIDES IN GROUNDWATER
 ug/g

PARAMETER	Part XV.1 Table 1 Residential / Parkland / Institutional / Industrial / Commercial / Community Property Use	Sample ID	
		BH5	BH5
		Date Sampled	
		Apr 11/14	Apr 11/14
Gamma-Hexachlorocyclohexane	1.2	<0.01	<0.01
Heptachlor	1.5	<0.01	<0.01
Aldrin	0.35	<0.01	<0.01
Heptachlor Epoxide	0.048	<0.01	<0.01
Endosulfan	1.5	<0.05	<0.05
Chlordane	7	<0.04	<0.04
DDE	10	<0.01	<0.01
DDD	10	<0.05	<0.05
DDT	2.8	<0.04	<0.04
Dieldrin	0.35	<0.02	<0.02
Endrin	0.48	<0.05	<0.05
Methoxychlor	6.5	<0.04	<0.04
Hexachlorobenzene	1	<0.01	<0.01
Hexachlorobutadiene	0.44	<0.01	<0.01
Hexachloroethane	2.1	<0.01	<0.01

NOTES:

NC - denotes no criteria

denotes exceeds MOE Part XV.1 Table 1 criteria

Part XV.1 - Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act
 Residential/Parkland/Institutional Property Use'

APPENDIX 1

**Certificate of Analysis for Chemical Testing
On Soil and Groundwater Samples
Phase Two - Environmental Site Assessment
Proposed EMS Station
107 - 111 Glen Cameron Road
Markham Road, Ontario**

CLIENT NAME: PATRIOT ENGINEERING LIMITED
62, 80 NASHDENE ROAD
TORONTO, ON M1V5E4
(416) 293-7716

ATTENTION TO: Milkias Woldegbgis

PROJECT: 37129-phase11

AGAT WORK ORDER: 17T208179

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

WATER ANALYSIS REVIEWED BY: Sofka Pehlyova, Senior Analyst

DATE REPORTED: May 05, 2017

PAGES (INCLUDING COVER): 12

VERSION*: 1

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

"NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 17T208179
PROJECT: 37129-phase11

CLIENT NAME: PATRIOT ENGINEERING LIMITED
SAMPLING SITE:

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

ATTENTION TO: Milkias Woldegbigis
SAMPLING BY:

O. Reg. 153(511) - OC Pesticides (Water)

DATE RECEIVED: 2017-04-20

Parameter	Unit	SAMPLE DESCRIPTION:		DATE SAMPLED: G / S	BH3 RDL	BH5 Water 8335396	BH5 Water 8335415	DATE REPORTED: 2017-05-05
		SAMPLE TYPE:	Water					
Gamma-Hexachlorocyclohexane	µg/L	1.2	0.01	<0.01	<0.01	<0.01	<0.01	
Heptachlor	µg/L	1.5	0.01	<0.01	<0.01	<0.01	<0.01	
Aldrin	µg/L	0.35	0.01	<0.01	<0.01	<0.01	<0.01	
Heptachlor Epoxide	µg/L	0.048	0.01	<0.01	<0.01	<0.01	<0.01	
Endosulfan	µg/L	1.5	0.05	<0.05	<0.05	<0.05	<0.05	
Chlordane	µg/L	7	0.04	<0.04	<0.04	<0.04	<0.04	
DDE	µg/L	10	0.01	<0.01	<0.01	<0.01	<0.01	
DDD	µg/L	10	0.05	<0.05	<0.05	<0.05	<0.05	
DDT	µg/L	2.8	0.04	<0.04	<0.04	<0.04	<0.04	
Dieldrin	µg/L	0.35	0.02	<0.02	<0.02	<0.02	<0.02	
Endrin	µg/L	0.48	0.05	<0.05	<0.05	<0.05	<0.05	
Methoxychlor	µg/L	6.5	0.04	<0.04	<0.04	<0.04	<0.04	
Hexachlorobenzene	µg/L	1	0.01	<0.01	<0.01	<0.01	<0.01	
Hexachlorobutadiene	µg/L	0.44	0.01	<0.01	<0.01	<0.01	<0.01	
Hexachloroethane	µg/L	2.1	0.01	<0.01	<0.01	<0.01	<0.01	
Surrogate	Unit	Acceptable Limits						
TCMX	%	50-140	94	108				
Decachlorobiphenyl	%	60-140	74	112				

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Potable Ground Water - All Types of Property Uses - Coarse Textured Soils
8335396-8335415 Note: DDT applies to the total of op'DDT and pp'DDT, DDD applies to the total of op'DDD and pp'DDD and DDE applies to the total of op'DDE and pp'DDE. Endosulfan I and Endosulfan II. Chlordane applies to the total of Alpha-Chlordane and Gamma-Chlordane.



AGAT Laboratories
 CLIENT NAME: PATRIOT ENGINEERING LIMITED
 SAMPLING SITE:

Certificate of Analysis

AGAT WORK ORDER: 17T208179
 PROJECT: 37129-phase11

ATTENTION TO: Milkias Woldegiorgis

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Water)

DATE RECEIVED: 2017-04-20

SAMPLE DESCRIPTION:						DATE REPORTED: 2017-05-05					
Parameter	Unit	SAMPLE TYPE: G / S	DATE SAMPLED: 2017-04-19 RDL	BH1	BH3	BH5	Water	Water	Water	Water	Water
F1 (C6 to C10)	µg/L	750	25	<25	<25	<25	<25	<25	<25	<25	<25
F1 (C6 to C10) minus BTEX	µg/L	750	25	<25	<25	<25	<25	<25	<25	<25	<25
F2 (C10 to C16)	µg/L	150	100	<100	<100	<100	<100	<100	<100	<100	<100
F3 (C16 to C34)	µg/L	500	100	<100	<100	460	<100	<100	<100	<100	<100
F4 (C34 to C50)	µg/L	500	100	<100	<100	NA	NA	NA	NA	NA	NA
Gravimetric Heavy Hydrocarbons Surrogate	µg/L	500	500	NA	NA	NA	NA	NA	NA	NA	NA
Terphenyl	%	60-140	71	114	76	76	76	76	76	76	76

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Potable Ground Water - All Types of Property Uses - Coarse Textured Soils

8335245-8335415 The C6-C10 fraction is calculated using Toluene response factor.

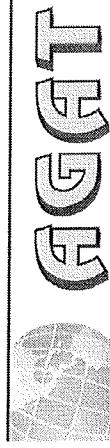
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and nC34. Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.

The chromatogram has returned to baseline by the retention time of nC50. Total C6-C50 results are corrected for BTEX contributions.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. nC6 and nC10 response factors are within 30% of Toluene response factor. nC10, nC16 and nC34 response factors are within 10% of their average. C50 response factor is within 70% of nC10 + nC16 nC34 average. Linearity is within 15%.

Extraction and holding times were met for this sample. Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 17T208179

PROJECT: 37129-phase11

CLIENT NAME: PATRIOT ENGINEERING LIMITED

SAMPLING SITE:

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

SAMPLING SITE: **Milkias Woldegbigis**SAMPLING DATE: **2017-04-20**

O. Reg. 153(511) - VOCs (Water)

Parameter	Unit	SAMPLE DESCRIPTION:		BH1	BH3	BH5	DATE REPORTED: 2017-05-05
		SAMPLE TYPE: G / S	DATE SAMPLED: RDL	Water 2017-04-19 8335245	Water 2017-04-19 8335396	Water 2017-04-19 8335415	
Dichlorodifluoromethane	µg/L	590	0.20	<0.20	<0.20	<0.20	
Vinyl Chloride	µg/L	0.5	0.17	<0.17	<0.17	<0.17	
Bromomethane	µg/L	0.89	0.20	<0.20	<0.20	<0.20	
Trichlorofluoromethane	µg/L	150	0.40	<0.40	<0.40	<0.40	
Acetone	µg/L	2700	1.0	<1.0	<1.0	<1.0	
1,1-Dichloroethylene	µg/L	1.6	0.30	<0.30	<0.30	<0.30	
Methylene Chloride	µg/L	50	0.30	<0.30	<0.30	<0.30	
trans-1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20	<0.20	<0.20	
Methyl tert-butyl ether	µg/L	15	0.20	<0.20	<0.20	<0.20	
1,1-Dichloroethane	µg/L	5	0.30	<0.30	<0.30	<0.30	
Methyl Ethyl Ketone	µg/L	1800	1.0	<1.0	<1.0	<1.0	
cis-1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20	<0.20	<0.20	
Chloroform	µg/L	2.4	0.20	<0.20	<0.20	<0.20	
1,2-Dichloroethane	µg/L	1.6	0.20	<0.20	<0.20	<0.20	
1,1,1-Trichloroethane	µg/L	200	0.30	<0.30	<0.30	<0.30	
Carbon Tetrachloride	µg/L	0.79	0.20	<0.20	<0.20	<0.20	
Benzene	µg/L	5.0	0.20	<0.20	<0.20	<0.20	
1,2-Dichloropropane	µg/L	5	0.20	<0.20	<0.20	<0.20	
Trichloroethylene	µg/L	1.6	0.20	<0.20	<0.20	<0.20	
Bromodichloromethane	µg/L	16	0.20	<0.20	<0.20	<0.20	
Methyl Isobutyl Ketone	µg/L	640	1.0	<1.0	<1.0	<1.0	
1,1,2-Trichloroethane	µg/L	4.7	0.20	<0.20	<0.20	<0.20	
Toluene	µg/L	24	0.20	<0.20	<0.20	<0.20	
Dibromochloromethane	µg/L	25	0.10	<0.10	<0.10	<0.10	
Ethylene Dibromide	µg/L	0.2	0.10	<0.10	<0.10	<0.10	
Tetrachloroethylene	µg/L	1.6	0.20	<0.20	<0.20	<0.20	
1,1,1,2-Tetrachloroethane	µg/L	1.1	0.10	<0.10	<0.10	<0.10	
Chlorobenzene	µg/L	30	0.10	<0.10	<0.10	<0.10	
Ethylbenzene	µg/L	2.4	0.10	<0.10	<0.10	<0.10	
m & p-Xylene	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	

*Milkias Woldegbigis***Certified By:** _____



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 17T208179
PROJECT: 37129-phase11

CLIENT NAME: PATRIOT ENGINEERING LIMITED
SAMPLING SITE:

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

ATTENTION TO: Milkias Woldegbigis
SAMPLED BY:

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2017-04-20				DATE REPORTED: 2017-05-05			
Parameter	Unit	SAMPLE DESCRIPTION: SAMPLE TYPE: DATE SAMPLLED: G / S	RDL	BH1 Water 2017-04-19 8335245	BH3 Water 2017-04-19 8335396	BH5 Water 2017-04-19 8335415	
Bromoform	µg/L	25	0.10	<0.10	<0.10	<0.10	<0.10
Styrene	µg/L	5.4	0.10	<0.10	<0.10	<0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L	1	0.10	<0.10	<0.10	<0.10	<0.10
o-Xylene	µg/L		0.10	<0.10	<0.10	<0.10	<0.10
1,3-Dichlorobenzene	µg/L	59	0.10	<0.10	<0.10	<0.10	<0.10
1,4-Dichlorobenzene	µg/L	1	0.10	<0.10	<0.10	<0.10	<0.10
1,2-Dichlorobenzene	µg/L	3	0.10	<0.10	<0.10	<0.10	<0.10
1,3-Dichloropropene	µg/L	0.5	0.30	<0.30	<0.30	<0.30	<0.30
Xylene Mixture	µg/L	300	0.20	<0.20	<0.20	<0.20	<0.20
n-Hexane	µg/L	51	0.20	<0.20	<0.20	<0.20	<0.20
Surrogate	Unit	Acceptable Limits					
		% Recovery	50-140	89	89	90	
4-Bromofluorobenzene		% Recovery	50-140	86	88	84	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Potable Ground Water - All Types of Property Uses - Coarse Textured Soils



Certificate of Analysis

AGAT WORK ORDER: 17T208179

PROJECT: 37129-phase11

CLIENT NAME: PATRIOT ENGINEERING LIMITED

SAMPLING SITE:

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

ATTENTION TO: Milkias Woldegbigis

SAMPLING BY:

O. Reg. 153(511) - Metals & Inorganics (Water)

DATE RECEIVED: 2017-04-20

DATE REPORTED: 2017-05-05

Parameter	Unit	SAMPLE DESCRIPTION:		DATE SAMPLED: 2017-04-19	BH1 Water	BH3 Water	DATE REPORTED: 2017-05-05
		G / S	RDL				
Antimony	µg/L	6	1.0	<1.0	<1.0	<1.0	
Arsenic	µg/L	25	1.0	<1.0	1.1	1.1	
Barium	µg/L	1000	2.0	129	324	324	
Beryllium	µg/L	4.0	0.5	<0.5	<0.5	<0.5	
Boron	µg/L	5000	100.0	22.5	18.9	18.9	
Cadmium	µg/L	2.7	0.2	<0.2	<0.2	<0.2	
Chromium	µg/L	50	2.0	3.0	3.9	3.9	
Cobalt	µg/L	3.8	0.5	1.1	1.1	1.1	
Copper	µg/L	87	10	<1.0	2.6	2.6	
Lead	µg/L	10	0.5	<0.5	<0.5	<0.5	
Molybdenum	µg/L	70	0.5	1.6	1.2	1.2	
Nickel	µg/L	100	1.0	3.2	5.4	5.4	
Selenium	µg/L	10	1.0	1.9	1.7	1.7	
Silver	µg/L	1.5	0.2	<0.2	<0.2	<0.2	
Thallium	µg/L	2	0.3	<0.3	<0.3	<0.3	
Uranium	µg/L	20	0.5	6.3	3.2	3.2	
Vanadium	µg/L	6.2	0.4	2.0	2.6	2.6	
Zinc	µg/L	1100	5.0	<5.0	<5.0	<5.0	
Mercury	µg/L	0.29	0.02	<0.02	<0.02	<0.02	
Chromium VI	µg/L	25	5	<5	<5	<5	
Cyanide, Free	µg/L	66	2	<2	<2	<2	
Sodium	µg/L	490000	1000	24100	84400	84400	
Chloride	µg/L	790000	500	257000	115000	115000	
Electrical Conductivity	µS/cm	2	1680	1480	1480	1480	
pH	Units	NA	8.12	8.03	8.03	8.03	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Potable Ground Water - All Types of Property Uses - Coarse Textured Soils
8335245-8335396 Elevated RDLs for Chloride & Sodium indicate the degree of sample dilutions prior to analyses to keep analytes within the calibration range, reduce matrix interference and to avoid contaminating the instruments.

Sofia Pahlyova
Certified By:



Quality Assurance

CLIENT NAME: PATRIOT ENGINEERING LIMITED

AGAT WORK ORDER: 17T208179

PROJECT: 37129-phase11

ATTENTION TO: Milkias Woldegbigis

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date: May 05, 2017			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE				
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper			Lower		Lower	Upper	
O. Reg. 153(511) - VOCs (Water)																
Dichlorodifluoromethane	8332473		< 0.20	< 0.20	NA	< 0.20	85%	50%	140%	72%	50%	140%	70%	50%	140%	
Vinyl Chloride	8332473		< 0.17	< 0.17	NA	< 0.17	120%	50%	140%	112%	50%	140%	86%	50%	140%	
Bromomethane	8332473		< 0.20	< 0.20	NA	< 0.20	101%	50%	140%	94%	50%	140%	82%	50%	140%	
Trichlorofluoromethane	8332473		< 0.40	< 0.40	NA	< 0.40	84%	50%	140%	91%	50%	140%	71%	50%	140%	
Acetone	8332473		< 1.0	< 1.0	NA	< 1.0	92%	50%	140%	112%	50%	140%	110%	50%	140%	
1,1-Dichloroethylene	8332473		< 0.30	< 0.30	NA	< 0.30	90%	50%	140%	107%	60%	130%	106%	50%	140%	
Methylene Chloride	8332473		< 0.30	< 0.30	NA	< 0.30	111%	50%	140%	103%	60%	130%	101%	50%	140%	
trans- 1,2-Dichloroethylene	8332473		< 0.20	< 0.20	NA	< 0.20	84%	50%	140%	106%	60%	130%	103%	50%	140%	
Methyl tert-butyl ether	8332473		< 0.20	< 0.20	NA	< 0.20	78%	50%	140%	95%	60%	130%	100%	50%	140%	
1,1-Dichloroethane	8332473		< 0.30	< 0.30	NA	< 0.30	91%	50%	140%	101%	60%	130%	103%	50%	140%	
Methyl Ethyl Ketone	8332473		< 1.0	< 1.0	NA	< 1.0	104%	50%	140%	122%	50%	140%	93%	50%	140%	
cis- 1,2-Dichloroethylene	8332473		< 0.20	< 0.20	NA	< 0.20	92%	50%	140%	105%	60%	130%	70%	50%	140%	
Chloroform	8332473		< 0.20	< 0.20	NA	< 0.20	91%	50%	140%	106%	60%	130%	96%	50%	140%	
1,2-Dichloroethane	8332473		< 0.20	< 0.20	NA	< 0.20	91%	50%	140%	104%	60%	130%	106%	50%	140%	
1,1,1-Trichloroethane	8332473		< 0.30	< 0.30	NA	< 0.30	76%	50%	140%	88%	60%	130%	87%	50%	140%	
Carbon Tetrachloride	8332473		< 0.20	< 0.20	NA	< 0.20	80%	50%	140%	97%	60%	130%	96%	50%	140%	
Benzene	8332473		< 0.20	< 0.20	NA	< 0.20	91%	50%	140%	100%	60%	130%	102%	50%	140%	
1,2-Dichloropropane	8332473		< 0.20	< 0.20	NA	< 0.20	84%	50%	140%	94%	60%	130%	96%	50%	140%	
Trichloroethylene	8332473		< 0.20	< 0.20	NA	< 0.20	90%	50%	140%	103%	60%	130%	102%	50%	140%	
Bromodichloromethane	8332473		< 0.20	< 0.20	NA	< 0.20	93%	50%	140%	99%	60%	130%	101%	50%	140%	
Methyl Isobutyl Ketone	8332473		< 1.0	< 1.0	NA	< 1.0	83%	50%	140%	98%	50%	140%	101%	50%	140%	
1,1,2-Trichloroethane	8332473		< 0.20	< 0.20	NA	< 0.20	99%	50%	140%	104%	60%	130%	101%	50%	140%	
Toluene	8332473		< 0.20	< 0.20	NA	< 0.20	92%	50%	140%	105%	60%	130%	101%	50%	140%	
Dibromochloromethane	8332473		< 0.10	< 0.10	NA	< 0.10	86%	50%	140%	97%	60%	130%	96%	50%	140%	
Ethylene Dibromide	8332473		< 0.10	< 0.10	NA	< 0.10	87%	50%	140%	96%	60%	130%	93%	50%	140%	
Tetrachloroethylene	8332473		< 0.20	< 0.20	NA	< 0.20	91%	50%	140%	105%	60%	130%	96%	50%	140%	
1,1,1,2-Tetrachloroethane	8332473		< 0.10	< 0.10	NA	< 0.10	84%	50%	140%	92%	60%	130%	90%	50%	140%	
Chlorobenzene	8332473		< 0.10	< 0.10	NA	< 0.10	94%	50%	140%	104%	60%	130%	100%	50%	140%	
Ethylbenzene	8332473		< 0.10	< 0.10	NA	< 0.10	92%	50%	140%	102%	60%	130%	95%	50%	140%	
m & p-Xylene	8332473		< 0.20	< 0.20	NA	< 0.20	99%	50%	140%	110%	60%	130%	101%	50%	140%	
Bromoform	8332473		< 0.10	< 0.10	NA	< 0.10	98%	50%	140%	91%	60%	130%	88%	50%	140%	
Styrene	8332473		< 0.10	< 0.10	NA	< 0.10	81%	50%	140%	91%	60%	130%	89%	50%	140%	
1,1,2,2-Tetrachloroethane	8332473		< 0.10	< 0.10	NA	< 0.10	120%	50%	140%	111%	60%	130%	109%	50%	140%	
o-Xylene	8332473		< 0.10	< 0.10	NA	< 0.10	99%	50%	140%	108%	60%	130%	102%	50%	140%	
1,3-Dichlorobenzene	8332473		< 0.10	< 0.10	NA	< 0.10	94%	50%	140%	97%	60%	130%	91%	50%	140%	
1,4-Dichlorobenzene	8332473		< 0.10	< 0.10	NA	< 0.10	100%	50%	140%	106%	60%	130%	100%	50%	140%	
1,2-Dichlorobenzene	8332473		< 0.10	< 0.10	NA	< 0.10	98%	50%	140%	99%	60%	130%	96%	50%	140%	
1,3-Dichloropropene	8332473		< 0.30	< 0.30	NA	< 0.30	83%	50%	140%	86%	60%	130%	85%	50%	140%	
n-Hexane	8332473		< 0.20	< 0.20	NA	< 0.20	70%	50%	140%	97%	60%	130%	74%	50%	140%	



Quality Assurance

CLIENT NAME: PATRIOT ENGINEERING LIMITED

AGAT WORK ORDER: 17T208179

PROJECT: 37129-phase11

ATTENTION TO: Milkias Woldegbigis

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: May 05, 2017			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE				MATRIX SPIKE				
PARAMETER	Batch	Sample id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits	Recovery	Acceptable Limits	Recovery	Acceptable Limits	Recovery	Acceptable Limits	Recovery	Acceptable Limits	
							Lower	Upper									

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Water)

F1 (C6 to C10)	8333336	< 25	< 25	NA	< 25	79%	60%	140%	85%	60%	140%	77%	60%	140%	
F2 (C10 to C16)		TW	< 100	< 100	NA	< 100	100%	60%	140%	75%	60%	140%	61%	60%	140%
F3 (C16 to C34)		TW	< 100	< 100	NA	< 100	98%	60%	140%	76%	60%	140%	82%	60%	140%
F4 (C34 to C50)		TW	< 100	< 100	NA	< 100	83%	60%	140%	110%	60%	140%	88%	60%	140%

O. Reg. 153(511) - OC Pesticides (Water)

Gamma-Hexachlorocyclohexane	TW	< 0.01	< 0.01	NA	< 0.01	71%	50%	140%	73%	50%	140%	88%	50%	140%
Heptachlor	TW	< 0.01	< 0.01	NA	< 0.01	82%	50%	140%	99%	50%	140%	104%	50%	140%
Aldrin	TW	< 0.01	< 0.01	NA	< 0.01	77%	50%	140%	85%	50%	140%	87%	50%	140%
Heptachlor Epoxide	TW	< 0.01	< 0.01	NA	< 0.01	81%	50%	140%	100%	50%	140%	112%	50%	140%
Endosulfan	TW	< 0.05	< 0.05	NA	< 0.05	77%	50%	140%	94%	50%	140%	96%	50%	140%
Chlordane	TW	< 0.04	< 0.04	NA	< 0.04	80%	50%	140%	104%	50%	140%	101%	50%	140%
DDE	TW	< 0.01	< 0.01	NA	< 0.01	86%	50%	140%	105%	50%	140%	96%	50%	140%
DDD	TW	< 0.05	< 0.05	NA	< 0.05	78%	50%	140%	104%	50%	140%	100%	50%	140%
DDT	TW	< 0.04	< 0.04	NA	< 0.04	86%	50%	140%	101%	50%	140%	96%	50%	140%
Dieldrin	TW	< 0.02	< 0.02	NA	< 0.02	78%	50%	140%	88%	50%	140%	94%	50%	140%
Endrin	TW	< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	120%	50%	140%	123%	50%	140%
Methoxychlor	TW	< 0.04	< 0.04	NA	< 0.04	85%	50%	140%	118%	50%	140%	118%	50%	140%
Hexachlorobenzene	TW	< 0.01	< 0.01	NA	< 0.01	84%	50%	140%	97%	50%	140%	80%	50%	140%
Hexachlorobutadiene	TW	< 0.01	< 0.01	NA	< 0.01	70%	50%	140%	82%	50%	140%	80%	50%	140%
Hexachloroethane	TW	< 0.01	< 0.01	NA	< 0.01	72%	50%	140%	60%	50%	140%	70%	50%	140%

Comments: Tap water analysis has been performed as QC sample testing for duplicate and matrix spike due to insufficient sample volume.

When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:



Quality Assurance

CLIENT NAME: PATRIOT ENGINEERING LIMITED

AGAT WORK ORDER: 17T208179

PROJECT: 37129-phase11

ATTENTION TO: Milkias Woldegbigis

SAMPLING SITE:

SAMPLED BY:

Water Analysis

RPT Date: May 05, 2017			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
			Lower	Upper	Lower		Lower	Upper	Lower	Upper	Lower	Upper	Recovery	Lower	Upper

O. Reg. 153(511) - Metals & Inorganics (Water)

Antimony	8353060	<1.0	<1.0	NA	< 1.0	93%	70%	130%	98%	80%	120%	99%	70%	130%
Arsenic	8353060	1.1	1.0	NA	< 1.0	96%	70%	130%	98%	80%	120%	104%	70%	130%
Barium	8353060	29.2	28.0	4.2%	< 2.0	101%	70%	130%	98%	80%	120%	104%	70%	130%
Beryllium	8353060	<0.5	<0.5	NA	< 0.5	99%	70%	130%	110%	80%	120%	112%	70%	130%
Boron	8353060	31.3	31.4	NA	< 10.0	101%	70%	130%	108%	80%	120%	105%	70%	130%
Cadmium	8353060	<0.2	<0.2	NA	< 0.2	96%	70%	130%	104%	80%	120%	105%	70%	130%
Chromium	8353060	3.9	3.7	NA	< 2.0	97%	70%	130%	102%	80%	120%	108%	70%	130%
Cobalt	8353060	<0.5	<0.5	NA	< 0.5	87%	70%	130%	92%	80%	120%	96%	70%	130%
Copper	8353060	3.5	3.5	NA	< 1.0	97%	70%	130%	102%	80%	120%	102%	70%	130%
Lead	8353060	<0.5	<0.5	NA	< 0.5	97%	70%	130%	103%	80%	120%	102%	70%	130%
Molybdenum	8353060	4.8	4.6	4.3%	< 0.5	96%	70%	130%	100%	80%	120%	102%	70%	130%
Nickel	8353060	1.2	1.1	NA	< 1.0	98%	70%	130%	104%	80%	120%	104%	70%	130%
Selenium	8353060	2.6	3.8	NA	< 1.0	97%	70%	130%	99%	80%	120%	105%	70%	130%
Silver	8353060	<0.2	<0.2	NA	< 0.2	98%	70%	130%	110%	80%	120%	109%	70%	130%
Thallium	8353060	<0.3	<0.3	NA	< 0.3	97%	70%	130%	100%	80%	120%	100%	70%	130%
Uranium	8353060	0.9	0.9	NA	< 0.5	93%	70%	130%	103%	80%	120%	106%	70%	130%
Vanadium	8353060	2.2	2.1	4.7%	< 0.4	95%	70%	130%	99%	80%	120%	103%	70%	130%
Zinc	8353060	5.9	5.3	NA	< 5.0	100%	70%	130%	105%	80%	120%	103%	70%	130%
Mercury	8352083	< 0.02	< 0.02	NA	< 0.02	104%	90%	110%	101%	90%	110%	97%	80%	120%
Chromium VI	8352331	16	16	NA	< 5	103%	90%	110%	103%	90%	110%	85%	70%	130%
Cyanide, Free	8349086	< 2	< 2	NA	< 2	97%	90%	110%	98%	90%	110%	87%	70%	130%
Sodium	8335245 8335245	24100	24100	0.0%	< 500	100%	70%	130%	100%	80%	120%	101%	70%	130%
Chloride	8332506	36300	34300	5.7%	< 100	90%	70%	130%	105%	70%	130%	112%	70%	130%
Electrical Conductivity	8335703	414	413	0.2%	< 2	109%	90%	110%	NA	NA	NA	NA	NA	NA
pH	8335703	8.35	8.23	1.4%	NA	100%	90%	110%	NA	NA	NA	NA	NA	NA

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Sofia Pehlyova
Certified By:



Method Summary

CLIENT NAME: PATRIOT ENGINEERING LIMITED

AGAT WORK ORDER: 17T208179

PROJECT: 37129-phase11

ATTENTION TO: Milkias Woldegbigis

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Gamma-Hexachlorocyclohexane	ORG-91-5112	EPA SW-846 3510 & 8081	GC/ECD
Heptachlor	ORG-91-5112	EPA SW-846 3510 & 8081	GC/ECD
Aldrin	ORG-91-5112	EPA SW-846 3510 & 8081	GC/ECD
Heptachlor Epoxide	ORG-91-5112	EPA SW-846 3510 & 8081	GC/ECD
Endosulfan	ORG-91-5112	EPA SW-846 3510 & 8081	GC/ECD
Chlordane	ORG-91-5112	EPA SW-846 3510 & 8081	GC/ECD
DDE	ORG-91-5112	EPA SW-846 3510 & 8081	GC/ECD
DDD	ORG-91-5112	EPA SW-846 3510 & 8081	GC/ECD
DDT	ORG-91-5112	EPA SW-846 3510 & 8081	GC/ECD
Dieldrin	ORG-91-5112	EPA SW-846 3510 & 8081	GC/ECD
Endrin	ORG-91-5112	EPA SW-846 3510 & 8081	GC/ECD
Methoxychlor	ORG-91-5112	EPA SW-846 3510 & 8081	GC/ECD
Hexachlorobenzene	ORG-91-5112	EPA SW-846 3510 & 8081	GC/ECD
Hexachlorobutadiene	ORG-91-5112	EPA SW-846 3510 & 8081	GC/ECD
Hexachloroethane	ORG-91-5112	EPA SW-846 3510 & 8081	GC/ECD
TCMX	ORG-91-5112	EPA SW-846 3510 & 8081	GC/ECD
Decachlorobiphenyl	ORG-91-5112	EPA SW-846 3510 & 8081	GC/ECD
F1 (C6 to C10)	VOL-91-5010	MOE PHC E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC E3421	(P&T)GC/FID
F2 (C10 to C16)	VOL-91-5010	MOE PHC E3421	GC / FID
F3 (C16 to C34)	VOL-91-5010	MOE PHC E3421	GC / FID
F4 (C34 to C50)	VOL-91-5010	MOE PHC E3421	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC E3421	BALANCE
Terphenyl	VOL-91-5010		GC/FID
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Acetone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
trans- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS



Method Summary

CLIENT NAME: PATRIOT ENGINEERING LIMITED

PROJECT: 37129-phase11

SAMPLING SITE:

AGAT WORK ORDER: 17T208179

ATTENTION TO: Milkias Woldegbigis

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Styrene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Water Analysis			
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW-846 7470 & 245.1	CVAAS
Chromium VI	INOR-93-6034	SM 3500-Cr B	SPECTROPHOTOMETER
Cyanide, Free	INOR-93-6052	MOE METHOD CN- 3015 & SM 4500 CN- I	TECHNICON AUTO ANALYZER
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE

CLIENT NAME: PATRIOT ENGINEERING LIMITED
62, 80 NASHDENE ROAD
TORONTO, ON M1V5E4
(416) 293-7716

ATTENTION TO: Milkias Woldegbigis

PROJECT: 37129

AGAT WORK ORDER: 17T205667

SOIL ANALYSIS REVIEWED BY: Sofka Pehlyova, Senior Analyst

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Trace Organics Lab Supervisor

DATE REPORTED: Apr 24, 2017

PAGES (INCLUDING COVER): 13

VERSION*: 1

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

***NOTES**

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L2Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

Certificate of Analysis

AGAT Laboratories

AGAT WORK ORDER: 17T205667

PROJECT: 37129

CLIENT NAME: PATRIOT ENGINEERING LIMITED

SAMPLING SITE:

ATTENTION TO: Milkias Woldegiorgis
SAMPLER BY: Abdul Mohammed

O. Reg. 153(511) - Metals & Inorganics (Soil)

DATE RECEIVED: 2017-04-12

DATE REPORTED: 2017-04-24

Parameter	Unit	SAMPLE DESCRIPTION: SAMPLE TYPE: DATE SAMPLED: G / S	BH2 SS2 Soil 2017-04-11	BH3 SS1 Soil 2017-04-11
Antimony	µg/g	7.5	0.8	<0.8
Arsenic	µg/g	18	1	3
Barium	µg/g	390	2	164
Beryllium	µg/g	5	0.5	1.1
Boron	µg/g	120	5	11
Boron (Hot Water Soluble)	µg/g	1.5	0.10	0.21
Cadmium	µg/g	1.2	0.5	<0.5
Chromium	µg/g	160	2	31
Cobalt	µg/g	22	0.5	116
Copper	µg/g	180	1	22
Lead	µg/g	120	1	12
Molybdenum	µg/g	6.9	0.5	<0.5
Nickel	µg/g	130	1	26
Selenium	µg/g	2.4	0.4	<0.4
Silver	µg/g	25	0.2	<0.2
Thallium	µg/g	1	0.4	<0.4
Uranium	µg/g	23	0.5	0.6
Vanadium	µg/g	86	1	43
Zinc	µg/g	340	5	65
Chromium VI	µg/g	10	0.2	<0.2
Cyanide	µg/g	0.051	0.040	<0.040
Mercury	µg/g	1.8	0.10	<0.10
Electrical Conductivity	nS/cm	0.7	0.005	0.265
Sodium Adsorption Ratio	NA	5	NA	0.699
pH: 2:1 CaCl ₂ Extraction	pH Units	NA	7.80	7.60

Comments: RDL = Reported Detection Limit; G / S = Guideline / Standard: Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Soil - Residential / Parkland / Institutional Property Use - Medium and Fine Textured Soils

8318900-8318903 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water: 1 part soil); pH was determined on the 0.01M CaCl₂ extract prepared at 2:1 ratio.

Sofia Pehlivanova

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 17T205667

PROJECT: 37129

CLIENT NAME: PATRIOT ENGINEERING LIMITED

SAMPLING SITE:

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

ATTENTION TO: Milkias Woldegiorgis
SAMPLER BY: Abdul Mohammed

Sampling Site:

O. Reg. 153(511) - OC Pesticides (Soil)

DATE RECEIVED: 2017-04-12

DATE REPORTED: 2017-04-24

Parameter	Unit	SAMPLE DESCRIPTION:		BH4 SS1	BH5 SS1	DATE REPORTED: 2017-04-24
		G / S	RDL	DATE SAMPLED: 2017-04-11	Soil	
Hexachloroethane	µg/g	0.07	0.01	<0.01	<0.01	
Gamma-Hexachlorocyclohexane	µg/g	0.063	0.005	<0.005	<0.005	
Heptachlor	µg/g	0.15	0.005	<0.005	<0.005	
Aldrin	µg/g	0.05	0.005	<0.005	<0.005	
Heptachlor Epoxide	µg/g	0.05	0.005	<0.005	<0.005	
Endosulfan	µg/g	0.04	0.005	<0.005	<0.005	
Chlordane	µg/g	0.05	0.007	<0.007	<0.007	
DDE	µg/g	0.33	0.007	<0.007	<0.007	
DDD	µg/g	3.3	0.007	<0.007	<0.007	
DDT	µg/g	1.4	0.007	<0.007	<0.007	
Dieldrin	µg/g	0.05	0.005	<0.005	<0.005	
Endrin	µg/g	0.04	0.005	<0.005	<0.005	
Methoxychlor	µg/g	0.13	0.005	<0.005	<0.005	
Hexachlorobenzene	µg/g	0.52	0.005	<0.005	<0.005	
Hexachlorobutadiene	µg/g	0.014	0.01	<0.01	<0.01	
Moisture Content	%	0.1	19.6	8.6		
Surrogate	Unit	Acceptable Limits				
TCMX	%	50-140	56	70		
Decachlorobiphenyl	%	60-130	74	74		

Comments: RDL - Reported Detection Limit: G / S - Guideline / Standard: Refers to Table 2: Full Depth Generic Site Condition Standards in a Portable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine Textured Soils
8318904-3318907 Results are based on the dry weight of the soil.
Note: DDT applies to the total of op-DDT and pp-DDT, DDD applies to the total of op-DDD and pp-DDD and DDE applies to the total of op'DDE and pp'DDE. Endosulfan I and Endosulfan II. Chlordane applies to the total of Alpha-Chlordane and Gamma-Chlordane.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 17T205667

PROJECT: 37129

CLIENT NAME: PATRIOT ENGINEERING LIMITED
SAMPLING SITE:

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

ATTENTION TO: Milkias Woldegiorgis

SAMPLING BY: Abdul Mohammed

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)

DATE RECEIVED: 2017-04-12

DATE REPORTED: 2017-04-24

Parameter	Unit	SAMPLE DESCRIPTION: SAMPLE TYPE: DATE SAMPLED:	BH1 SS3 Soil 2017-04-11	BH2 SS4 Soil 2017-04-11	BH4 SS4 Soil 2017-04-11	BH5 SS3 Soil 2017-04-11
F1 (C6 to C10)	µg/g	65	5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	65	5	<5	<5	<5
F2 (C10 to C16)	µg/g	150	10	<10	<10	<10
F3 (C16 to C34)	µg/g	1300	50	<50	<50	<50
F4 (C34 to C50)	µg/g	5600	50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	5600	50	NA	NA	NA
Moisture Content	%	0.1	13.5	12.4	12.7	15.3
Surrogate	Unit	Acceptable Limits				
Terphenyl	%	60-140	125	124	83	98

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard. Refers to Table 2: Full Depth Generic Site Condition Standards in a Portable Ground Water Condition - Soil - 8318899-8318908 Results are based on sample dry weight.

The C6-C10 fraction is calculated using toluene response factor.

The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for nC10, nC16, and nC34. Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.

The chromatogram has returned to baseline by the retention time of nC50. Total C6 - C50 results are corrected for BTEX contributions.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. nC6 and nC10 response factors are within 30% of Toluene response factor.

nC10, nC16 and nC34 response factors are within 10% of their average. C50 response factor is within 70% of nC10 + nC16 + nC34 average.

Linearity is within 15%.

Extraction and holding times were met for this sample.

Fractions 1-4 are quantified without the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 17T205667
PROJECT: 37129

CLIENT NAME: PATRIOT ENGINEERING LIMITED
SAMPLING SITE:

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

ATTENTION TO: Milkias Woldegbigis
SAMPLED BY: Abdul Mohammed

DATE RECEIVED: 2017-04-12

O. Reg. 153(511) - VOCs (Soil)

DATE REPORTED: 2017-04-24

Parameter	Unit	SAMPLE DESCRIPTION:		BH1 SS3	BH2 SS4	BH4 SS4	BH5 SS3
		SAMPLE TYPE:	DATE SAMPLED:	Soil	Soil	Soil	Soil
Dichlorodifluoromethane	ug/g	25	0.05	<0.05	<0.05	<0.05	<0.05
Vinyl Chloride	ug/g	0.022	0.02	<0.02	<0.02	<0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	ug/g	5.8	0.05	<0.05	<0.05	<0.05	<0.05
Acetone	ug/g	28	0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	ug/g	0.96	0.05	<0.05	<0.05	<0.05	<0.05
Trans-1,2-Dichloroethylene	ug/g	0.75	0.05	<0.05	<0.05	<0.05	<0.05
Methyl tert-butyl Ether	ug/g	1.4	0.05	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	ug/g	0.6	0.02	<0.02	<0.02	<0.02	<0.02
Methyl Ethyl Ketone	ug/g	44	0.50	<0.50	<0.50	<0.50	<0.50
Cis-1,2-Dichloroethylene	ug/g	2.5	0.02	<0.02	<0.02	<0.02	<0.02
Chloroform	ug/g	0.18	0.04	<0.04	<0.04	<0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03	<0.03	<0.03	<0.03
1,1,1-Trichloroethane	ug/g	3.4	0.05	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	ug/g	0.12	0.05	<0.05	<0.05	<0.05	<0.05
Benzene	ug/g	0.17	0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichloropropane	ug/g	0.085	0.03	<0.03	<0.03	<0.03	<0.03
Trichloroethylene	ug/g	0.52	0.03	<0.03	<0.03	<0.03	<0.03
Bromodichloromethane	ug/g	1.9	0.05	<0.05	<0.05	<0.05	<0.05
Methyl Isobutyl Ketone	ug/g	4.3	0.50	<0.50	<0.50	<0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04	<0.04	<0.04	<0.04
Toluene	ug/g	6	0.05	<0.05	<0.05	<0.05	<0.05
Dibromochloromethane	ug/g	2.9	0.05	<0.05	<0.05	<0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethylene	ug/g	2.3	0.05	<0.05	<0.05	<0.05	<0.05
1,1,2-Tetrachloroethane	ug/g	0.05	0.04	<0.04	<0.04	<0.04	<0.04
Chlorobenzene	ug/g	2.7	0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	ug/g	1.6	0.05	<0.05	<0.05	<0.05	<0.05
m & p-Xylene	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 17T205667
PROJECT: 37129

CLIENT NAME: PATRIOT ENGINEERING LIMITED
SAMPLING SITE:

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

ATTENTION TO: Milkias Woldebigis
SAMPLED BY: Abdul Mohammed

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2017-04-12			DATE REPORTED: 2017-04-24			
Parameter	Unit	SAMPLE DESCRIPTION: SAMPLE TYPE: DATE SAMPLED:	BH1 SS3 Soil G / S	BH2 SS4 Soil RDL	BH4 SS4 Soil 8318901	BH6 SS3 Soil 8318908
Bromoform	ug/g	0.26	0.05	<0.05	<0.05	<0.05
Styrene	ug/g	2.2	0.05	<0.05	<0.05	<0.05
1,1,2-Tetrachloroethane	ug/g	0.05	<0.05	<0.05	<0.05	<0.05
c-Xylene	ug/g	0.05	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	ug/g	6	0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.097	0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g	1.7	0.05	<0.05	<0.05	<0.05
Xylene Mixture	ug/g	25	0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene	ug/g	0.081	0.04	<0.04	<0.04	<0.04
n-Hexane	ug/g	34	0.05	<0.05	<0.05	<0.05
Surrogate	Unit	Acceptable Limits				
		% Recovery	50-140	90	91	91
4-Bromofluorobenzene	% Recovery		50-140	97	98	93
Toluene-d8						
4-Bromofluorobenzene						

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine Textured Soils
8318899-8318908 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Spring
Certified By:

Quality Assurance

CLIENT NAME: PATRIOT ENGINEERING LIMITED

AGAT WORK ORDER: 17T205667

PROJECT: 37129

ATTENTION TO: Milkias Woldegbigis

SAMPLING SITE:
SAMPLED BY: Abdul Mohammed

Soil Analysis

RPT Date: Apr 24, 2017			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE				
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper			Lower		Lower	Upper	
O. Reg. 153(511) - Metals & Inorganics (Soil)																
Antimony	8318714		<0.8	<0.8	NA	< 0.8	126%	70%	130%	88%	80%	120%	82%	70%	130%	
Arsenic	8318714		7	7	0.0%	< 1	109%	70%	130%	94%	80%	120%	100%	70%	130%	
Barium	8318714		18	18	0.0%	< 2	98%	70%	130%	96%	80%	120%	95%	70%	130%	
Beryllium	8318714		<0.5	<0.5	NA	< 0.5	109%	70%	130%	93%	80%	120%	99%	70%	130%	
Boron	8318714		9	9	NA	< 5	90%	70%	130%	98%	80%	120%	113%	70%	130%	
Boron (Hot Water Soluble)	8321611		0.15	0.16	NA	< 0.10	108%	60%	140%	100%	70%	130%	100%	60%	140%	
Cadmium	8318714		<0.5	<0.5	NA	< 0.5	109%	70%	130%	100%	80%	120%	100%	70%	130%	
Chromium	8318714		10	10	0.0%	< 2	99%	70%	130%	97%	80%	120%	115%	70%	130%	
Cobalt	8318714		3.4	3.4	0.0%	< 0.5	93%	70%	130%	93%	80%	120%	98%	70%	130%	
Copper	8318714		3	4	NA	< 1	99%	70%	130%	99%	80%	120%	91%	70%	130%	
Lead	8318714		12	12	0.0%	< 1	108%	70%	130%	96%	80%	120%	88%	70%	130%	
Molybdenum	8318714		0.8	0.8	NA	< 0.5	104%	70%	130%	96%	80%	120%	103%	70%	130%	
Nickel	8318714		5	6	18.2%	< 1	99%	70%	130%	101%	80%	120%	101%	70%	130%	
Selenium	8318714		<0.4	<0.4	NA	< 0.4	86%	70%	130%	95%	80%	120%	98%	70%	130%	
Silver	8318714		<0.2	<0.2	NA	< 0.2	112%	70%	130%	103%	80%	120%	107%	70%	130%	
Thallium	8318714		<0.4	<0.4	NA	< 0.4	104%	70%	130%	110%	80%	120%	110%	70%	130%	
Uranium	8318714		0.7	0.7	NA	< 0.5	109%	70%	130%	99%	80%	120%	98%	70%	130%	
Vanadium	8318714		11	11	0.0%	< 1	94%	70%	130%	92%	80%	120%	108%	70%	130%	
Zinc	8318714		52	49	5.9%	< 5	105%	70%	130%	98%	80%	120%	111%	70%	130%	
Chromium VI	8313500		<0.2	<0.2	NA	< 0.2	92%	70%	130%	98%	80%	120%	97%	70%	130%	
Cyanide	8318714		<0.040	<0.040	NA	< 0.040	102%	70%	130%	92%	80%	120%	105%	70%	130%	
Mercury	8318714		<0.10	<0.10	NA	< 0.10	107%	70%	130%	98%	80%	120%	93%	70%	130%	
Electrical Conductivity	8318714		0.255	0.263	3.1%	< 0.005	93%	90%	110%	NA			NA			
Sodium Adsorption Ratio	8321611		0.672	0.668	0.6%	NA	NA			NA			NA			
pH, 2:1 CaCl ₂ Extraction	8318900	8318900	7.80	7.78	0.3%	NA	100%	80%	120%	NA			NA			

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:


Quality Assurance

CLIENT NAME: PATRIOT ENGINEERING LIMITED

AGAT WORK ORDER: 17T205667

PROJECT: 37129

ATTENTION TO: Milkias Woldegbigis

SAMPLING SITE:

SAMPLED BY: Abdul Mohammed

Trace Organics Analysis

RPT Date: Apr 24, 2017			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	
O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)																
F1 (C6 to C10)	8319381		< 5	< 5	NA	< 5	81%	60%	130%	87%	85%	115%	106%	70%	130%	
F2 (C10 to C16)	8318905	8318905	< 10	< 10	NA	< 10	102%	60%	130%	110%	80%	120%	101%	70%	130%	
F3 (C16 to C34)	8318905	8318905	< 50	< 50	NA	< 50	104%	60%	130%	120%	80%	120%	104%	70%	130%	
F4 (C34 to C50)	8318905	8318905	< 50	< 50	NA	< 50	95%	60%	130%	120%	80%	120%	84%	70%	130%	
O. Reg. 153(511) - VOCs (Soil)																
Dichlorodifluoromethane	8307348		< 0.05	< 0.05	NA	< 0.05	119%	50%	140%	98%	50%	140%	107%	50%	140%	
Vinyl Chloride	8307348		< 0.02	< 0.02	NA	< 0.02	114%	50%	140%	97%	50%	140%	100%	50%	140%	
Bromomethane	8307348		< 0.05	< 0.05	NA	< 0.05	103%	50%	140%	95%	50%	140%	107%	50%	140%	
Trichlorofluoromethane	8307348		< 0.05	< 0.05	NA	< 0.05	122%	50%	140%	111%	50%	140%	105%	50%	140%	
Acetone	8307348		< 0.50	< 0.50	NA	< 0.50	98%	50%	140%	100%	50%	140%	105%	50%	140%	
1,1-Dichloroethylene	8307348		< 0.05	< 0.05	NA	< 0.05	113%	50%	140%	80%	60%	130%	91%	50%	140%	
Methylene Chloride	8307348		< 0.05	< 0.05	NA	< 0.05	117%	50%	140%	109%	60%	130%	113%	50%	140%	
Trans- 1,2-Dichloroethylene	8307348		< 0.05	< 0.05	NA	< 0.05	113%	50%	140%	90%	60%	130%	105%	50%	140%	
Methyl tert-butyl Ether	8307348		< 0.05	< 0.05	NA	< 0.05	115%	50%	140%	113%	60%	130%	118%	50%	140%	
1,1-Dichloroethane	8307348		< 0.02	< 0.02	NA	< 0.02	111%	50%	140%	83%	60%	130%	96%	50%	140%	
Methyl Ethyl Ketone	8307348		< 0.50	< 0.50	NA	< 0.50	95%	50%	140%	95%	50%	140%	87%	50%	140%	
Cis- 1,2-Dichloroethylene	8307348		< 0.02	< 0.02	NA	< 0.02	120%	50%	140%	101%	60%	130%	114%	50%	140%	
Chloroform	8307348		< 0.04	< 0.04	NA	< 0.04	108%	50%	140%	103%	60%	130%	108%	50%	140%	
1,2-Dichloroethane	8307348		< 0.03	< 0.03	NA	< 0.03	97%	50%	140%	97%	60%	130%	102%	50%	140%	
1,1,1-Trichloroethane	8307348		< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	97%	60%	130%	98%	50%	140%	
Carbon Tetrachloride	8307348		< 0.05	< 0.05	NA	< 0.05	103%	50%	140%	95%	60%	130%	96%	50%	140%	
Benzene	8307348		< 0.02	< 0.02	NA	< 0.02	106%	50%	140%	98%	60%	130%	103%	50%	140%	
1,2-Dichloropropane	8307348		< 0.03	< 0.03	NA	< 0.03	91%	50%	140%	92%	60%	130%	91%	50%	140%	
Trichloroethylene	8307348		< 0.03	< 0.03	NA	< 0.03	97%	50%	140%	101%	60%	130%	96%	50%	140%	
Bromodichloromethane	8307348		< 0.05	< 0.05	NA	< 0.05	103%	50%	140%	103%	60%	130%	104%	50%	140%	
Methyl Isobutyl Ketone	8307348		< 0.50	< 0.50	NA	< 0.50	95%	50%	140%	109%	50%	140%	111%	50%	140%	
1,1,2-Trichloroethane	8307348		< 0.04	< 0.04	NA	< 0.04	100%	50%	140%	98%	60%	130%	108%	50%	140%	
Toluene	8307348		< 0.05	< 0.05	NA	< 0.05	119%	50%	140%	107%	60%	130%	102%	50%	140%	
Dibromochloromethane	8307348		< 0.05	< 0.05	NA	< 0.05	110%	50%	140%	93%	60%	130%	111%	50%	140%	
Ethylene Dibromide	8307348		< 0.04	< 0.04	NA	< 0.04	109%	50%	140%	116%	60%	130%	106%	50%	140%	
Tetrachloroethylene	8307348		< 0.05	< 0.05	NA	< 0.05	108%	50%	140%	110%	60%	130%	116%	50%	140%	
1,1,1,2-Tetrachloroethane	8307348		< 0.04	< 0.04	NA	< 0.04	112%	50%	140%	114%	60%	130%	102%	50%	140%	
Chlorobenzene	8307348		< 0.05	< 0.05	NA	< 0.05	106%	50%	140%	104%	60%	130%	116%	50%	140%	
Ethylbenzene	8307348		< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	109%	60%	130%	108%	50%	140%	
m & p-Xylene	8307348		< 0.05	< 0.05	NA	< 0.05	120%	50%	140%	118%	60%	130%	123%	50%	140%	
Bromoform	8307348		< 0.05	< 0.05	NA	< 0.05	89%	50%	140%	114%	60%	130%	114%	50%	140%	
Styrene	8307348		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	116%	60%	130%	98%	50%	140%	
1,1,2,2-Tetrachloroethane	8307348		< 0.05	< 0.05	NA	< 0.05	106%	50%	140%	112%	60%	130%	104%	50%	140%	
o-Xylene	8307348		< 0.05	< 0.05	NA	< 0.05	119%	50%	140%	118%	60%	130%	112%	50%	140%	

Quality Assurance

CLIENT NAME: PATRIOT ENGINEERING LIMITED

AGAT WORK ORDER: 17T205667

PROJECT: 37129

ATTENTION TO: Milkias Woldegbigis

SAMPLING SITE:
SAMPLED BY: Abdul Mohammed

Trace Organics Analysis (Continued)

PARAMETER	Batch	Sample Id	DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE			
			Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	
1,3-Dichlorobenzene	8307348		< 0.05	< 0.05	NA	< 0.05	108%	50%	140%	120%	60%	130%	119%	50%	140%	
1,4-Dichlorobenzene	8307348		< 0.05	< 0.05	NA	< 0.05	110%	50%	140%	83%	60%	130%	113%	50%	140%	
1,2-Dichlorobenzene	8307348		< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	114%	60%	130%	112%	50%	140%	
1,3-Dichloropropene	8307348		< 0.04	< 0.04	NA	< 0.04	91%	50%	140%	92%	60%	130%	86%	50%	140%	
n-Hexane	8307348		< 0.05	< 0.05	NA	< 0.05	91%	50%	140%	113%	60%	130%	80%	50%	140%	
O. Reg. 153(511) - OC Pesticides (Soil)																
Hexachloroethane	8318907	8318907	< 0.01	< 0.01	NA	< 0.01	67%	50%	140%	62%	50%	140%	62%	50%	140%	
Gamma-Hexachlorocyclohexane	8318907	8318907	< 0.005	< 0.005	NA	< 0.005	99%	50%	140%	62%	50%	140%	62%	50%	140%	
Heptachlor	8318907	8318907	< 0.005	< 0.005	NA	< 0.005	105%	50%	140%	64%	50%	140%	76%	50%	140%	
Aldrin	8318907	8318907	< 0.005	< 0.005	NA	< 0.005	117%	50%	140%	66%	50%	140%	94%	50%	140%	
Heptachlor Epoxide	8318907	8318907	< 0.005	< 0.005	NA	< 0.005	105%	50%	140%	70%	50%	140%	76%	50%	140%	
Endosulfan	8318907	8318907	< 0.005	< 0.005	NA	< 0.005	107%	50%	140%	81%	50%	140%	92%	50%	140%	
Chlordane	8318907	8318907	< 0.007	< 0.007	NA	< 0.007	102%	50%	140%	85%	50%	140%	94%	50%	140%	
DDE	8318907	8318907	< 0.007	< 0.007	NA	< 0.007	108%	50%	140%	90%	50%	140%	107%	50%	140%	
DDD	8318907	8318907	< 0.007	< 0.007	NA	< 0.007	115%	50%	140%	78%	50%	140%	90%	50%	140%	
DDT	8318907	8318907	< 0.007	< 0.007	NA	< 0.007	114%	50%	140%	84%	50%	140%	94%	50%	140%	
Dieldrin	8318907	8318907	< 0.005	< 0.005	NA	< 0.005	105%	50%	140%	70%	50%	140%	86%	50%	140%	
Endrin	8318907	8318907	< 0.005	< 0.005	NA	< 0.005	113%	50%	140%	80%	50%	140%	96%	50%	140%	
Methoxychlor	8318907	8318907	< 0.005	< 0.005	NA	< 0.005	109%	50%	140%	88%	50%	140%	96%	50%	140%	
Hexachlorobenzene	8318907	8318907	< 0.005	< 0.005	NA	< 0.005	103%	50%	140%	88%	50%	140%	98%	50%	140%	
Hexachlorobutadiene	8318907	8318907	< 0.01	< 0.01	NA	< 0.01	81%	50%	140%	66%	50%	140%	70%	50%	140%	

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:


Method Summary

CLIENT NAME: PATRIOT ENGINEERING LIMITED

AGAT WORK ORDER: 17T205667

PROJECT: 37129

ATTENTION TO: Milkias Woldegbigis

SAMPLING SITE:

SAMPLED BY: Abdul Mohammed

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW-846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A;SM 4500 CN	TECHNICON AUTO ANALYZER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Electrical Conductivity	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010B	ICP/OES
pH, 2:1 CaCl ₂ Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	PH METER



Method Summary

CLIENT NAME: PATRIOT ENGINEERING LIMITED

AGAT WORK ORDER: 17T205667

PROJECT: 37129

ATTENTION TO: Milkias Woldegbigis

SAMPLING SITE:

SAMPLED BY: Abdul Mohammed

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Hexachloroethane	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Gamma-Hexachlorocyclohexane	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Heptachlor	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Aldrin	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Heptachlor Epoxide	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Endosulfan	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Chlordane	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
DDE	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
DDD	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
DDT	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Dieldrin	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Endrin	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Methoxychlor	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Hexachlorobenzene	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Hexachlorobutadiene	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
TCMX	ORG-91-5112	EPA SW-846 3541,3620 & 8081	GC/ECD
Decachlorobiphenyl	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Moisture Content		MOE E3139	BALANCE
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P & T GC / FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P & T GC / FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	Balance
Moisture Content	VOL-91-5009	CCME Tier 1 Method, SW846 5035,8015	BALANCE
Terphenyl	VOL-91-5009	CCME Tier 1 Method	GC/FID
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS



Method Summary

CLIENT NAME: PATRIOT ENGINEERING LIMITED

AGAT WORK ORDER: 17T205667

PROJECT: 37129

ATTENTION TO: Milkias Woldegbigis

SAMPLING SITE:

SAMPLED BY: Abdul Mohammed

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS