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November 7, 2016
File: PE1579-LET.04

TD Commercial Banking
via email

Geotechnical Engineering
Environmental Engineering
Hydrogeology
Geological Engineering
Materials Testing
Building Science
Archaeological Studies

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Subject: **Letter of Reliance
Environmental Assessment Update
2688 Carp Road - Ottawa**

Dear Sir/Madame,

Further to the request of Mr. Tom Carroll, Paterson Group (Paterson) has been authorized to issue this letter of reliance for the Environmental Assessment Update (Report: PE1579-LET.03, dated October 6, 2016), prepared for the aforementioned site. TD Commercial Banking are permitted to rely on the contents and conclusions of this report from an environmental perspective.

We trust that this information meets your requirements.

Regards,

Paterson Group Inc.



Mark D'Arcy, P.Eng.

Report Distribution

- T.G. Carroll Cartage Ltd. (pdf)
- Paterson Group (1 copy)

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Consulting Engineers

154 Colonnade Road South
Ottawa, Ontario
Canada, K2E 7J5
Tel: (613) 226-7381
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October 6, 2016
File: PE1579-LET.03

T.G. Carroll Cartage Ltd.
2054 Carp Road
Carp, Ontario
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Geotechnical Engineering
Environmental Engineering
Hydrogeology
Geological Engineering
Materials Testing
Building Science
Archaeological Services

www.patersongroup.ca

**Subject: Environmental Assessment Update
2688 Carp Road
Ottawa, Ontario**

Dear Sir,

Further to your request and authorization, Paterson Group (Paterson) has prepared this Environmental Assessment Update, detailing the recent site visit and remedial activities, carried out at the subject site.

1.0 Background Information

The subject site is located on the east side of Carp Road, approximately 250 m southeast of Reis Road. For the purpose of this report, Carp Road will be considered to run north-south. The subject site is a 3.2 ha property with a creek running through the southern portion of the site. T.G. Carroll Cartage Ltd. has operated a storage yard and small garage on the property since their acquisition of the property circa 2000. It is understood that the property is being considered for sale.

2.0 Previous Engineering Report

The following report was reviewed:

- "Phase I - Environmental Site Assessment, 2688 Carp Road, Ottawa (Carp), Ontario", prepared by Paterson Group Inc., dated October 28, 2008.

The review of the historical data did not identify any potentially contaminating activities with the potential to have impacted the subject site. Following the historical research, a site visit was conducted. At that time, the site was occupied by a garage building, non hazardous

Ottawa

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North Bay

construction debris and stored trucks. A few hydrocarbon stains were identified in various locations on the subject site. Based on the limited surficial area of each stain, the nature of the petroleum products and the observations made during a concurrent geotechnical test pit investigation program, the stains were not considered to represent a significant environmental concern.

Fill material was observed on the eastern portion of the site in the test pits conducted for geotechnical purposes. The fill consisted of various soil types with an occasional piece of glass, brick and concrete observed, however no significant debris or any signs of contamination were observed during the excavation of the test pits.

A Phase II - ESA was not recommended at the time of issuance of the report. The stain at the location of the ASTs was considered to be the result of minor spillage during the filling of equipment. It was recommended that more caution should be exercised when filling vehicles from the on site ASTs to avoid further surficial spillage. Any spilled petroleum products should be cleaned up as soon as possible, should future incidents occur.

3.0 Site Visit

Paterson carried out a site visit to the subject property on September 20, 2016 to review and assess the use of the subject property and the condition of the site.

At the time of the site visit, winter road-maintenance vehicles, various pieces of equipment, construction supplies, waste oil containers, two 2,500 L diesel aboveground storage tanks (ASTs) and a large fill pile were stored on the subject site. Several areas of limited surficial staining was observed on the subject site around the garage and vehicle/equipment parts storage areas. One stain beneath the clear diesel AST pump with an approximate 2 m diameter, was considered to be of greater concern. The locations of the above noted features are presented in Drawing PE1579-2 - Site Plan.

At the time of the site visit, a welder was operating out of the garage on-site and Mr. Carroll mentioned that very limited vehicle maintenance has taken place in the on-site garage. The garage is equipped with a self-contained pit which at the time of the site visit contained oily water.

Assessment

Based on several observations made during the site visit, the following recommendations were made:

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- Excavate soil in the areas of the stained surficial soil.
- Carry out sampling of the soil beneath the area of the former ASTs to confirm the quality of the soil in this location.
- Have the garage pit pumped out by a licensed contractor and have the pit integrity confirmed.
- The imported fill pile should be removed from the property prior to the sale, or have it assessed.

4.0 Subsurface Investigation

Based on the recommendations provided, Paterson was contacted to monitor the removal of the stained soil on the subject site. On September 26, 2016, Paterson returned to the site, to monitor the removal of the surficial staining and assess the condition of the soil beneath the stain at the clear diesel AST.

Five areas were addressed including the area of the former ASTs, the current ASTs, and three areas associated with equipment and vehicle storage. In each area, the stained soil was removed to a depth of approximately 0.6 m. Confirmatory samples were recovered from the excavations and select samples were submitted for analytical testing. The excavation areas are depicted on Drawing PE1579-3 - Site Remediation Plan. One triaxle load of impacted soil was removed from the site and hauled to GFL Environmental Inc. (GFL) landfill site at Moose Creek, Ontario.

The results from the testing indicated that the stained soils were primarily surficial in nature, with the exception of the area beside the current ASTs (Excavation 1). F2 and F3 petroleum hydrocarbons were detected in excess of the site standards in the exposed base soil at this location, which required further excavation (see below).

Garage Pit

Mr. Carroll indicated that Drain-All Ltd. was contacted to visit the site and pump the oily water and sediment from the pit and cleaned it in accordance with the recommendations, following the site visit on September 20, 2016. Paterson returned to the site on September 26, 2016, to carry out the inspection of the pit in the garage.

At the time of the site visit, the base of the pit was obscured by water and sediment present within the pit. The pit consists of a 200 L plastic barrel, seated below the floor slab, with an in-flow pipe from the sink and outflow pipe leading east of the building. The barrel appeared kinked from upheaval or frost damage.

The presence of the outflow pipe was considered to present an environmental concern

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which had not been assessed. At the time of the site visit, steel storage containers were present on the east side of the garage building, and therefore the outflow pipe and soil condition in the vicinity of the pipe discharge point could not be assessed.

5.0 Remedial Excavations

Paterson returned to the site on October 3, 2016, to carry out the further excavation at Excavation 1 and to assess the concern identified with the garage pit outflow pipe.

The clear diesel AST had been removed from the area of Excavation 1 in advance of the extension of the remedial excavation. Soil that was located beneath the pump for the clear diesel AST (eastern side of the tank), between 1.5 to 4.0 m below ground surface (bgs), exhibited a diesel odour and some discolouration. This soil was excavated, loaded into tri-axle dump trucks and trailers and taken off-site for disposal. The impacted soil appeared to extend to a maximum depth of approximately 4.25 m below the surface grade.

The soil profile in the area of Excavation 1 consisted of crushed stone (stone dust), underlain by sand and gravel fill with an intermittent layer of silty sand (surrounding services), underlain by increasingly dense sandy till. Limited perched water was encountered at a depth of approximately 3.5 m bgs, however this water was removed with the impacted soil during the excavation.

The remedial excavation was advanced to a maximum depth of 4.5 m, at which depth all suspected hydrocarbon-impacted soil had been removed from the base and west and south sidewalls of the excavation. Due to the proximity to the neighbouring property, the excavation could not be advanced north and due to the presence of multiple live power conduits to the east, the excavation was not advanced to east.

A test pit was advanced approximately 4 m east of the eastern wall of the excavation (on the other side of the electrical services) to confirm that the impacted soil did not extend much further beyond the existing east wall. No evidence was observed in the test pit. The test pit was excavated to a maximum depth of 3.7 m and was terminated in very dense till. Based on our observations the contaminated soil is not considered to extend much further to the north or east of the excavation.

The final excavation was quasi-rectangular in shape and had an approximate footprint of 25 m². Approximately five tri-axle truck loads and 3 trailer loads of contaminated soil were removed from Excavation 1 and hauled to GFL. Paterson personnel obtained confirmatory samples from the sidewalls and base of the excavation on October 3, 2016.

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Mr. Carroll indicated he would be backfilling the excavation with septic grade sand from his sand pit. The locations of the remedial excavation and confirmatory samples are shown on Drawing PE1579-3 - Site Remediation Plan, appended to this report.

Garage Pit

Prior to the site visit on October 3, 2016, the steel containers on the east side of the garage building had been moved to allow access to the outflow pipe beyond the east wall of the garage, for assessment of the soil condition in this area. Following the completion of the remedial activities at Excavation 1, Paterson monitored the excavation of the outflow pipe from the pit in the garage.

The outflow pipe ran approximately 6 m east of the subject building, under approximately 0.3 m of clear stone and foam board insulation. The pipe had solid and perforated sections, underlain by clear stone, followed by sandy fill material. The pipe was 50-100% full of saturated sludge. Impacted oily soil was observed at the base of the clear stone layer, beneath the perforated sections of the pipe, however, the impacted material did not appear to penetrate far into the sandy fill.

The pipe, the surrounding crushed stone and suspected impacted sandy fill was excavated as contaminated material and removed from the subject site and disposed at GFL. The final depth of the excavation was extended to 1.4 m. Confirmatory samples were collected and submitted for laboratory analysis. Locations of the excavation and the confirmatory samples are illustrated on Drawing PE1579-3 - Site Remediation Plan, appended to this report.

Soil Sampling Protocol

Throughout the subsurface investigation and remedial excavations, a total of 45 soil samples were recovered from the test holes by means of grab sampling. Upon recovery, all samples were immediately sealed in appropriate containers to facilitate a preliminary screening procedure.

All samples recovered as part of this investigation will be stored in the laboratory for a period of one (1) month after issuance of this report. All samples will then be discarded unless this firm is otherwise directed.

Soil Sample Headspace Analysis

An RKI Eagle Gas Detector (Gastech) was used to measure the combustible vapour concentrations in the headspace of all soil samples recovered from the boreholes. The

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technical protocol was obtained from Appendix C of the Ontario Ministry of Environment and Climate Change (MOECC) document titled "Interim Guidelines for the Remediation of Petroleum Contamination at Operating Retail and Private Fuel Outlets in Ontario", dated March 1992.

Soil samples recovered at the time of sampling were placed immediately into airtight plastic bags with nominal headspace. All lumps of soil inside the bags were broken by hand, and the soil was allowed to come to room temperature prior to conducting the vapour survey. Allowing the samples to stabilize to room temperature ensures consistency of readings between samples.

To measure the soil vapours, the analyser probe is inserted into the nominal headspace above the soil sample. The sample is agitated/manipulated gently as the measurement is taken. The peak reading registered within the first 15 seconds is recorded as the vapour measurement. The parts per million (ppm) or percentage lower explosive limit (% LEL) scale is used to measure concentrations of combustible vapours.

The Gastech readings ranged between 0 ppm and 20% LEL. Some of the results were indicative of petroleum hydrocarbon contamination within the soil. The results were used in conjunction with field observations and sample location/orientation as part of the selection process for sample submission.

Groundwater

No groundwater was encountered in any of the remedial excavations.

6.0 Analytical Test Results

Soil Standards

The soil standards for the subject site were obtained from Table 8 of the document entitled "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the *Environmental Protection Act*", dated April 15, 2011. The MOECC Standards are based on the following considerations:

- Coarse grained soil conditions.
- Surface soil and groundwater conditions.
- Potable groundwater situation.
- Industrial property land use.
- Within 30 m of a water body.

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Paracel Laboratories (Paracel) of Ottawa, performed the laboratory analysis of the samples submitted for analytical testing. Paracel is a member of the Standards Council of Canada/Canadian Association for Environmental Analytical Laboratories (SCC/CAEAL). Paracel is accredited and certified by SCC/CAEAL for specific tests registered with the association.

Soil

Based on our visual observations, three soil samples from Excavations 1, 3 and 5, were submitted to Paracel Laboratories for analysis of PHC fractions 2 through 4 (F2-F4), following the initial investigation. An additional seven soil samples from Excavations 1 and 6, were submitted for analysis of benzene, toluene, ethylbenzene, xylenes (BTEX) and PHC fractions 1 through 4 (F1-F4), from the October 3, 2016 remedial excavation work. The results of the analytical testing, and the selected soil standards, are presented below in Tables 1, 2 and 3. A copy of the laboratory certificates of analysis is attached to this report.

Table 1 - Subsurface Investigation Results					
Analytical Test Results - Soil					
PHC (F₂-F₄)					
Parameter	MDL (µg/g)	Soil Samples (µg/g)			MOECC Table 8 Industrial Standards (µg/g)
		EX1-G1	EX3-G1	EX5-G1	
F ₂ (C ₁₀ -C ₁₆)	4	<u>2,740</u>	nd	nd	10
F ₃ (C ₁₆ -C ₃₄)	8	<u>8,180</u>	nd	68	240
F ₄ (C ₃₄ -C ₅₀)	6	nd	nd	11	120

Notes:

- MDL - Method Detection Limit
- nd - Not detected above the MDL
- value exceeds selected MOECC Standard

As discussed in the report, the initial sample submission from Excavation 1 (Sample EX1-G1), exceeded the MOECC Table 8 Standards for PHC F2 and F3 concentrations. PHC F3 and F4 concentrations were identified in Sample EX5-G1, however, they are in compliance with the MOECC Table 8 Standards.

Table 2 - Remedial Excavation Results - Excavation 1							
Analytical Test Results - Soil							
BTEX and PHC (F ₁ -F ₄)							
Parameter	MDL (µg/g)	Soil Samples (µg/g)					MOECC Table 8 Industrial Standards (µg/g)
		EX1-B7	EX1-B9	EX1-W4	EX1-S5	EX1-E3	
Benzene	0.02	nd	nd	nd	nd	nd	0.02
Ethylbenzene	0.05	nd	nd	nd	nd	nd	0.05
Toluene	0.05	nd	nd	nd	nd	nd	0.2
Xylenes	0.05	nd	nd	nd	nd	<u>0.07</u>	0.05
F ₁ (C ₆ -C ₁₀)	7	nd	nd	nd	nd	<u>44</u>	25
F ₂ (C ₁₀ -C ₁₆)	4	nd	nd	nd	nd	<u>592</u>	10
F ₃ (C ₁₆ -C ₃₄)	8	nd	nd	nd	nd	<u>357</u>	240
F ₄ (C ₃₄ -C ₅₀)	6	nd	nd	nd	nd	nd	120

Notes:

- MDL - Method Detection Limit
- nd - Not detected above the MDL
- value exceeds selected MOECC Standard

The above samples are final confirmatory samples, indicating that the base, and the south and west sidewalls of the excavation are in compliance with the MOECC Table 8 Standards. The sample from the east sidewall (Sample EX1-E3), contains concentrations of xylenes, and PHC fractions 1,2 and 3 in excess of the MOECC Table 8 Standards. As a result, soil located beneath the underground power utility lines on the east side of Excavation 1 remains impacted. The relative concentrations of the contaminants are not considered to be indicative of significant impacts.

Table 2 - Remedial Excavation Results - Excavation 6 Analytical Test Results - Soil BTEX and PHC (F ₁ -F ₄)				
Parameter	MDL (µg/g)	Soil Samples (µg/g) October 9, 2016		MOECC Table 8 Industrial Standards (µg/g)
		EX6-B1	EX6-B3	
Benzene	0.02	nd	nd	0.02
Ethylbenzene	0.05	nd	nd	0.05
Toluene	0.05	nd	nd	0.2
Xylenes	0.05	nd	nd	0.05
F ₁ (C ₈ -C ₁₀)	7	nd	nd	25
F ₂ (C ₁₀ -C ₁₆)	4	nd	nd	10
F ₃ (C ₁₆ -C ₃₄)	8	nd	nd	240
F ₄ (C ₃₄ -C ₅₀)	6	nd	nd	120

Notes:

- MDL - Method Detection Limit
- nd - Not detected above the MDL
- Bold and underlined** - value exceeds selected MOECC Standard

No detectable BTEX or PHC parameter concentrations were identified in the soil samples analysed from Excavation 6. The soil test results from Excavation 6 comply with the MOECC Table 8 standards.

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7.0 Assessment and Recommendations

Assessment

On September 20, 2016, Paterson conducted a site visit to review the use and condition of the subject property and neighbouring properties. Following the site visit, recommendations were made to remove the stained soil in five (5) areas across the northern portion of the subject site, investigate the subsurface in these areas and to have the pit in the garage pumped and investigated. A return visit was carried out on September 26, 2016, to monitor the stained soil removal, collect subsurface samples and to view the pit in the garage. The results of the subsurface investigation identified PHC impacted soil in the area of the current ASTs as well as concerns associated with the use of the pit in the garage. A final site visit was carried out on October 3, 2016, to monitor an environmental remediation program which addressed the impacted soil in the area of the current ASTs and to address and remediate the area to the east of the garage, where the oil/water pit had been discharging.

As part of the remedial activities, a total of six tri-axle truck loads and four trailer loads of contaminated soil were removed from the subject site. A total of 36 final confirmatory samples were recovered from the surficial and environmental remediation excavations and test pit 12. All analysed soil samples complied except an east wall sample (Sample EX1-E3) from Excavation 1, which exceeds the MOECC Table 8 Standards. The east wall sample contains xylene and petroleum hydrocarbon fractions 1, 2 and 3 in excess of the MOECC Table 8 Standards, although the concentrations of these parameters were not considered to be very elevated. Due to the location of underground power conduits, electrical outlets and lamp posts on the subject site, this area could not be excavated. A test pit placed nearby, to the east of Excavation 1 contained soil with no apparent impacts, therefore the contamination is not considered to extend much further beyond the eastern wall of Excavation 1.

Based on the results of the analytical testing, the contamination observed in the areas denoted as Excavations 2 through 6 on Drawing PE1579-2 - Site Remediation Plan, has been successfully removed. It is our opinion that the petroleum hydrocarbon contamination identified in Excavation 1 was due to an isolated spill event from the clear diesel AST. Based on the analytical testing, the majority of the contamination in this area has been removed from the subject site. A clean base, south and west sidewalls were reached in the excavation, however, due to the proximity of the neighbouring property (2702 Carp Road) and live underground power conduits, the excavation could not be extended further to the north or east. Based on our observations the contaminated soil is not considered to extend much further to the north or east.

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Based on the concentration of the remnant impacts along the east wall, the source of the contamination is considered to have been removed and the remaining impacts are not considered to represent a concern to the proposed use of the subject site or the environment. The remnant impacts are expected to degrade in time.

Fill

The quality of the large fill pile on the eastern portion of the subject site was not confirmed as part of the site assessment. It is understood that the pile is to be removed from the subject site prior to the transfer of ownership.

Based on the observations made during the excavation activities, it is apparent that the grade on the western portion of the subject site has been raised with sandy fill material. This fill material appear to consist entirely of soil, with the exception of in Excavation 5, in which, trace amounts of asphalt was observed. The fill material did not appear to be of poor quality, although, the quality of the fill was not assessed.

Garage Pit

Based on our observations made during the second site visit, the pit in the garage was be self-contained. The pit was observed to be discharging potentially impacted water to the east of the subject building. Based on the analytical results, the remediation of the area to the east of the garage is considered to have been successful in removing the limited impacted soil in this area. It is our understanding that the garage building may be demolished under the new ownership, if the building is to be demolished, the soil in the vicinity of the pit should be assessed following the demolition.

Based on our observations and the results of the subsurface investigation and remedial activities, **it is our opinion that no further investigative work is required at this time.**

Recommendations

Garage Pit

Based on our observations, it is apparent that the garage has not been used frequently. The impacts were localized around the outflow pipe and the surrounding clear stone. It is recommended that the pit be filled in with concrete and the outflow pipe be capped at this time, to prevent any further accidental use or misuse of the pit.

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8.0 Statement of Limitations

The client should be aware that any information pertaining to soils are furnished as a matter of general information only and excavation descriptions are not to be interpreted as descriptive of conditions at locations other than those described by the excavations themselves.

This report was prepared for the use of T.G. Carroll Cartage Ltd. Permission from Paterson and T.G. Carroll Cartage Ltd. will be required to release this report to any other party.

We trust that this report satisfies your requirements.

Paterson Group Inc.



Sean Moggridge, B.Eng.



Mark S. D'Arcy, P.Eng.

Report Distribution

- T.G. Carroll Cartage Ltd. (2 copies)
- Paterson Group (1 copy)

Attachments

- Analytical Test Results
- Figure 1: Key Plan
- Drawing PE1579-2 - Site Plan
- Drawing PE1579-3 - Site Remediation Plan

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Certificate of Analysis

Paterson Group Consulting Engineers

154 Colonnade Road South
Nepean, ON K2E 7J5
Attn: Sean Moggridge

Client PO: 19935
Project: PE1579
Custody: 108949

Report Date: 22-Sep-2016
Order Date: 20-Sep-2016

Order #: 1639213

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1639213-01	EX1-G1
1639213-02	EX3-G1
1639213-03	EX5-G1

Approved By:

Mark Foto, M.Sc.
Lab Supervisor

Any use of these results implies your agreement that our total liability in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis
Client: Paterson Group Consulting Engineers
Client PO: 15935

Report Date: 22-Sep-2016
Order Date: 20-Sep-2016
Project Description: PE1579

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	21-Sep-16	22-Sep-16
Solids, %	Gravimetric, calculation	21-Sep-16	21-Sep-16

Certificate of Analysis
 Client: Paterson Group Consulting Engineers
 Client PO: 19935

Report Date: 22-Sep-2016
 Order Date: 20-Sep-2016
 Project Description: PE1579

Client ID:	EX1-G1	EX3-G1	EX5-G1	-
Sample Date:	20-Sep-16	20-Sep-16	20-Sep-16	-
Sample ID:	1639213-01	1639213-02	1639213-03	-
MDL/Units	Soil	Soil	Soil	-

Physical Characteristics

% Solids	0.1 % by Wt.	93.9	89.3	91.7	-
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Hydrocarbons

F2 PHCs (C10-C16)	4 ug/g dry	2740	<4	<4	-
F3 PHCs (C16-C34)	8 ug/g dry	8180	<8	68	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	11	-

Certificate of Analysis
 Client: Paterson Group Consulting Engineers
 Client PO: 19935

Report Date: 22-Sep-2016
 Order Date: 20-Sep-2016
 Project Description: PE1579

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						

Certificate of Analysis
Client: Paterson Group Consulting Engineers
Client PO: 19935

Report Date: 22-Sep-2016
Order Date: 20-Sep-2016
Project Description: PE1579

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	1440	8	ug/g dry	1140			23.0	30	
F4 PHCs (C34-C50)	1570	6	ug/g dry	1260			21.9	30	ORG01
Physical Characteristics									
% Solids	79.4	0.1	% by wt.	78.3			1.5	25	

Certificate of Analysis
 Client: Paterson Group Consulting Engineers
 Client PO: 19935

Report Date: 22-Sep-2016
 Order Date: 20-Sep-2016
 Project Description: PE1579

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Unit's	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F2 PHCs (C10-C16)	85	4	ug/g		94.5	80-120			
F3 PHCs (C16-C34)	216	8	ug/g		116	80-120			
F4 PHCs (C34-C50)	140	6	ug/g		113	80-120			

Certificate of Analysis
Client: Paterson Group Consulting Engineers
Client PO: 19935

Report Date: 22-Sep-2016
Order Date: 20-Sep-2016
Project Description: PE1579

Qualifier Notes:

QC Qualifiers:

ORG01 : GC-FID signal did not return to baseline by C50

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

- n/a: not applicable
- ND: Not Detected
- MDL: Method Detection Limit
- Source Result: Data used as source for matrix and duplicate samples
- %REC: Percent recovery.
- RPD: Relative percent difference.

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method have been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

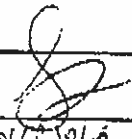
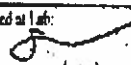

Client Name: PATELSONGROUR, CA P# 1579
 Contact Name: SEAN MCGRIDGE
 Address: 154 CHEVROLET ROAD NORTH City: 19935
 Telephone: (613) 226-7381 Email: SMCGRIGR@PATELSONGROUR.CA

Criteria: O. Reg. 15/04 (As Amended Table 1) RSC Filing O. Reg. 558-00 PVOO CCME SCIB (Storm) SUB (Sanitary) Municipality: _____ Other: _____

Matrix Type: Soil (Soil) GW (Ground Water) SW (Surface Water) SS (Sludge/Sediment) P (Particulate) A (Air) Other: _____

Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taker		Required Analyses									
				Date	Time	PHOSPHORUS	NITROGEN	PHOSPHORUS	METALS BY ICP	ILR	CAD	BARIUM	PHCS (F2-F4)		
1	S		1	Sept 20/16	1 pm									X	120ml
2	S		1	"	1:30 pm									X	
3	S		1	"	2 pm									X	
4															
5															
6															
7															
8															
9															
10															

Comments: _____
 Method of Delivery: Walk-in

Relinquished By (Sign): 	Received by Driver/Depot:	Received at Lab: 	Verified By: 
Relinquished By (Print): <u>SEAN MCGRIDGE</u>	Date/Time: _____	Date/Time: <u>20/09/16 16:55</u>	Date/Time: <u>20/09/16 19:49</u>
Date/Time: <u>20/09/16 16:55</u>	Temperature: _____ °C	Temperature: <u>20.5</u> °C	pH (Verified) _____



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Certificate of Analysis

Paterson Group Consulting Engineers

154 Colonnade Road South
Nepean, ON K2E 7J5
Attn: Sean Moggridge

Client PO: 19937
Project: PE1579
Custody: 109846

Report Date: 6-Oct-2016
Order Date: 4-Oct-2016

Order #: 1641207

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1641207-01	EX1-B7
1641207-02	EX1-B9
1641207-03	EX1-W4
1641207-04	EX1-S5
1641207-05	EX1-E3
1641207-06	EX6-B1
1641207-07	EX6-B3

Approved By:

Mark Foto, M.Sc.
Lab Supervisor

Any use of these results implies your agreement that our total liability in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis
 Client: Paterson Group Consulting Engineers
 Client PO: 19937

Report Date: 06-Oct-2016
 Order Date: 4-Oct-2016
 Project Description: PE1579

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	5-Oct-16	5-Oct-16
PHC F1	CWS Tier 1 - P&T GC-FID	5-Oct-16	5-Oct-16
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	5-Oct-16	5-Oct-16
Solids, %	Gravimetric, calculation	5-Oct-16	5-Oct-16

Certificate of Analysis
 Client: Paterson Group Consulting Engineers
 Client PO: 19937

Report Date: 06-Oct-2016
 Order Date: 4-Oct-2016
 Project Description: PE1579

	Client ID:	EX1-B7	EX1-B9	EX1-W4	EX1-S5
	Sample Date:	03-Oct-16	03-Oct-16	03-Oct-16	03-Oct-16
	Sample ID:	1641207-01	1641207-02	1641207-03	1641207-04
	MDL/Units	Soil	Soil	Soil	Soil

Physical Characteristics

% Solids	0.1 % by Wt.	92.3	95.4	93.2	94.6
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Volatiles

Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Toluene-d8	Surrogate	83.0%	81.8%	81.6%	81.4%

Hydrocarbons

F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	<8	<8
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	<6

	Client ID:	EX1-E3	EX6-B1	EX6-B3	-
	Sample Date:	03-Oct-16	03-Oct-16	03-Oct-16	-
	Sample ID:	1641207-05	1641207-06	1641207-07	-
	MDL/Units	Soil	Soil	Soil	-

Physical Characteristics

% Solids	0.1 % by Wt.	90.9	84.2	86.4	-
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Volatiles

Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
m,p-Xylenes	0.05 ug/g dry	0.07	<0.05	<0.05	-
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Xylenes, total	0.05 ug/g dry	0.07	<0.05	<0.05	-
Toluene-d8	Surrogate	70.8%	85.8%	84.9%	-

Hydrocarbons

F1 PHCs (C6-C10)	7 ug/g dry	44	<7	<7	-
F2 PHCs (C10-C16)	4 ug/g dry	592	<4	<4	-
F3 PHCs (C16-C34)	8 ug/g dry	357	<8	<8	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	-

Certificate of Analysis
 Client: Paterson Group Consulting Engineers
 Client PO: 19937

Report Date: 06-Oct-2016
 Order Date: 4-Oct-2016
 Project Description: PE1579

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						

Certificate of Analysis
 Client: Paterson Group Consulting Engineers
 Client PO: 19937

Report Date: 06-Oct-2016
 Order Date: 4-Oct-2016
 Project Description: PE1579

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND				40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	ND	8	ug/g dry	ND				30	
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND				30	
Physical Characteristics									
% Solids	82.7	0.1	% by Wt.	82.1			0.7	25	
Volatiles									
Benzene	ND	0.02	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
m,p Xylenes	ND	0.05	ug/g dry	ND				50	
o-Xylene	ND	0.05	ug/g dry	ND				50	
Surrogate: Toluene-d8	1.77		ug/g dry		80.6	50-140			

Certificate of Analysis
 Client: Paterson Group Consulting Engineers
 Client PO: 19937

Report Date: 06-Oct-2016
 Order Date: 4-Oct-2016
 Project Description: PE1579

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	191	7	ug/g		95.3	80-120			
F2 PHCs (C10-C16)	72	4	ug/g		80.0	80-120			
F3 PHCs (C16-C34)	212	8	ug/g		114	80-120			
F4 PHCs (C34-C50)	140	6	ug/g		113	80-120			
Volatiles									
Benzene	5.08	0.02	ug/g		127	60-130			
Ethylbenzene	4.18	0.05	ug/g		104	60-130			
Toluene	3.88	0.05	ug/g		96.6	60-130			
m,p-Xylenes	7.94	0.05	ug/g		99.2	60-130			
o-Xylene	4.07	0.05	ug/g		102	60-130			
Surrogate: Toluene-d8	2.18		ug/g		68.2	50-140			

Certificate of Analysis
Client: Paterson Group Consulting Engineers
Client PO: 19937

Report Date: 06-Oct-2016
Order Date: 4-Oct-2016
Project Description: PE1579

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.



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Chain of Custody
(Lab Use Only)
No. 109846

Page ___ of ___
Turnaround Time:
 1 Day 3 Day
 Day
 Regular
Date Required: Day Thursday

Client Name: PATERSON GROUP INC
Contact Name: SEAN MCCRIDGE
Address: 164 COLONNADE ROAD SOUTH
Telephone: 613 226 7381

Postal Reference: PE1577
Phone #: 19937
E-mail Address: SMCCRIDGE@PATERSONGROUP.CA

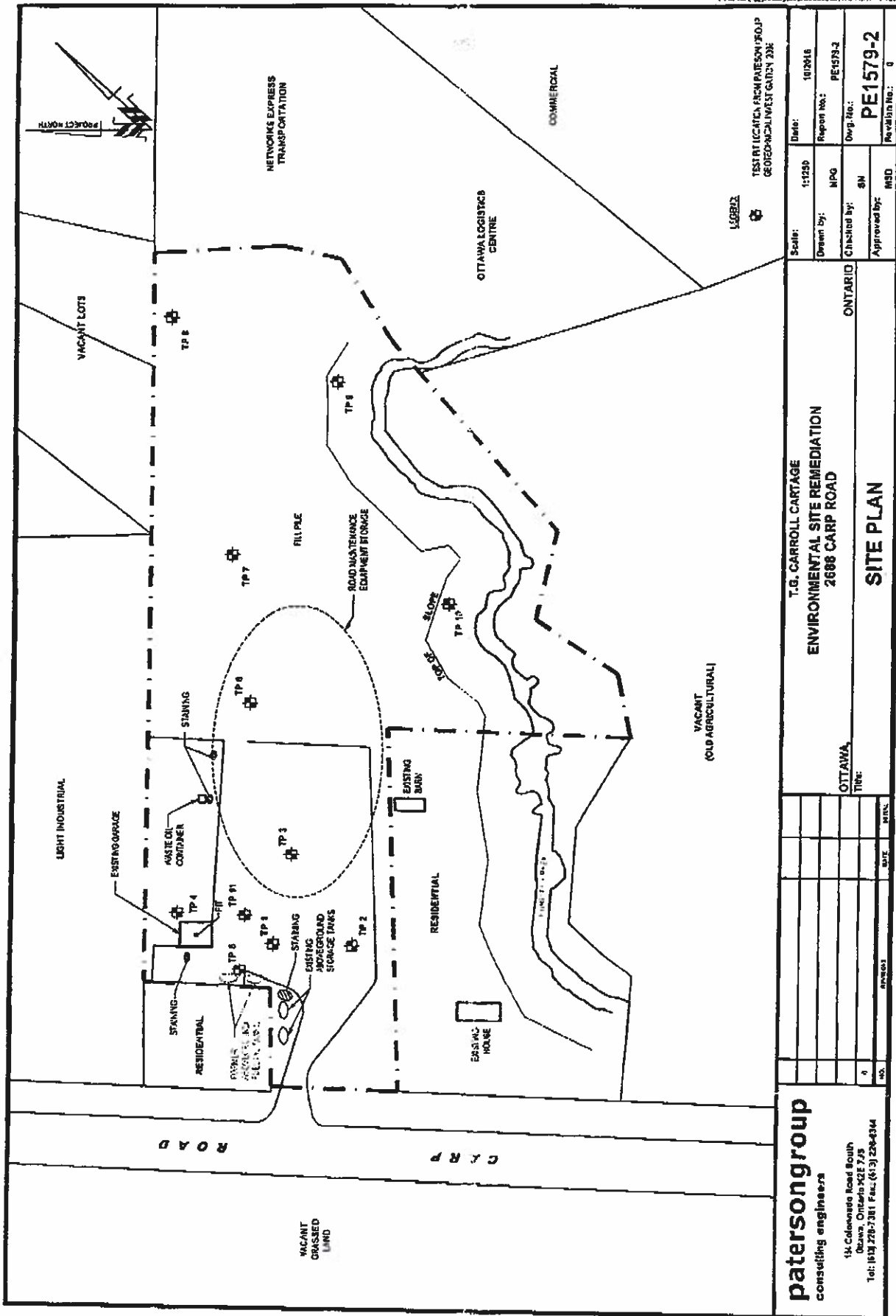
Matrix Type: Soil Sediment Table RSC Filing O. Reg. 552/00 PFOO CCMG SLB (Storm) SUB (Sanitary) Municipality: Other

Matrix Type: (S=Soil, G=Ground Water, SW=Surface Water, SS=Sludge, S=Sanitary Sewer, P=Paint, A=Air, O=Other)				Required Analyses										
Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken		PHENOL	BTEX	PAHs	Metals by IC P	Hg	COP	BOD/SS		
				Date	Time									
1 EXI-B7				10/3/16		X								120 ml + 1 ml
2 EXI-B9						X								
3 EXI-W4						X								
4 EXI-S5						X								
5 EXI-E3						X								
6 EXG-B1						X								
7 EXG-B3						X								
8 TP12-G4														HOLD
9														
10														

Comments: Method of Delivery: Paracel

Relinquished By (Sign): Received at Lab: SUMEYRA DOKMA
Relinquished By (Print): SEAN MCCRIDGE Date/Time: 04/10/16 4:46 Date/Time: OCT 04, 2016 - 08:41
Date/Time: Oct 4, 2016 3:46 PM Temperature: 6 C Temperature: 23.5 C
pH Method | By: N/A

Chain of Custody (Env) - Rev 07 Feb 2016



Scale:	1:1250	Date:	10/26/16
Drawn by:	MPG	Report No.:	PE1579-2
Checked by:	SN	Drawn No.:	PE1579-2
Approved by:	MSD	Revising No.:	0

T.G. CARROLL CARTAGE
ENVIRONMENTAL SITE REMEDIATION
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 Title:

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