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Phase II Environmental Site Assessment (ESA)

206105 Highway 26, Meaford, Ontario

“M1 Parcel”

Project #

2001801

Prepared For

LC Development Group (LCDG Inc.)

June 3, 2020

June 3, 2020

Suresh Singh
LC Development Group (LCDG Inc.)
909 Davenport Road, 2nd Floor
Toronto, Ontario
M6G 2B7

Dear Suresh Singh:

Re: Phase II Environmental Site Assessment (ESA), 206105 Highway 26 "M1 Parcel", Meaford,
ON
Project #: 2001801

We are pleased to present our Phase II Environmental Site Assessment (ESA) report for the above-noted property. The scope of this Phase II ESA conforms to the requirements outlined in the Canadian Standards Association (CSA) Standard Z769-00 (R2013) - Phase II Environmental Site Assessment. The purpose of this Phase II ESA was for due diligence and to address the following potential on-site and off-site sources of environmental concern, identified in Golder's Phase I ESA conducted at the Site on January 6, 2020:

- Former vehicle maintenance/service garages on-Site – Two former garages located in the central portion of the Site.
- The property located at 206068 Highway 26 (50 m southwest – up-gradient) was occupied by a vehicle maintenance/service garage.
- The property located at 206066 Highway 26 (50 southwest – up-gradient) was formerly listed as a gasoline service station with expired fuel tanks.
- The property located at 206065 Highway 26 (adjoining property west of the southwest corner of the Site – up-gradient) currently and historically was occupied by a vehicle maintenance/service garage.

Based on the findings of the Phase II ESA and historical environmental investigations conducted on the Site, laboratory analyses revealed that all of the measured contaminant concentrations in soil and groundwater complied with the Table 3 criteria for RPI property uses with medium-fine textured soils in a non-potable ground water condition.

In conclusion, based on the aforementioned findings, no appreciable impacts to the subsurface or other environmental concerns have been identified in association with the subject property based on our Phase II ESA. Therefore, in our opinion, no further actions are currently warranted.

The report provides Site information from Palmer's site reconnaissance, drilling activities, soil and groundwater sampling, review of laboratory certificate of analysis, and our conclusions for your consideration. We trust that this report will be satisfactory for your current needs. If you have any questions or require further information, please contact our office at your convenience.

Yours truly,

PalmerTM



Bobby Katanchi, M.Sc., P.Geo. QP_{ESA}
Senior Hydrogeologist

Executive Summary

Palmer is pleased to provide this Phase II Environmental Site Assessment (ESA) report to Suresh Singh of LC Development Group (LCDG Inc.). The Phase II ESA was prepared for the parcel of land located at 206105 Highway 26, Meaford, Ontario (hereafter collectively referred to as the "Site").

It is understood that the Phase II ESA is required for due diligence purposes. It should be noted that the format of this report is not intended to support the filing of a Record of Site Condition (RSC) with the Ministry of the Environment, Conservation and Parks (MECP).

The Phase II ESA was conducted to address the following potential on-site and off-site sources of environmental concern, identified in Golder's Phase I ESA conducted at the Site on January 6, 2020:

- Former vehicle maintenance/service garages on-Site – Two former garages located in the central portion of the Site.
- The property located at 206068 Highway 26 (50 m southwest – up-gradient) was occupied by a vehicle maintenance/service garage.
- The property located at 206066 Highway 26 (50 southwest – up-gradient) was formerly listed as a gasoline service station with expired fuel tanks.
- The property located at 206065 Highway 26 (adjoining property west of the southwest corner of the Site – up-gradient) currently and historically was occupied by a vehicle maintenance/service garage.

The abovementioned Areas of Potential Environmental Concern (APECs) as identified by Golder were investigated as part of this report. Soil and groundwater samples were collected to investigate potential Petroleum Hydrocarbon (PHC), Volatile Organic Compound (VOC), and Metal related impacts.

The Phase II ESA was conducted in accordance with the Canadian Standards Association (CSA) Standard Z769-00 (R2013) - Phase II Environmental Site Assessment. For assessment purposes, the soil and groundwater analytical results were compared to 2011 Ministry of the Environment, Conservation and Parks (MECP) Table 3: Full Depth Generic Site Condition Standard (SCS) in a Non-Potable Ground Water Condition in medium-fine textured soil for residential/parkland/institutional land uses (MECP Table 3 Standards).

Based on the results of the Phase II ESA, Palmer presents the following summary of findings:

- a) Drilling of four (4) boreholes to a maximum depth of 8.10 metres below ground surface (mbgs) at strategically selected and accessible locations on-site during the geotechnical drilling investigation;
- b) All of the boreholes, BHM1-1, BHM1-2, BHM1-3, and BHM1-4 were installed with ground water monitoring wells;
- c) Representative soil and groundwater samples were collected and submitted to an accredited laboratory for chemical analysis of one or more of the following parameters: Petroleum Hydrocarbons Fractions F1 to F4 (PHCs), Volatile Organic Compounds (VOCs), and Metals;
- d) The general stratigraphy at the Site consisted of concrete and topsoil overlying fill material. The fill material was underlain by undisturbed native soil, consisting of layers of sandy silt, sand, clayey silt and silty clay till;

- e) Groundwater levels were measured on April 17 and May 13, 2020. Ground water levels were measured at two (2) monitoring wells (BH-M1-1 and BH-M1-2) at depths of 0.51 and 1.53 mbgs, the other two (2) wells remained dry, and were unable to be sampled;
- f) Based on laboratory soil and groundwater analysis, all tested soil and groundwater samples met the MECP Table 3 Standards;
- g) No evidence of free product (i.e. visible film or sheen), or odour was observed during purging and groundwater sampling; and,
- h) The total organic vapour (TOV) concentrations in the head-space of the soil samples were non-detect.

In conclusion, no appreciable impacts to the subsurface or other environmental concerns have been identified in association with the subject property based on our Phase II ESA. Therefore, in our opinion, no further actions are currently warranted.

The statements made in this Executive Summary are subject to the same limitations as contained in the report and should be read in conjunction with the entire report.

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1. Introduction

Palmer was retained by LC Development Group (LCDG Inc.) (the Client) to conduct a Phase II Environmental Site Assessment (Phase II ESA) for the parcel of land located at 206105 Highway 26, Meaford, Ontario (hereinafter referred to as the 'Site'), as shown in **Figure 1**. This report presents the results of the investigation and the conclusions we have drawn regarding the possible impact of the conditions observed.

1.1 Background

Golder Associates Ltd. (Golder) conducted a Phase I ESA at the Site with findings summarised in the report entitled "Phase I Environmental Site Assessment, 206105 Highway 26, Meaford, Ontario, Golder", dated January 6, 2020. Based on the findings of the Phase I ESA, the following potential on-site and off-site sources of environmental concern, identified in Golder's recent Phase I ESA conducted at the Site on January 6, 2020:

- Former vehicle maintenance/service garages on-Site – Two former garages located in the central portion of the Site.
- The property located at 206068 Highway 26 (50 m southwest – up-gradient) was occupied by a vehicle maintenance/service garage.
- The property located at 206066 Highway 26 (50 southwest – up-gradient) was formerly listed as a gasoline service station with expired fuel tanks.
- The property located at 206065 Highway 26 (adjoining property west of the southwest corner of the Site – up-gradient) currently and historically was occupied by a vehicle maintenance/service garage.

A Phase II ESA was recommended due to Golder's abovementioned findings.

1.2 Objective

The purpose of this Phase II ESA was to investigate soil and groundwater quality for potential environmental impacts due to vehicle maintenance/service garages on-site and off-site in accordance with the findings of the Phase I ESA conducted by Golder (see Section 1.1).

It is understood that the Phase II ESA is required for due diligence purposes. It should be noted that the format of this report is not intended to support the filing of a Record of Site Condition (RSC) with the Ministry of the Environment, Conservation and Parks (MECP).

The findings presented in this report may be used for this purpose subject to the limitations stated under Section 8.0. No other party shall have the right to rely on any service provided by Palmer without prior written consent. Use of this report by any other party shall be at such party's sole risk.

1.3 Scope of Work

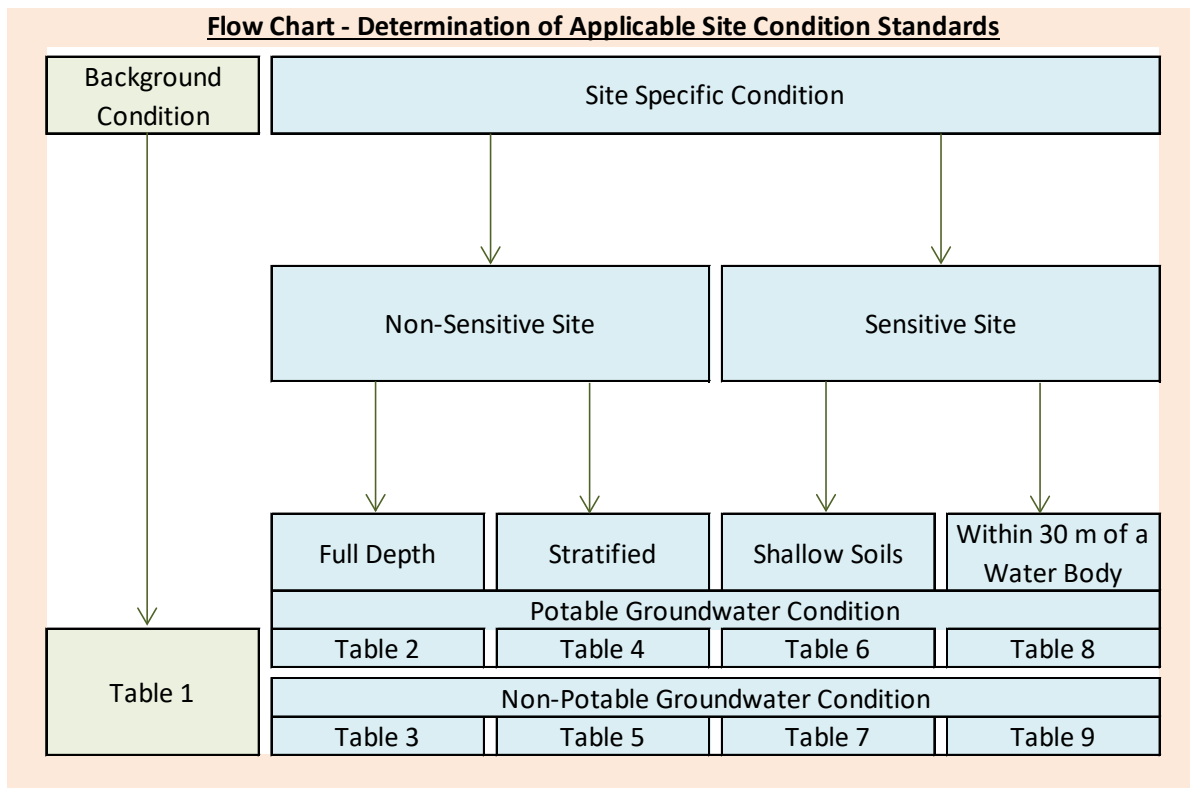
The Phase II ESA was conducted in accordance with the Canadian Standard Association (CSA) Standard Z769-00 (R2013) - Phase II Environmental Site Assessment.

The Phase II ESA scope of work for the on-Site investigation consisted of the following activities:

- Conducted a Site-specific health and safety hazard assessment prior to commencing field activities;
- Requested local utility locating companies (cable, telephone, gas, hydro) to mark any underground utilities present at the Site;
- Palmer advanced a total of four (4) boreholes at the Site and instrumented all of the boreholes with monitoring wells during the geotechnical investigation conducted at the site;
- Screened soil sample head space for vapours using a photo ionization detector (PID);
- Measured the water level and purged ground water from installed monitoring wells prior to sampling;
- Collected representative soil samples and submitted to an accredited laboratory for chemical analysis of one or more of the following parameters: Petroleum Hydrocarbons Fractions F1 to F4 (PHCs), Volatile Organic Compounds (VOCs), and Metals;
- Collected three (3) groundwater samples (one (1) ground water sample collected during initial monitoring event and two ground water samples collected during second monitoring event) and submitted to an accredited laboratory for chemical analysis of the following parameters: PHCs, VOCs and Metals; and
- Reviewed the analytical data and prepared a report summarising the findings of this investigation.

2. Site Assessment Criteria

The following Figure shows a flow chart for selection of applicable criteria:



The Site specific details which formed the basis of the assessment criteria selection are provided below:

Site Sensitivity:

- The Site does not include, nor is there evidence to suggest it could have an adverse effect on a sensitive environment;
- The borehole drilling program revealed that the bedrock is deeper than 8.1 m below existing grade across the Site; and,
- The subsurface soil pH values are between 7.94 and 8.06. Three (3) soil samples (including one (1) duplicate soil sample) were collected on April 2, 2020 at boreholes (BHM1-3 and BHM1-4) between the surface and 6.5 mbg, to determine the soil pH for the Site.

Land Use:

- Currently, the subject Site is developed with a building and is primarily used for residential land uses. No change in land use is anticipated.

Ground Water Use:

- Numerous records in the vicinity of the Site indicated the presence of drinking water well records. However, it has been assumed that the Site will be serviced by a municipal drinking water supply derived from the Nottawasaga Bay intake in the future.

Depth and Soil Texture:

- For the purpose of the report, the assessment criteria corresponding to the full depth option will be used for comparison to the laboratory analytical results.
- One (1) soil sample was collected on March 27, 2020 at the location of BH M2-5 Sample 3 between 1.5 and 2.1 mbg, to determine the soil grain size for the Site as part of the geotechnical investigation conducted at the site.
- Based upon field observations and soil grain size analyses conducted by Terrapex, 1% of the soil particles are greater than 75 micrometers (μm). Therefore, for the purpose of this report, the assessment criteria corresponding to medium-fine textured soils were selected for comparison in laboratory analytical results.
- The selected soil texture is applicable to at least one-third of the Site being assessed. Therefore, the medium-fine textured soil standards can be used, as per Ontario Regulation 153/04, s.42 (1).

Based on the above information, the applicable Environmental Protection Act (EPA) Site assessment criteria selected for use at this Site at the Full Depth Generic Site Condition Standards (SCS) in a Non-Potable Ground Water Condition (Table 3) criteria for residential/parkland/institutional land uses with medium-fine textured soils.

3. Fieldwork, Sampling, & Analytical Testing

Palmer conducted a Site-specific health and safety hazard assessment and communicated it with the field staff prior to commencing the field activities, including clearing underground utility locations prior to commencement of drilling activities.

Fieldwork for the Phase II ESA commenced on March 9, 2020 by soil sampling from a total of four (4) boreholes (BH-M1-1, BH-M1-2, BH-M1-3, and BH-M1-4) drilled to a maximum depth of 8.1 mbg with the installation of four (4) ground water monitoring wells during the geotechnical investigation conducted at the site, as presented in **Figure 2**. The boreholes were strategically placed throughout the subject Site in order to address any environmental concerns that were previously discussed.

Standard operating procedures for on-site safety advocated by our firm include wearing of hard hats, safety vests, steel-toe boots bearing the CSA green triangle emblem, and usage of hearing protection. Other personal protective equipment can include fire-proof coveralls and rubber gloves, depending on the level of hazard/risk anticipated at the Site.

The borehole locations were established in the field by Palmer staff prior to drilling. *Ontario One-Call* was contracted to locate and clear buried utility lines including telephone cables, natural gas mains, and hydro power lines. All the detected underground lines were identified on the ground by marking paints of various colours.

3.1 Soil: Drilling

Boreholes were advanced by using a track mounted power auger drilling rig on a track equipped with solid stem augers and split spoons, supplied and operated by Drilltech Drilling Ltd. under the direction of Palmer staff.

Disposable nitrile gloves were used and replaced between the handling of samples and all soil sampling equipment (stainless steel trowels, spatulas, etc.) were thoroughly decontaminated between soil sample locations to prevent potential cross-contamination. Decontamination activities included physical removal of any adhered debris, wash/scrub in “Alconox” soap solution, distilled water rinse, methanol rinse, and air dry.

Samples were collected continuously from the split spoons. Samples submitted to the laboratory were based on visual observations, results of headspace screening, and identified potential sources of environmental concern and associated parameters of concern.

3.2 Soil: Sampling

Representative soil samples were recovered at each of the borehole locations. The soil stratigraphy was logged during drilling as soil samples were collected with split spoons. Visual observations of any foreign materials or odours were also logged. The finalized field logs are presented in **Appendix A**.

Soil samples were split into portions that were collected into a plastic bag and a sample jar. Head space vapour concentrations were determined by allowing the bags to warm up to ambient temperature, probing into partially opened bags using a monitoring probe, and measuring the sample head space with a photoionization detector (PID). Selected samples were placed in laboratory-supplied glass jars or vials and stored in a cooler during transport to the laboratory.

All soil samples were collected in accordance with strict environmental sampling protocols to ensure reliable results.

3.3 Ground Water: Monitoring Well Installation

Upon completion of drilling, a 50-mm diameter, flush-joint threaded PVC monitoring well was installed in four (4) of the boreholes for ground water monitoring by Drilltech Drilling Ltd. under the direction of Palmer staff.

The monitoring wells included a 3 m length of slotted intake screen. The tops of the intake screens were then extended to the ground surface using solid riser pipe. A silica sand filter pack was placed between the intake screen and the wall of the borehole. The filter pack was extended approximately 0.6 m above the top of the well screen to allow for settlement of the sand packs and to accommodate expansion of the overlying well seals. A bentonite seal was placed above the sand pack and extended to approximately 0.3 mbg. No glue was used in the construction of the monitoring well.

All ground water monitoring wells installed at the Site were instrumented with sufficient lengths of low density polyethylene tubing to facilitate well development and purging requirements. Following the initial installation, depths to the static water level were measured and each monitoring well was developed by purging the well dry at least once to remove any fluids that may have been introduced into the well during drilling and to remove particulates that may have become entrained in the well and filter pack, and to stabilize and grade the filter pack, improve connectivity between the well and the formation, and restore ground water that may have been disturbed or altered during the drilling process to ensure the samples to be representative of true formation waters.

3.4 Ground Water: Sampling

The wells were purged to waste and fresh ground water samples were drawn for chemical analyses. During the initial sampling round, ground water samples were collected using a foot valve with dedicated waterra tubing. The second round of ground water sampling was conducted using a low-flow peristaltic pump with dedicated tubing in each of the monitoring wells. This method minimizes the velocity of the formation waters entering the well screen, as the drawdown is kept to a minimum (i.e., less than 10 cm) by adjusting the pumping rate. The samples were placed in laboratory-supplied glass bottles or vials and stored in a cooler during transport to the laboratory.

Ground water monitoring, including measuring the depth to the stabilized water level, was conducted on April 17, 2020. Groundwater monitoring and sampling was conducted on May 13, 2020. Measurements of ground water depths were made using an electronic oil/water interface probe.

In addition, the ground water was screened (during all monitoring events) in the field for evidence of free product including presence of liquid petroleum hydrocarbons (LPH), sheen (iridescence), odour, and colour. No free-product was observed in any of the monitoring wells on the Site.

3.5 Analytical Testing

Soil and ground water samples collected during the Phase II investigation were submitted for laboratory analysis. The soil and ground water laboratory chemical analysis was conducted by ALS Environmental (ALS) of Waterloo, Ontario.

A total of seven (7) soil samples (not including QA/QC samples) and three (3) groundwater samples were submitted to ALS for chemical analysis of various organic and inorganic parameters (**Table 1**). The rationale for the selection of the soil samples for analysis was based on the location, depth, texture, classifications and any visible signs of organic impacts.

Table 1. Sample Depths, Descriptions, and Chemical Analyses Performed

BOREHOLE ID	SAMPLE ID	MATERIAL MATRIX	SAMPLE DEPTH BELOW GRADE (m)	SAMPLE DESCRIPTION	CHEMICAL ANALYSES PERFORMED
BHM1-1	SS1	Soil	0-0.6	Clayey Silt Fill	PHC/VOC, Metals
BHM1-2	SS1	Soil	0-0.6	Sand and Gravel Fill	Metals
BHM1-2	DUP1	Soil	0-0.6	Sand and Gravel Fill	Metals
BHM1-2	SS4	Soil	1.8-2.4	Silty Clay Till	PHC/VOC
BHM1-3	SS1	Soil	0-0.6	Sand and Gravel Fill	Metals
BHM1-3	SS6	Soil	3.1-3.4	Silty Clay Till	PHC/VOC
BHM1-4	SS1	Soil	0-0.6	Sand Fill	PHC/VOC
BHM1-4	SS2	Soil	0.6-1.2	Clayey Silt Fill	Metals

The Laboratory Certificate of Analyses and Analytical Reports are reproduced in **Appendix B**.

4. Quality Assurance

The laboratory used for this investigation, ALS, is accredited by the Standards Council of Canada (SCC) and the Canadian Association for Laboratory Accreditation (CALA), in accordance with the international standard ISO/IEC 17025:2005 – General Requirements for the Competence of Testing and Calibration Laboratories. ALS is accredited for analysis of all parameters required under the Ontario Regulation 153/04 – Record of Site Condition, as outlined in the MECP Technical Update entitled “Laboratory Accreditation Requirements Under the New Record of Site Condition Regulation (O. Reg. 153/04).”

The laboratory quality assurance program included the analysis of laboratory method blanks, matrix spikes, and samples of Reference Materials, in accordance with their analytical protocol. These analytical results comprise portions of the Certificate of Analysis in **Appendix B and C**. ALS’s overall quality control for the analysis meets their acceptability criteria, with the exception of an OWP Qualifier which pertains to “Organic water sample contained visible sediment (must be included as part of analysis). Measured concentrations of organic substances in water can be biased high due to presence of sediment”.

A strict Quality Assurance/Quality Control (QA/QC) program was implemented and maintained throughout the project to ensure the Site data represents the actual Site conditions.

The QA/QC program provides a method of documented checks to assess the precision and accuracy of collected data. Palmer field and QA/QC protocols have been developed to meet or exceed those defined in the Ministry of the Environment, Conservation and Parks (MECP) documents entitled Guide for Completing Phase II Environmental Site Assessments under Ontario Regulation 153/04 (June 2011) and Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the EPA (March 9, 2004, amended as of July 1, 2011).

The QA/QC program included the following set of standard procedures or protocols.

- i. The use of personal protective equipment (PPE);
- ii. Thorough documentation of all field activities and sample handling practices;
- iii. Thorough decontamination of all sampling equipment used during all investigation phases;
- iv. The incorporation of duplicate samples into the sampling and analytical programs to assess the validity of the data received from the analytical laboratory;
- v. The use of laboratory analytical protocols and method detection limits that have been established in accordance with regulatory requirements for the province of Ontario;
- vi. All sample jars, bottles, and vials were pre-cleaned, inspected, clearly labeled, and their contents recorded on the Finalized Field Log Sheets and Chain-of-Custody forms; and
- vii. Chain-of-Custody forms included sample identification, location, sampling date, and the analyses prescribed were completed and delivered to the laboratory with the cooled samples within 10 hours of sampling.

5. Subsurface Findings

The detailed soil profiles encountered in each borehole are provided in the attached Borehole Logs in **Appendix A**.

5.1 Soil Profile

The observed soil stratigraphy generally comprised surficial concrete or topsoil overlying sand and/or gravel, clayey silt, or silty sand fill, which was underlain by a stratum of silty clay, sandy silt, clayey silt or sand till.

The estimated thickness of each geologic unit is as follows:

Table 2. Soil Stratigraphy

	GEOLOGIC UNIT	DEPTH
Surface	Concrete	0.00 to 0.2 m
	Topsoil	0.00 to 0.3 m
Fill Strata	Sand Fill	0.1 to 0.8 m
	Clayey Silt Fill	0.2 to 1.1 m
	Sand and Gravel Fill	0.2 to 0.3 m
	Silty Sand Fill	0.5 to 0.6 m
Till Strata	Silty Clay Till	0.3 to 6.5 m
	Sandy Silt Till	0.7 to 4.0 m
	Clayey Silt Till (trace sand with occasional gravel)	0.8 to 8.1 m
	Sand Till	1.8 to 2.4 m
Bedrock	Not Encountered.	

The soil across the property is considered to be medium-fine-textured for the purpose of this ESA.

5.2 Ground Water

Stabilized ground water levels were measured at depths between 0.51 and 1.53 m below existing grade for BHM1-1 and BHM1-2 on May 13, 2020, respectively. The other two (2) ground water monitoring wells remained dry, and were unable to be sampled.

Table 2 below illustrates the details of the monitoring wells and their respective measurements:

Table 3. Monitoring Well Information

MONITORING WELL ID	DATE MONITORED (M-D-Y)	DEPTH OF WATER BELOW GROUND SURFACE (m)	OBSERVATIONS
BHM1-1	04-17-20	0.42	None
	05-13-20	0.51	None
BHM1-2	04-17-20	Dry	None
	05-13-20	1.53	None
BHM1-3	04-17-20	Dry	None
	05-13-20	Dry	None
BHM1-4	04-17-20	Dry	None
	05-13-20	Dry	None

The results of the ground water monitoring indicated that the primary near surface water table resides within the clayey silt (fill) and silty clay (till) layers.

No free-product and/or odours were observed in any of the monitoring wells monitored on the Site.

Based on the Site topography, the ground water in the overburden layer is interpreted to flow across the Site in an easterly direction.

Temporal variability in the ground water flow direction could not be assessed during this Phase II ESA investigation since ground water elevations were obtained from all monitoring wells during one season and no historical ground water data was available.

5.3 Soil Vapour Screening

All soil samples were screened in the field for evidence of staining and odours. Soil sample headspace screening was also performed to facilitate sample selections for laboratory analysis and to provide an assessment of the vertical contaminant distributions at each borehole location.

The soil sample headspace screening was conducted with a PID Thermo 580B calibrated to a known isobutylene gas. Sample headspace screening with the PID yielded readings of non-detect.

6. Chemical Analysis

6.1 Soil Analytical Results

The laboratory certificate of analysis of the soil samples is included in **Appendix B**. In total, seven (7) soil samples were collected and analyzed for PHCs, VOCs, and Metals.

The analytical results of the soil samples tested for PHCs, VOCs, and Metals did not detect any of these compounds above the laboratory minimum detection limits, which are below the MECF Table 3 Standards.

No evidence of free product (i.e. visible film or sheen) was observed during Palmer's drilling program.

6.2 Ground Water Analytical Results

The laboratory certificate of analysis of the groundwater samples are included in **Appendix C**. In total, three (3) ground water samples (one (1) ground water sample collected during initial monitoring event and two ground water samples collected during second monitoring event) were collected and analyzed for PHCs, VOCs, and Metals parameters. The remaining two (2) ground water monitoring wells remained dry and were unable to be sampled and analyzed.

During the initial ground water sampling event conducted on April 17, 2020, one (1) ground water sample was collected and analyzed for PHCs, VOCs, and Metals parameters. The remaining three (3) ground water monitoring wells remained dry and were unable to be sampled and analyzed.

The analytical result of the groundwater sample analysed for VOCs and Metals did not detect any of these compounds above the laboratory minimum detection limits, which are below the MECF Table 3 Standards.

The analytical result of the groundwater sample analysed for PHCs detected PHC Fraction F3 above the MECF Table 3 Standards, as follows:

Table 4. Ground Water Exceedances

MONITORING WELL ID	DATE MONITORED (M-D-Y)	PARAMETER	GROUND WATER CONCENTRATION (µg/L)	TABLE 3 CRITERIA (µg/L)
BHM1-1	04-17-20	PHC Fraction F3 (C16-C34)	860	500

The ground water exceedance is likely a result due to the presence of sediment contained in the water sample, which can bias the PHC results. Hydrocarbon particles are known to adhere to sediment particles and when a large volume of sediment is present in the collected ground water sample, a false positive can be detected during laboratory analysis.

Due to the presence of sediment in the initial ground water sample that was collected, an additional ground water sampling event was conducted on May 13, 2020. One (1) ground water sample was recollected from BHM1-1 using low-flow sampling methodologies to re-evaluate the PHC Fraction F2-F4 concentrations in ground water and minimize the collection of sediment in the ground water sample. One (1) additional ground water sample was collected and analyzed for PHCs, VOCs, and Metals parameters at BHM1-2. The remaining two (2) ground water monitoring wells remained dry and were unable to be sampled and analyzed.

The analytical result of the groundwater samples analysed during the second monitoring event for PHCs, VOCs and Metals did not detect any of these compounds above the laboratory minimum detection limits, which are below the MECP Table 3 Standards. Therefore, Palmer was able to verify that the presence of sediment in the initial ground water sample collected at BHM1-1 caused a biased PHC Fraction F3 result.

No evidence of free product (i.e. visible film or sheen) was observed during Palmer's sampling program.

7. Conclusions

Based on the findings of the Phase II ESA and historical environmental investigations conducted on the Site, laboratory analyses revealed that all of the measured contaminant concentrations in soil and groundwater complied with the Table 3 criteria for RPI property uses with medium-fine textured soils in a non-potable ground water condition.

In conclusion, based on the aforementioned findings, no appreciable impacts to the subsurface or other environmental concerns have been identified in association with the subject property based on our Phase II ESA. Therefore, in our opinion, no further actions are currently warranted.

8. Limitations of Report

This report was prepared by Palmer for the account of LC Development Group (LCDG Inc.) in accordance with the professional services agreement.

The conclusions and recommendations detailed in this report are based upon the information available at the time of preparation of the report. No investigative method eliminates the possibility of obtaining imprecise or incomplete information. Professional judgement was exercised in gathering and analyzing the information obtained and in the formulation of our conclusions and recommendations.

The nature of the sampling works makes it possible that contrary conditions may be identified in locations which were not sampled. However, it does suggest that the conditions will be localized and not extensive. The soil boundaries indicated on the borehole logs are inferred from non-continuous sampling and observations made during drilling and therefore should not be interpreted as exact planes of geological change.

The disclosure of any information contained in this report is the sole responsibility of the intended recipient. The material in it reflects Palmer's best judgement in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Palmer accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. This limitations statement is considered part of this report.

Unless stated otherwise in this report, provided that the report is still reliable, and less than 12 months old, Palmer may issue a third-party reliance letter to parties, client identifies in writing, upon payment of the then current fee for such letters. All third parties relying on Palmer's report, by such reliance agree to be bound by our proposal and Palmer's standard reliance letter. Palmer's standard reliance letter indicates that in no event shall Palmer be liable for any damages, howsoever arising, relating to third-party reliance on Palmer's report. No reliance by any party is permitted without such agreement. This report is not to be given over to any third party for any purpose whatsoever without the written permission of Palmer.

The original of the technology-based document sent herewith has been authenticated and will be retained by Palmer for a minimum of five years. Since the file transmitted is now out of Palmer's control and its integrity can no longer be ensured, no guarantee may be given with regards to any modifications made to this document.

9. Certification

This report was prepared by Chloe Stephenson, B.A., EPT. who is currently an Environmental Scientist with Palmer in the Toronto Office. She has experience numerous Phase I ESAs at various land use types, and conducting soil and ground water sampling procedures in accordance with Ontario Regulation 153/04 and 511/09 and the CSA Z768-01 and Z769-00 environmental protocols. Chloe is a recognized Environmental Professional (in training) with Eco Canada.

This report was reviewed by Sarah Sipak, B.Sc., an Environmental Due Diligence Team Lead in the Toronto office of Palmer. She has over ten years' experience conducting Phase I and II ESAs, soil and ground water sampling, and site remediation in accordance with Ontario Regulation 153/04 and 511/09, the CSA Z768-01 and Z769-00 environmental protocols, the Consulting Engineers of Ontario's Generally Accepted Standards for Environmental Investigations, and the Canadian Mortgage and Housing Corporation (CMHC) environmental site investigation procedures for mortgage loan insurance. The aforementioned ESAs have covered all land use types across Canada. Sarah also has numerous years of experience in preparing and filing Record of Site Conditions (RSCs) with the Ministry of the Environment, Conservation and Parks (MECP).

This report was reviewed by Bobby Katanchi, M.Sc., P.Geo., QP_{ESA}, a Senior Hydrogeologist in the Toronto Office of Palmer, with a Masters of Science Degree in Hydrogeology, and is a recognized Professional Geoscientist in Ontario since 2013. Bobby has conducted and managed over 50 of environmental investigations including Phase One ESAs, Phase Two ESAs, and various site remediation projects across Ontario. Bobby is a Qualified Person (QP_{ESA}) under the MECP O.Reg. 153/04 as amended.

Prepared By:



Chloe Stephenson, B.A., EPT
Environmental Scientist

Reviewed By:



Sarah Sipak, B.Sc.
Environmental Due Diligence Team Lead



Bobby Katanchi, M.Sc., P.Geo. QP_{ESA}
Senior Hydrogeologist

10. References

- Chapman and Putnam, The Physiography of Southern Ontario, 1984;
- The Ontario Geological Survey, 1990;
- The Ontario Geological Survey, 2003;
- Phase I Environmental Site Assessment, 206105 Highway 26, Meaford, Ontario, Golder, 2020; and,
- ALS Environmental Laboratory Analytical Results; and,
- Google Earth, 2020.

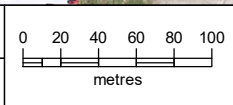
Figures



CLIENT:
LC Development Group - LCDG INC

PROJECT:
206105 Highway 26 (M1)

PREPARED BY:
Palmer™



PROJECT NO.	2001801	REVISION:	1-1
DATE:	May 03, 2020	SCALE:	1:4000
DRAWN:	CV	DATUM:	NAD 1983
CHECKED:	ED	PROJECTION:	UTM zone 17



LEGEND:
 Subject Property

Imagery (2015) provided by Grey County WMS



TITLE:
Site Location

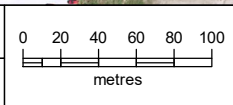
Figure 1



CLIENT:
LC Development Group - LCDG INC

PROJECT:
206105 Highway 26 (M1)

PREPARED BY:
PalmerTM



- LEGEND:
- Subject Property
 - + Borehole Location
 - Inferred Groundwater Flow

PROJECT NO.	2001801	REVISION:	1-1
DATE:	May 03, 2020	SCALE:	1:4000
DRAWN:	CV	DATUM:	NAD 1983
CHECKED:	ED	PROJECTION:	UTM zone 17

Imagery (2015) provided by Grey County WMS

Borehole Location Plan

Figure 2

Appendix A

Borehole Logs

BH LOCATION: See Borehole Location Plan

GRAPH NOTES +3, ×3: Numbers refer to Sensitivity ○ 8=3% Strain at Failure

PROJECT: Geotechnical Investigation, Phase 2 ESA, M1

CLIENT: LC Development Group

PROJECT LOCATION: Meaford, ON

DATUM: N/A

BH LOCATION: See Borehole Location Plan

Method: Continuous Spoon/Solid Stem Augers

Diameter: 155 mm

Date: Apr-02-2020

REF. NO.: 2001801

ENCL NO.: 2

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W _P	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	POCKET PEN. (C _u) (kPa)	NATURAL UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)		
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			SHEAR STRENGTH (kPa)								WATER CONTENT (%)	
								20 40 60 80 100	20 40 60 80 100								
							○ UNCONFINED + FIELD VANE & Sensitivity ● QUICK TRIAXIAL × LAB VANE										
0.0	Ground Surface														GR SA SI CL		
0.0	CONCRETE: 180 mm						Concrete										
0.2	FILL: sand and gravel, trace clay, trace silt, trace rootlets, trace organics, dark brown to brown, wet loose FILL: clayey silt, some sand, trace organics, contains cobbles, brown, moist, firm to very stiff SILTY CLAY TILL: some sand, trace gravel, contains seams of sand, contains cobbles and boulders, brown, moist, very stiff to hard		1	SS	8		Holeplug										
0.3																	
0.8			2	SS	25												
1			3	SS	55		W. L. 1.5 mBGL May 13, 2020										
2			4	SS	59		Screen								Auger grinding		
3			5	SS	33												
3.3	END OF BOREHOLE DUE TO AUGER AND SPOON REFUSAL 1. Borehole caved to 2.7 mBGS upon completion of drilling 2. Upon completion of drilling, a 50mm diameter monitoring well was installed in the borehole. 3. Water Level Readings: Date W. L. Depth (mBGS) April 17, 2020 No GW Accu. May 13, 2020 1.53		6	SS	50/ 100mm		Natural Pack							Auger grinding and spoon bouncing			

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES

+ 3 , × 3 : Numbers refer to Sensitivity

○ = 3% Strain at Failure

BH LOCATION: See Borehole Location Plan

Measurement

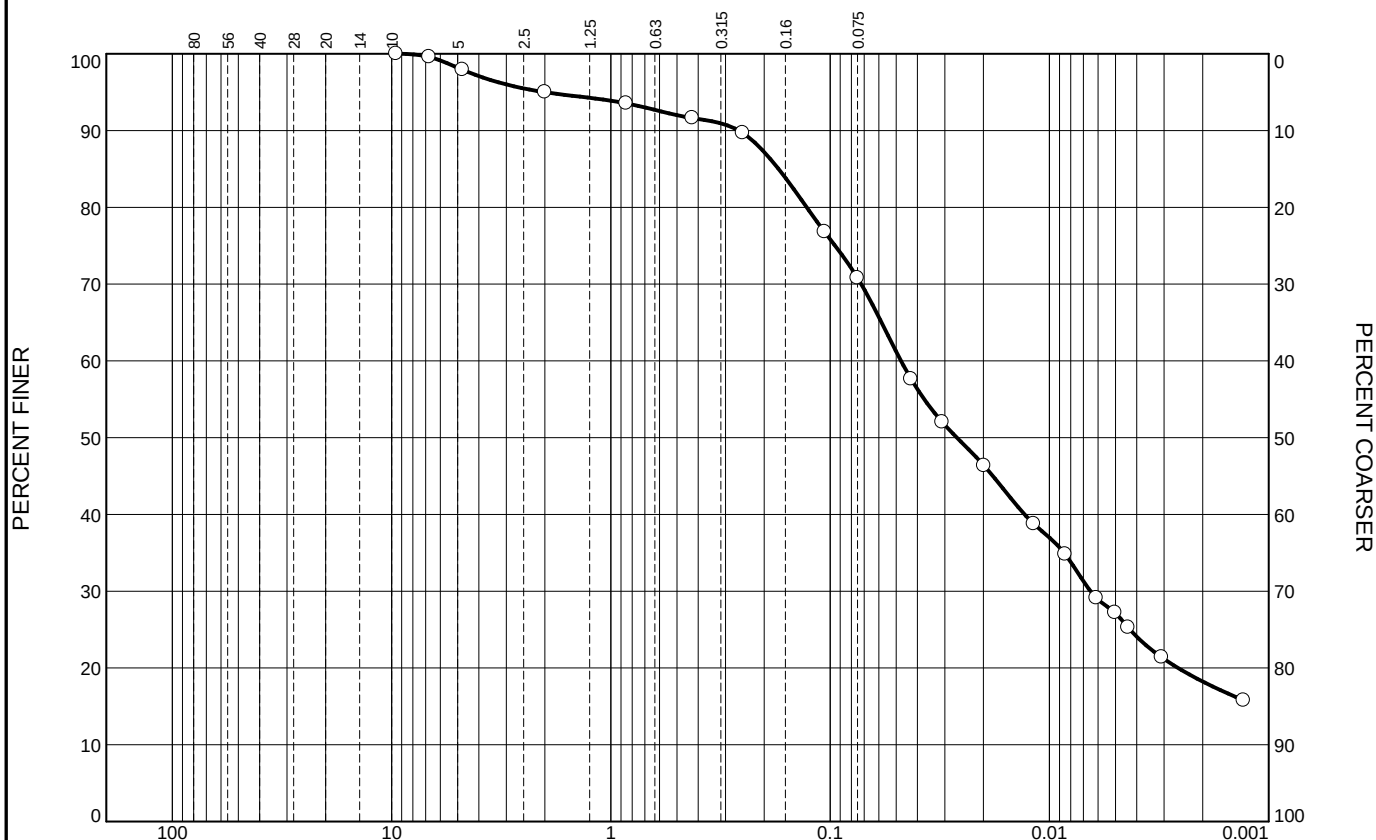
BH LOCATION: See Borehole Location Plan

GRAPH NOTES + 3, × 3: Numbers refer to Sensitivity ○ 8=3% Strain at Failure

Appendix B

Results of the Soil Chemical Analysis and Grain Size Analysis

Grain Size Distribution Report



The plot shows the grain size distribution of a soil sample. The x-axis represents particle size in millimeters on a logarithmic scale, with major ticks at 100, 10, 1, 0.1, and 0.01. The y-axis represents the percentage of soil finer than a given particle size, ranging from 0 to 100. The curve starts at 100% finer for 100 mm and decreases as particle size decreases, reaching approximately 18% finer at 0.001 mm.

Particle Size (mm)	Percent Finer (%)
100	100
60	100
40	100
25	100
15	100
10	100
7.5	98
6	95
4.75	93
3.75	92
3	87
2.5	85
2	84
1.5	82
1.18	81
0.85	78
0.6	70
0.425	67
0.3	59
0.25	54
0.18	48
0.15	42
0.106	38
0.075	34
0.06	32
0.0425	30
0.03	28
0.025	25
0.018	22
0.015	20
0.0106	18
0.0075	18
0.006	18
0.00425	18
0.003	18
0.0025	18
0.0018	18
0.0015	18
0.00106	18
0.00075	18
0.0006	18
0.000425	18
0.0003	18
0.00025	18
0.00018	18
0.00015	18
0.000106	18
0.000075	18
0.00006	18
0.0000425	18
0.00003	18
0.000025	18
0.000018	18
0.000015	18
0.0000106	18
0.0000075	18
0.000006	18
0.00000425	18
0.000003	18
0.0000025	18
0.0000018	18
0.0000015	18
0.00000106	18
0.00000075	18
0.0000006	18
0.000000425	18
0.0000003	18
0.00000025	18
0.00000018	18
0.00000015	18
0.000000106	18
0.000000075	18
0.00000006	18
0.0000000425	18
0.00000003	18
0.000000025	18
0.000000018	18
0.000000015	18
0.0000000106	18
0.0000000075	18
0.000000006	18
0.00000000425	18
0.000000003	18
0.0000000025	18
0.0000000018	18
0.0000000015	18
0.00000000106	18
0.00000000075	18
0.0000000006	18
0.000000000425	18
0.0000000003	18
0.00000000025	18
0.00000000018	18
0.00000000015	18
0.000000000106	18
0.000000000075	18
0.00000000006	18
0.0000000000425	18
0.00000000003	18
0.000000000025	18
0.000000000018	18
0.000000000015	18
0.0000000000106	18
0.0000000000075	18
0.000000000006	18
0.00000000000425	18
0.000000000003	18
0.0000000000025	18
0.0000000000018	18
0.0000000000015	18
0.00000000000106	18
0.00000000000075	18
0.0000000000006	18
0.000000000000425	18
0.0000000000003	18
0.00000000000025	18
0.00000000000018	18
0.00000000000015	18
0.000000000000106	18
0.000000000000075	18
0.00000000000006	18
0.0000000000000425	18
0.00000000000003	18
0.000000000000025	18
0.000000000000018	18
0.000000000000015	18
0.0000000000000106	18
0.0000000000000075	18
0.000000000000006	18
0.00000000000000425	18
0.000000000000003	18
0.0000000000000025	18
0.0000000000000018	18
0.0000000000000015	18
0.00000000000000106	18
0.00000000000000075	18
0.0000000000000006	18
0.000000000000000425	18
0.0000000000000003	18
0.000000000000000	

Material Description	USCS	AASHTO
○ SANDY CLAYEY SILT some gravel		

Terrapex

Figure 4

Tested By: RR **Checked By:** DM



PALMER ENVIRONMENTAL CONSULTING
GROUP INC. (Richmond Hill)
ATTN: TED PAN
74 Berkeley Street
Toronto ON M5V 1E3

Date Received: 07-APR-20
Report Date: 15-APR-20 13:31 (MT)
Version: FINAL REV. 2

Client Phone: 647-795-8153

Certificate of Analysis

Lab Work Order #: L2434748
Project P.O. #: NOT SUBMITTED
Job Reference: 2001801
C of C Numbers: 17-731600
Legal Site Desc:

Jennifer Barkshire-Paterson
Account Manager

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ANALYTICAL REPORT

Summary of Guideline Exceedances

Guideline						
ALS ID	Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
Ontario Regulation 153/04 - April 15, 2011 Standards - T3-Soil-Res/Park/Inst. Property Use (Coarse)						
(No parameter exceedances)						
Ontario Regulation 153/04 - April 15, 2011 Standards - T3-Soil-Res/Park/Inst. Property Use (Fine)						
(No parameter exceedances)						

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



ANALYTICAL REPORT

L2434748 CONT'D....

Job Reference: 2001801

PAGE 3 of 10

15-APR-20 13:31 (MT)

Physical Tests - SOIL

Analyte	Unit	Guide Limits		Lab ID	L2434748-1	L2434748-2	L2434748-3	L2434748-8	L2434748-9	L2434748-10
		#1	#2	Sample Date	02-APR-20	02-APR-20	02-APR-20	02-APR-20	02-APR-20	02-APR-20
				Sample ID	BHM1-2 SS4	BHM1-3 SS6	BHM1-4 SS1	BHM1-3 SS1	BHM1-4 SS8	DUP2
% Moisture	%	-	-	9.86	6.67	15.6				
pH	pH units	-	-				7.94	8.06	8.02	

Guide Limit #1: T3-Soil-Res/Park/Inst. Property Use (Coarse)

Guide Limit #2: T3-Soil-Res/Park/Inst. Property Use (Fine)

 Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.



ANALYTICAL REPORT

Metals - SOIL

Analyte	Unit	Lab ID Sample Date Sample ID					
		Guide Limits #1 #2					
Antimony (Sb)	ug/g	7.5	7.5	<1.0	<1.0	<1.0	<1.0
Arsenic (As)	ug/g	18	18	3.8	4.1	4.7	4.8
Barium (Ba)	ug/g	390	390	20.0	25.0	40.5	31.5
Beryllium (Be)	ug/g	4	5	<0.50	0.51	<0.50	0.61
Boron (B)	ug/g	120	120	16.3	21.8	13.8	24.3
Cadmium (Cd)	ug/g	1.2	1.2	<0.50	<0.50	<0.50	<0.50
Chromium (Cr)	ug/g	160	160	12.0	15.6	13.1	20.7
Cobalt (Co)	ug/g	22	22	6.8	8.0	7.3	10.3
Copper (Cu)	ug/g	140	180	25.8	23.7	27.5	30.3
Lead (Pb)	ug/g	120	120	3.8	4.0	3.6	4.9
Molybdenum (Mo)	ug/g	6.9	6.9	<1.0	<1.0	<1.0	<1.0
Nickel (Ni)	ug/g	100	130	14.0	17.3	11.9	21.8
Selenium (Se)	ug/g	2.4	2.4	<1.0	<1.0	<1.0	<1.0
Silver (Ag)	ug/g	20	25	<0.20	<0.20	<0.20	<0.20
Thallium (Tl)	ug/g	1	1	<0.50	<0.50	<0.50	<0.50
Uranium (U)	ug/g	23	23	<1.0	<1.0	<1.0	<1.0
Vanadium (V)	ug/g	86	86	17.2	21.7	27.2	27.8
Zinc (Zn)	ug/g	340	340	24.5	31.9	36.6	38.3

Guide Limit #1: T3-Soil-Res/Park/Inst. Property Use (Coarse)

Guide Limit #2: T3-Soil-Res/Park/Inst. Property Use (Fine)

 Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

 Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

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



ANALYTICAL REPORT

Volatile Organic Compounds - SOIL

Analyte	Unit	Lab ID				
		Sample Date				
		Sample ID				
		L2434748-1	L2434748-2	L2434748-3		
		02-APR-20	02-APR-20	02-APR-20		
		BHM1-2 SS4	BHM1-3 SS6	BHM1-4 SS1		
Guide Limits						
		#1	#2			
Acetone	ug/g	16	28	<0.50	<0.50	<0.50
Benzene	ug/g	0.21	0.17	<0.0068	<0.0068	<0.0068
Bromodichloromethane	ug/g	13	13	<0.050	<0.050	<0.050
Bromoform	ug/g	0.27	0.26	<0.050	<0.050	<0.050
Bromomethane	ug/g	0.05	0.05	<0.050	<0.050	<0.050
Carbon tetrachloride	ug/g	0.05	0.12	<0.050	<0.050	<0.050
Chlorobenzene	ug/g	2.4	2.7	<0.050	<0.050	<0.050
Dibromochloromethane	ug/g	9.4	9.4	<0.050	<0.050	<0.050
Chloroform	ug/g	0.05	0.18	<0.050	<0.050	<0.050
1,2-Dibromoethane	ug/g	0.05	0.05	<0.050	<0.050	<0.050
1,2-Dichlorobenzene	ug/g	3.4	4.3	<0.050	<0.050	<0.050
1,3-Dichlorobenzene	ug/g	4.8	6	<0.050	<0.050	<0.050
1,4-Dichlorobenzene	ug/g	0.083	0.097	<0.050	<0.050	<0.050
Dichlorodifluoromethane	ug/g	16	25	<0.050	<0.050	<0.050
1,1-Dichloroethane	ug/g	3.5	11	<0.050	<0.050	<0.050
1,2-Dichloroethane	ug/g	0.05	0.05	<0.050	<0.050	<0.050
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.050	<0.050	<0.050
cis-1,2-Dichloroethylene	ug/g	3.4	30	<0.050	<0.050	<0.050
trans-1,2-Dichloroethylene	ug/g	0.084	0.75	<0.050	<0.050	<0.050
Methylene Chloride	ug/g	0.1	0.96	<0.050	<0.050	<0.050
1,2-Dichloropropane	ug/g	0.05	0.085	<0.050	<0.050	<0.050
cis-1,3-Dichloropropene	ug/g	-	-	<0.030	<0.030	<0.030
trans-1,3-Dichloropropene	ug/g	-	-	<0.030	<0.030	<0.030
1,3-Dichloropropene (cis & trans)	ug/g	0.05	0.083	<0.042	<0.042	<0.042
Ethylbenzene	ug/g	2	15	<0.018	<0.018	<0.018
n-Hexane	ug/g	2.8	34	<0.050	<0.050	<0.050
Methyl Ethyl Ketone	ug/g	16	44	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	ug/g	1.7	4.3	<0.50	<0.50	<0.50
MTBE	ug/g	0.75	1.4	<0.050	<0.050	<0.050
Styrene	ug/g	0.7	2.2	<0.050	<0.050	<0.050

Guide Limit #1: T3-Soil-Res/Park/Inst. Property Use (Coarse)

Guide Limit #2: T3-Soil-Res/Park/Inst. Property Use (Fine)

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

ANALYTICAL REPORT

Volatile Organic Compounds - SOIL

Analyte	Unit	Guide Limits		Lab ID	L2434748-1	L2434748-2	L2434748-3
		#1	#2	Sample Date	02-APR-20	02-APR-20	02-APR-20
				Sample ID	BHM1-2 SS4	BHM1-3 SS6	BHM1-4 SS1
1,1,1,2-Tetrachloroethane	ug/g	0.058	0.05		<0.050	<0.050	<0.050
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05		<0.050	<0.050	<0.050
Tetrachloroethylene	ug/g	0.28	2.3		<0.050	<0.050	<0.050
Toluene	ug/g	2.3	6		<0.080	<0.080	<0.080
1,1,1-Trichloroethane	ug/g	0.38	3.4		<0.050	<0.050	<0.050
1,1,2-Trichloroethane	ug/g	0.05	0.05		<0.050	<0.050	<0.050
Trichloroethylene	ug/g	0.061	0.52		<0.010	0.015	<0.010
Trichlorofluoromethane	ug/g	4	5.8		<0.050	<0.050	<0.050
Vinyl chloride	ug/g	0.02	0.022		<0.020	<0.020	<0.020
o-Xylene	ug/g	-	-		<0.020	<0.020	<0.020
m+p-Xylenes	ug/g	-	-		<0.030	<0.030	<0.030
Xylenes (Total)	ug/g	3.1	25		<0.050	<0.050	<0.050
Surrogate: 4-Bromofluorobenzene	%	-	-		92.6	95.5	90.9
Surrogate: 1,4-Difluorobenzene	%	-	-		108.2	110.6	106.2

Guide Limit #1: T3-Soil-Res/Park/Inst. Property Use (Coarse)

Guide Limit #2: T3-Soil-Res/Park/Inst. Property Use (Fine)

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

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



ANALYTICAL REPORT

Hydrocarbons - SOIL

Analyte	Unit	Lab ID				
		Sample Date				
		Sample ID				
		L2434748-1	L2434748-2	L2434748-3		
		02-APR-20	02-APR-20	02-APR-20		
		BHM1-2 SS4	BHM1-3 SS6	BHM1-4 SS1		
Guide Limits						
		#1	#2			
F1 (C6-C10)	ug/g	55	65	<5.0	<5.0	<5.0
F1-BTEX	ug/g	55	65	<5.0	<5.0	<5.0
F2 (C10-C16)	ug/g	98	150	<10	<10	<10
F3 (C16-C34)	ug/g	300	1300	<50	<50	<50
F4 (C34-C50)	ug/g	2800	5600	<50	<50	<50
Total Hydrocarbons (C6-C50)	ug/g	-	-	<72	<72	<72
Chrom. to baseline at nC50		-	-	YES	YES	YES
Surrogate: 2-Bromobenzotrifluoride	%	-	-	97.7	93.2	93.0
Surrogate: 3,4-Dichlorotoluene	%	-	-	64.5	53.9 SURR-ND	70.3

Guide Limit #1: T3-Soil-Res/Park/Inst. Property Use (Coarse)

Guide Limit #2: T3-Soil-Res/Park/Inst. Property Use (Fine)

 Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

 Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
-----------	-------------

SURR-ND Surrogate recovery marginally exceeded ALS DQO. Reported non-detect results for associated samples were deemed to be unaffected.

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

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

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

Hydrocarbon results are expressed on a dry weight basis.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.

In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

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

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:

1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

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

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

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

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

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

Notes:

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

Reference Information

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Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).			
MET-200.2-CCMS-WT	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)
Soil/sediment is dried, disaggregated, and sieved (2 mm). For tests intended to support Ontario regulations, the <2mm fraction is ground to pass through a 0.355 mm sieve. Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.			
Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H ₂ S) may be excluded if lost during sampling, storage, or digestion.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).			
MOISTURE-WT	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)
PH-WT	Soil	pH	MOEE E3137A
A minimum 10g portion of the sample is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil and then analyzed using a pH meter and electrode.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
VOC-1,3-DCP-CALC-WT	Soil	Regulation 153 VOCs	SW8260B/SW8270C
VOC-511-HS-WT	Soil	VOC-O.Reg 153/04 (July 2011)	SW846 8260 (511)
Soil and sediment samples are extracted in methanol and analyzed by headspace-GC/MS.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).			
XYLENES-SUM-CALC-WT	Soil	Sum of Xylene Isomer Concentrations	CALCULATION
Total xylenes represents the sum of o-xylene and m&p-xylene.			
**ALS test methods may incorporate modifications from specified reference methods to improve performance.			
Chain of Custody Numbers:			
17-731600			
The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:			
Laboratory Definition Code	Laboratory Location		
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA		

Reference Information

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GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg ww - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

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

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT		Soil						
Batch	R5054533							
WG3305307-4	DUP	WG3305307-3						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	13-APR-20
WG3305307-2	LCS							
F1 (C6-C10)			97.8		%		80-120	13-APR-20
WG3305307-1	MB							
F1 (C6-C10)			<5.0		ug/g		5	13-APR-20
Surrogate: 3,4-Dichlorotoluene			89.9		%		60-140	13-APR-20
WG3305307-6	MS	L2434564-3						
F1 (C6-C10)			96.7		%		60-140	13-APR-20
F2-F4-511-WT		Soil						
Batch	R5053293							
WG3305195-3	DUP	WG3305195-3						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	30	08-APR-20
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	30	08-APR-20
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	30	08-APR-20
WG3305195-2	LCS							
F2 (C10-C16)			115.5		%		80-120	08-APR-20
F3 (C16-C34)			118.5		%		80-120	08-APR-20
F4 (C34-C50)			113.2		%		80-120	08-APR-20
WG3305195-1	MB							
F2 (C10-C16)			<10		ug/g		10	08-APR-20
F3 (C16-C34)			<50		ug/g		50	08-APR-20
F4 (C34-C50)			<50		ug/g		50	08-APR-20
Surrogate: 2-Bromobenzotrifluoride			104.1		%		60-140	08-APR-20
WG3305195-4	MS	WG3305195-5						
F2 (C10-C16)			119.0		%		60-140	08-APR-20
F3 (C16-C34)			119.8		%		60-140	08-APR-20
F4 (C34-C50)			116.9		%		60-140	08-APR-20
MET-200.2-CCMS-WT		Soil						
Batch	R5053911							
WG3305237-2	CRM	WT-CANMET-TILL2						
Antimony (Sb)			89.5		%		70-130	08-APR-20
Arsenic (As)			97.8		%		70-130	08-APR-20
Barium (Ba)			92.1		%		70-130	08-APR-20
Beryllium (Be)			88.6		%		70-130	08-APR-20
Boron (B)			2.6		mg/kg		0-8.6	08-APR-20

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT		Soil						
Batch	R5053911							
WG3305237-3	LCS							
Antimony (Sb)			102.8		%		80-120	08-APR-20
Arsenic (As)			102.5		%		80-120	08-APR-20
Barium (Ba)			99.7		%		80-120	08-APR-20
Beryllium (Be)			103.8		%		80-120	08-APR-20
Boron (B)			99.0		%		80-120	08-APR-20
Cadmium (Cd)			96.9		%		80-120	08-APR-20
Chromium (Cr)			101.3		%		80-120	08-APR-20
Cobalt (Co)			99.8		%		80-120	08-APR-20
Copper (Cu)			98.3		%		80-120	08-APR-20
Lead (Pb)			98.5		%		80-120	08-APR-20
Molybdenum (Mo)			99.7		%		80-120	08-APR-20
Nickel (Ni)			98.9		%		80-120	08-APR-20
Selenium (Se)			99.7		%		80-120	08-APR-20
Silver (Ag)			104.0		%		80-120	08-APR-20
Thallium (Tl)			97.4		%		80-120	08-APR-20
Uranium (U)			100.3		%		80-120	08-APR-20
Vanadium (V)			104.2		%		80-120	08-APR-20
Zinc (Zn)			98.6		%		80-120	08-APR-20
WG3305237-1	MB							
Antimony (Sb)			<0.10		mg/kg		0.1	08-APR-20
Arsenic (As)			<0.10		mg/kg		0.1	08-APR-20
Barium (Ba)			<0.50		mg/kg		0.5	08-APR-20
Beryllium (Be)			<0.10		mg/kg		0.1	08-APR-20
Boron (B)			<5.0		mg/kg		5	08-APR-20
Cadmium (Cd)			<0.020		mg/kg		0.02	08-APR-20
Chromium (Cr)			<0.50		mg/kg		0.5	08-APR-20
Cobalt (Co)			<0.10		mg/kg		0.1	08-APR-20
Copper (Cu)			<0.50		mg/kg		0.5	08-APR-20
Lead (Pb)			<0.50		mg/kg		0.5	08-APR-20
Molybdenum (Mo)			<0.10		mg/kg		0.1	08-APR-20
Nickel (Ni)			<0.50		mg/kg		0.5	08-APR-20
Selenium (Se)			<0.20		mg/kg		0.2	08-APR-20
Silver (Ag)			<0.10		mg/kg		0.1	08-APR-20
Thallium (Tl)			<0.050		mg/kg		0.05	08-APR-20

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT		Soil						
Batch	R5053911							
WG3305237-1	MB							
Uranium (U)			<0.050		mg/kg		0.05	08-APR-20
Vanadium (V)			<0.20		mg/kg		0.2	08-APR-20
Zinc (Zn)			<2.0		mg/kg		2	08-APR-20
Batch	R5055899							
WG3306748-2	CRM	WT-CANMET-TILL2						
Antimony (Sb)			116.4		%		70-130	13-APR-20
Arsenic (As)			113.4		%		70-130	13-APR-20
Barium (Ba)			107.2		%		70-130	13-APR-20
Beryllium (Be)			102.4		%		70-130	13-APR-20
Boron (B)			3.3		mg/kg		0-8.6	13-APR-20
Cadmium (Cd)			107.8		%		70-130	13-APR-20
Chromium (Cr)			109.9		%		70-130	13-APR-20
Cobalt (Co)			109.7		%		70-130	13-APR-20
Copper (Cu)			112.0		%		70-130	13-APR-20
Lead (Pb)			107.1		%		70-130	13-APR-20
Molybdenum (Mo)			109.7		%		70-130	13-APR-20
Nickel (Ni)			110.6		%		70-130	13-APR-20
Selenium (Se)			0.40		mg/kg		0.15-0.55	13-APR-20
Silver (Ag)			0.29		mg/kg		0.16-0.36	13-APR-20
Thallium (Tl)			105.3		%		70-130	13-APR-20
Uranium (U)			106.4		%		70-130	13-APR-20
Vanadium (V)			110.6		%		70-130	13-APR-20
Zinc (Zn)			103.1		%		70-130	13-APR-20
WG3306748-6	DUP	WG3306748-5						
Antimony (Sb)		<0.10	<0.10	RPD-NA	ug/g	N/A	30	13-APR-20
Arsenic (As)		0.81	0.73		ug/g	11	30	13-APR-20
Barium (Ba)		11.0	9.31		ug/g	17	40	13-APR-20
Beryllium (Be)		0.13	0.12		ug/g	5.1	30	13-APR-20
Boron (B)		10.4	7.7		ug/g	29	30	13-APR-20
Cadmium (Cd)		<0.020	<0.020	RPD-NA	ug/g	N/A	30	13-APR-20
Chromium (Cr)		6.53	5.36		ug/g	20	30	13-APR-20
Cobalt (Co)		1.11	0.94		ug/g	16	30	13-APR-20
Copper (Cu)		1.80	1.64		ug/g	9.4	30	13-APR-20
Lead (Pb)		3.95	3.49		ug/g	12	40	13-APR-20

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT		Soil						
Batch	R5055899							
WG3306748-6	DUP	WG3306748-5						
Molybdenum (Mo)		0.31	0.29		ug/g	8.8	40	13-APR-20
Nickel (Ni)		3.18	2.70		ug/g	16	30	13-APR-20
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	13-APR-20
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	13-APR-20
Thallium (Tl)		<0.050	<0.050	RPD-NA	ug/g	N/A	30	13-APR-20
Uranium (U)		0.244	0.208		ug/g	16	30	13-APR-20
Vanadium (V)		5.36	4.24		ug/g	23	30	13-APR-20
Zinc (Zn)		4.5	6.6	J	ug/g	2.1	4	13-APR-20
WG3306748-4	LCS							
Antimony (Sb)			107.2		%		80-120	13-APR-20
Arsenic (As)			105.2		%		80-120	13-APR-20
Barium (Ba)			102.3		%		80-120	13-APR-20
Beryllium (Be)			99.0		%		80-120	13-APR-20
Boron (B)			94.3		%		80-120	13-APR-20
Cadmium (Cd)			100.2		%		80-120	13-APR-20
Chromium (Cr)			100.9		%		80-120	13-APR-20
Cobalt (Co)			100.9		%		80-120	13-APR-20
Copper (Cu)			100.4		%		80-120	13-APR-20
Lead (Pb)			97.4		%		80-120	13-APR-20
Molybdenum (Mo)			102.9		%		80-120	13-APR-20
Nickel (Ni)			100.7		%		80-120	13-APR-20
Selenium (Se)			103.4		%		80-120	13-APR-20
Silver (Ag)			101.8		%		80-120	13-APR-20
Thallium (Tl)			98.1		%		80-120	13-APR-20
Uranium (U)			93.7		%		80-120	13-APR-20
Vanadium (V)			105.3		%		80-120	13-APR-20
Zinc (Zn)			96.3		%		80-120	13-APR-20
WG3306748-1	MB							
Antimony (Sb)			<0.10		mg/kg		0.1	13-APR-20
Arsenic (As)			<0.10		mg/kg		0.1	13-APR-20
Barium (Ba)			<0.50		mg/kg		0.5	13-APR-20
Beryllium (Be)			<0.10		mg/kg		0.1	13-APR-20
Boron (B)			<5.0		mg/kg		5	13-APR-20
Cadmium (Cd)			<0.020		mg/kg		0.02	13-APR-20



Quality Control Report

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT		Soil						
Batch	R5055899							
WG3306748-1	MB							
Chromium (Cr)			<0.50		mg/kg		0.5	13-APR-20
Cobalt (Co)			<0.10		mg/kg		0.1	13-APR-20
Copper (Cu)			<0.50		mg/kg		0.5	13-APR-20
Lead (Pb)			<0.50		mg/kg		0.5	13-APR-20
Molybdenum (Mo)			<0.10		mg/kg		0.1	13-APR-20
Nickel (Ni)			<0.50		mg/kg		0.5	13-APR-20
Selenium (Se)			<0.20		mg/kg		0.2	13-APR-20
Silver (Ag)			<0.10		mg/kg		0.1	13-APR-20
Thallium (Tl)			<0.050		mg/kg		0.05	13-APR-20
Uranium (U)			<0.050		mg/kg		0.05	13-APR-20
Vanadium (V)			<0.20		mg/kg		0.2	13-APR-20
Zinc (Zn)			<2.0		mg/kg		2	13-APR-20
MOISTURE-WT		Soil						
Batch	R5052727							
WG3305223-3	DUP	L2434714-2						
% Moisture		2.70	2.94		%	8.4	20	08-APR-20
WG3305223-2	LCS							
% Moisture			99.6		%		90-110	08-APR-20
WG3305223-1	MB							
% Moisture			<0.25		%		0.25	08-APR-20
PH-WT		Soil						
Batch	R5053850							
WG3304803-1	DUP	L2434629-1						
pH		7.92	7.97	J	pH units	0.05	0.3	08-APR-20
WG3305435-1	LCS							
pH			7.00		pH units		6.9-7.1	08-APR-20
VOC-511-HS-WT		Soil						
Batch	R5054533							
WG3305307-4	DUP	WG3305307-3						
1,1,1,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
1,1,2,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
1,1,1-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
1,1,2-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
1,1-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20

Quality Control Report

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Soil						
Batch	R5054533							
WG3305307-4	DUP	WG3305307-3						
1,1-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
1,2-Dibromoethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
1,2-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
1,2-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
1,2-Dichloropropane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
1,3-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
1,4-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
Acetone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	09-APR-20
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	09-APR-20
Bromodichloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
Bromoform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
Bromomethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
Carbon tetrachloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
Chlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
Chloroform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
cis-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
cis-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	09-APR-20
Dibromochloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
Dichlorodifluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	09-APR-20
n-Hexane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
Methylene Chloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
MTBE		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	09-APR-20
Methyl Ethyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	09-APR-20
Methyl Isobutyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	09-APR-20
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	09-APR-20
Styrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
Tetrachloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	09-APR-20
trans-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
trans-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	09-APR-20
Trichloroethylene		<0.010	<0.010		ug/g			09-APR-20

Quality Control Report

Workorder: L2434748

Report Date: 15-APR-20

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Soil						
Batch	R5054533							
WG3305307-4 DUP		WG3305307-3						
Trichloroethylene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	09-APR-20
Trichlorofluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-APR-20
Vinyl chloride		<0.020	<0.020	RPD-NA	ug/g	N/A	40	09-APR-20
WG3305307-2 LCS								
1,1,1,2-Tetrachloroethane			97.0		%		60-130	09-APR-20
1,1,2,2-Tetrachloroethane			104.3		%		60-130	09-APR-20
1,1,1-Trichloroethane			99.8		%		60-130	09-APR-20
1,1,2-Trichloroethane			105.6		%		60-130	09-APR-20
1,1-Dichloroethane			102.0		%		60-130	09-APR-20
1,1-Dichloroethylene			86.0		%		60-130	09-APR-20
1,2-Dibromoethane			105.2		%		70-130	09-APR-20
1,2-Dichlorobenzene			102.3		%		70-130	09-APR-20
1,2-Dichloroethane			105.1		%		60-130	09-APR-20
1,2-Dichloropropane			102.4		%		70-130	09-APR-20
1,3-Dichlorobenzene			100.3		%		70-130	09-APR-20
1,4-Dichlorobenzene			103.1		%		70-130	09-APR-20
Acetone			119.3		%		60-140	09-APR-20
Benzene			106.7		%		70-130	09-APR-20
Bromodichloromethane			109.9		%		50-140	09-APR-20
Bromoform			106.3		%		70-130	09-APR-20
Bromomethane			104.2		%		50-140	09-APR-20
Carbon tetrachloride			102.3		%		70-130	09-APR-20
Chlorobenzene			100.8		%		70-130	09-APR-20
Chloroform			108.7		%		70-130	09-APR-20
cis-1,2-Dichloroethylene			98.0		%		70-130	09-APR-20
cis-1,3-Dichloropropene			102.4		%		70-130	09-APR-20
Dibromochloromethane			100.7		%		60-130	09-APR-20
Dichlorodifluoromethane			58.3		%		50-140	09-APR-20
Ethylbenzene			94.8		%		70-130	09-APR-20
n-Hexane			84.1		%		70-130	09-APR-20
Methylene Chloride			101.0		%		70-130	09-APR-20
MTBE			101.9		%		70-130	09-APR-20
m+p-Xylenes			96.1		%		70-130	09-APR-20
Methyl Ethyl Ketone			121.4				60-140	

Quality Control Report

Workorder: L2434748

Report Date: 15-APR-20

Page 9 of 12

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Soil						
Batch	R5054533							
WG3305307-2	LCS							
Methyl Ethyl Ketone			121.4		%		60-140	09-APR-20
Methyl Isobutyl Ketone			110.5		%		60-140	09-APR-20
o-Xylene			103.4		%		70-130	09-APR-20
Styrene			96.2		%		70-130	09-APR-20
Tetrachloroethylene			102.4		%		60-130	09-APR-20
Toluene			97.4		%		70-130	09-APR-20
trans-1,2-Dichloroethylene			93.0		%		60-130	09-APR-20
trans-1,3-Dichloropropene			103.7		%		70-130	09-APR-20
Trichloroethylene			105.3		%		60-130	09-APR-20
Trichlorofluoromethane			82.9		%		50-140	09-APR-20
Vinyl chloride			96.8		%		60-140	09-APR-20
WG3305307-1	MB							
1,1,1,2-Tetrachloroethane			<0.050		ug/g		0.05	09-APR-20
1,1,2,2-Tetrachloroethane			<0.050		ug/g		0.05	09-APR-20
1,1,1-Trichloroethane			<0.050		ug/g		0.05	09-APR-20
1,1,2-Trichloroethane			<0.050		ug/g		0.05	09-APR-20
1,1-Dichloroethane			<0.050		ug/g		0.05	09-APR-20
1,1-Dichloroethylene			<0.050		ug/g		0.05	09-APR-20
1,2-Dibromoethane			<0.050		ug/g		0.05	09-APR-20
1,2-Dichlorobenzene			<0.050		ug/g		0.05	09-APR-20
1,2-Dichloroethane			<0.050		ug/g		0.05	09-APR-20
1,2-Dichloropropane			<0.050		ug/g		0.05	09-APR-20
1,3-Dichlorobenzene			<0.050		ug/g		0.05	09-APR-20
1,4-Dichlorobenzene			<0.050		ug/g		0.05	09-APR-20
Acetone			<0.50		ug/g		0.5	09-APR-20
Benzene			<0.0068		ug/g		0.0068	09-APR-20
Bromodichloromethane			<0.050		ug/g		0.05	09-APR-20
Bromoform			<0.050		ug/g		0.05	09-APR-20
Bromomethane			<0.050		ug/g		0.05	09-APR-20
Carbon tetrachloride			<0.050		ug/g		0.05	09-APR-20
Chlorobenzene			<0.050		ug/g		0.05	09-APR-20
Chloroform			<0.050		ug/g		0.05	09-APR-20
cis-1,2-Dichloroethylene			<0.050		ug/g		0.05	09-APR-20
cis-1,3-Dichloropropene			<0.030		ug/g		0.03	09-APR-20

Quality Control Report

Workorder: L2434748

Report Date: 15-APR-20

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Soil						
Batch	R5054533							
WG3305307-1	MB							
Dibromochloromethane			<0.050		ug/g		0.05	09-APR-20
Dichlorodifluoromethane			<0.050		ug/g		0.05	09-APR-20
Ethylbenzene			<0.018		ug/g		0.018	09-APR-20
n-Hexane			<0.050		ug/g		0.05	09-APR-20
Methylene Chloride			<0.050		ug/g		0.05	09-APR-20
MTBE			<0.050		ug/g		0.05	09-APR-20
m+p-Xylenes			<0.030		ug/g		0.03	09-APR-20
Methyl Ethyl Ketone			<0.50		ug/g		0.5	09-APR-20
Methyl Isobutyl Ketone			<0.50		ug/g		0.5	09-APR-20
o-Xylene			<0.020		ug/g		0.02	09-APR-20
Styrene			<0.050		ug/g		0.05	09-APR-20
Tetrachloroethylene			<0.050		ug/g		0.05	09-APR-20
Toluene			<0.080		ug/g		0.08	09-APR-20
trans-1,2-Dichloroethylene			<0.050		ug/g		0.05	09-APR-20
trans-1,3-Dichloropropene			<0.030		ug/g		0.03	09-APR-20
Trichloroethylene			<0.010		ug/g		0.01	09-APR-20
Trichlorofluoromethane			<0.050		ug/g		0.05	09-APR-20
Vinyl chloride			<0.020		ug/g		0.02	09-APR-20
Surrogate: 1,4-Difluorobenzene			112.1		%		50-140	09-APR-20
Surrogate: 4-Bromofluorobenzene			95.9		%		50-140	09-APR-20
WG3305307-5	MS		WG3305307-3					
1,1,1,2-Tetrachloroethane			94.9		%		50-140	09-APR-20
1,1,2,2-Tetrachloroethane			102.4		%		50-140	09-APR-20
1,1,1-Trichloroethane			99.6		%		50-140	09-APR-20
1,1,2-Trichloroethane			104.9		%		50-140	09-APR-20
1,1-Dichloroethane			101.7		%		50-140	09-APR-20
1,1-Dichloroethylene			82.9		%		50-140	09-APR-20
1,2-Dibromoethane			104.4		%		50-140	09-APR-20
1,2-Dichlorobenzene			92.0		%		50-140	09-APR-20
1,2-Dichloroethane			105.0		%		50-140	09-APR-20
1,2-Dichloropropane			101.5		%		50-140	09-APR-20
1,3-Dichlorobenzene			89.7		%		50-140	09-APR-20
1,4-Dichlorobenzene			92.0		%		50-140	09-APR-20
Acetone			128.9		%		50-140	09-APR-20

Quality Control Report

Workorder: L2434748

Report Date: 15-APR-20

Page 11 of 12

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Soil						
Batch	R5054533							
WG3305307-5	MS	WG3305307-3						
Benzene			105.5		%		50-140	09-APR-20
Bromodichloromethane			109.7		%		50-140	09-APR-20
Bromoform			103.5		%		50-140	09-APR-20
Bromomethane			98.4		%		50-140	09-APR-20
Carbon tetrachloride			99.9		%		50-140	09-APR-20
Chlorobenzene			98.5		%		50-140	09-APR-20
Chloroform			108.8		%		50-140	09-APR-20
cis-1,2-Dichloroethylene			96.9		%		50-140	09-APR-20
cis-1,3-Dichloropropene			98.6		%		50-140	09-APR-20
Dibromochloromethane			99.9		%		50-140	09-APR-20
Dichlorodifluoromethane			43.5	MES	%		50-140	09-APR-20
Ethylbenzene			91.9		%		50-140	09-APR-20
n-Hexane			76.2		%		50-140	09-APR-20
Methylene Chloride			100.4		%		50-140	09-APR-20
MTBE			102.0		%		50-140	09-APR-20
m+p-Xylenes			92.8		%		50-140	09-APR-20
Methyl Ethyl Ketone			106.0		%		50-140	09-APR-20
Methyl Isobutyl Ketone			110.0		%		50-140	09-APR-20
o-Xylene			99.8		%		50-140	09-APR-20
Styrene			92.4		%		50-140	09-APR-20
Tetrachloroethylene			98.0		%		50-140	09-APR-20
Toluene			95.5		%		50-140	09-APR-20
trans-1,2-Dichloroethylene			90.9		%		50-140	09-APR-20
trans-1,3-Dichloropropene			98.9		%		50-140	09-APR-20
Trichloroethylene			103.8		%		50-140	09-APR-20
Trichlorofluoromethane			77.9		%		50-140	09-APR-20
Vinyl chloride			89.2		%		50-140	09-APR-20

Quality Control Report

Workorder: L2434748

Report Date: 15-APR-20

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: TED PAN

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Legend:

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

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

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

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

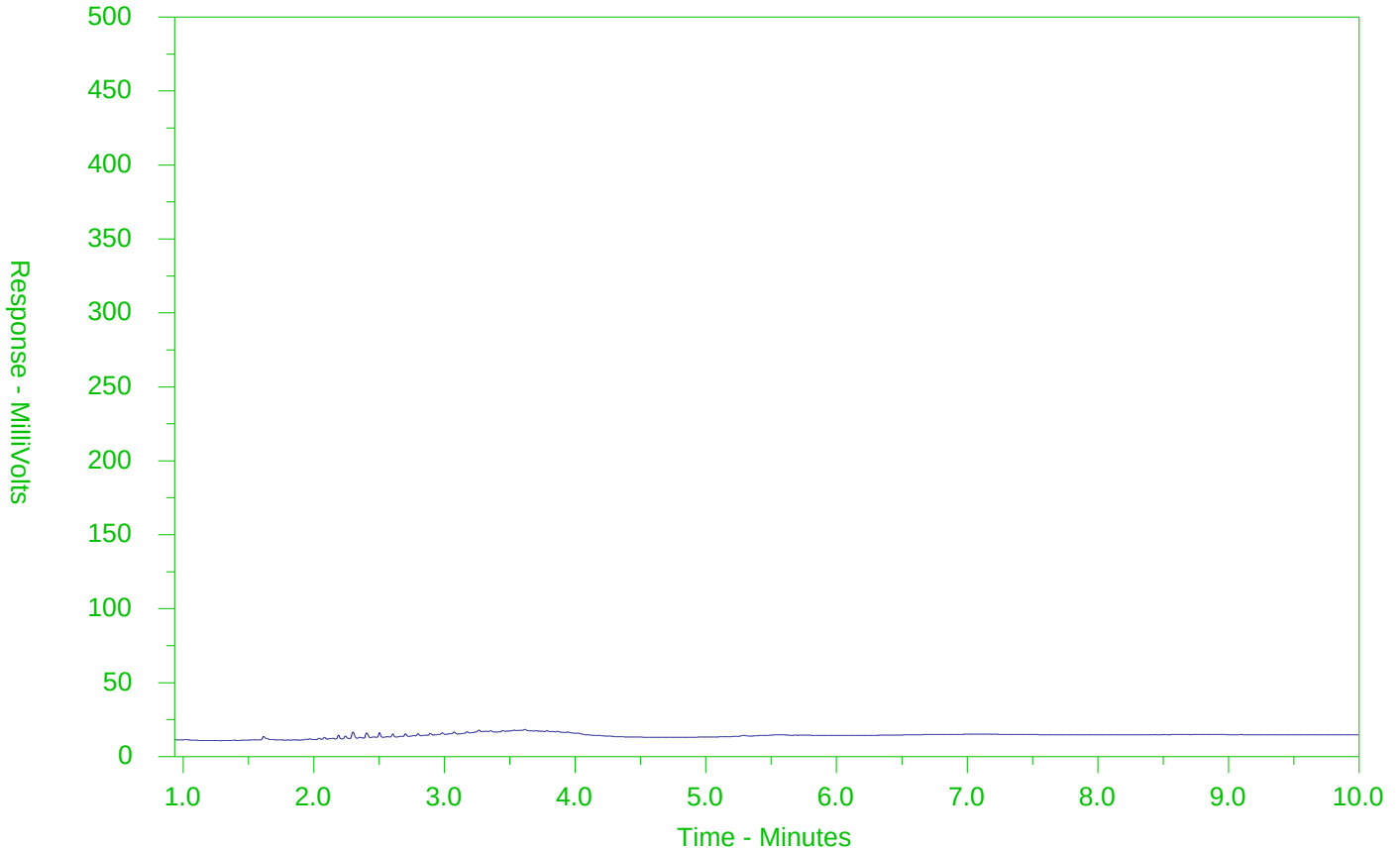
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2434748-1
Client Sample ID: BHM1-2 SS4



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

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

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

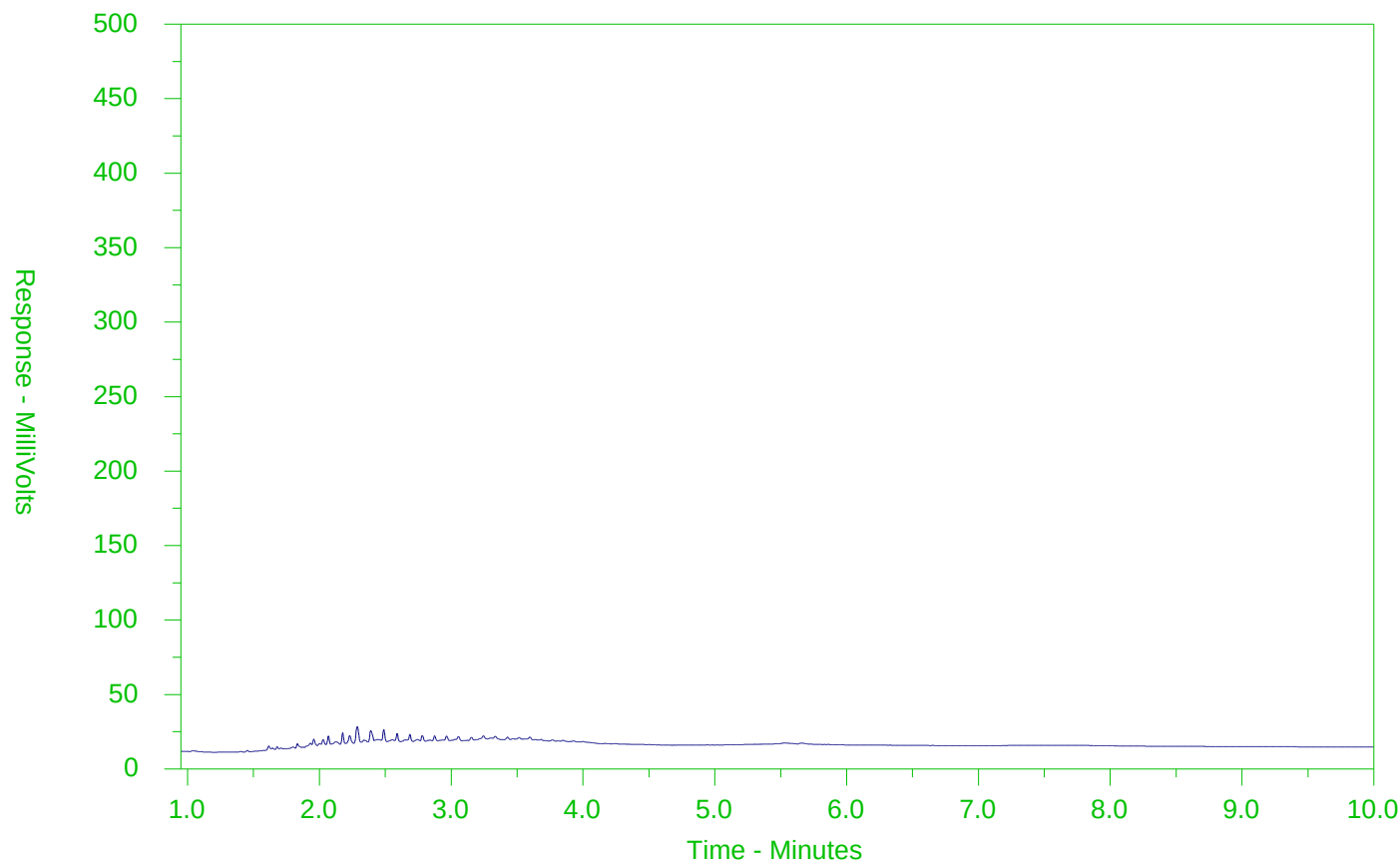
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2434748-2
Client Sample ID: BHM1-3 SS6



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

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

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

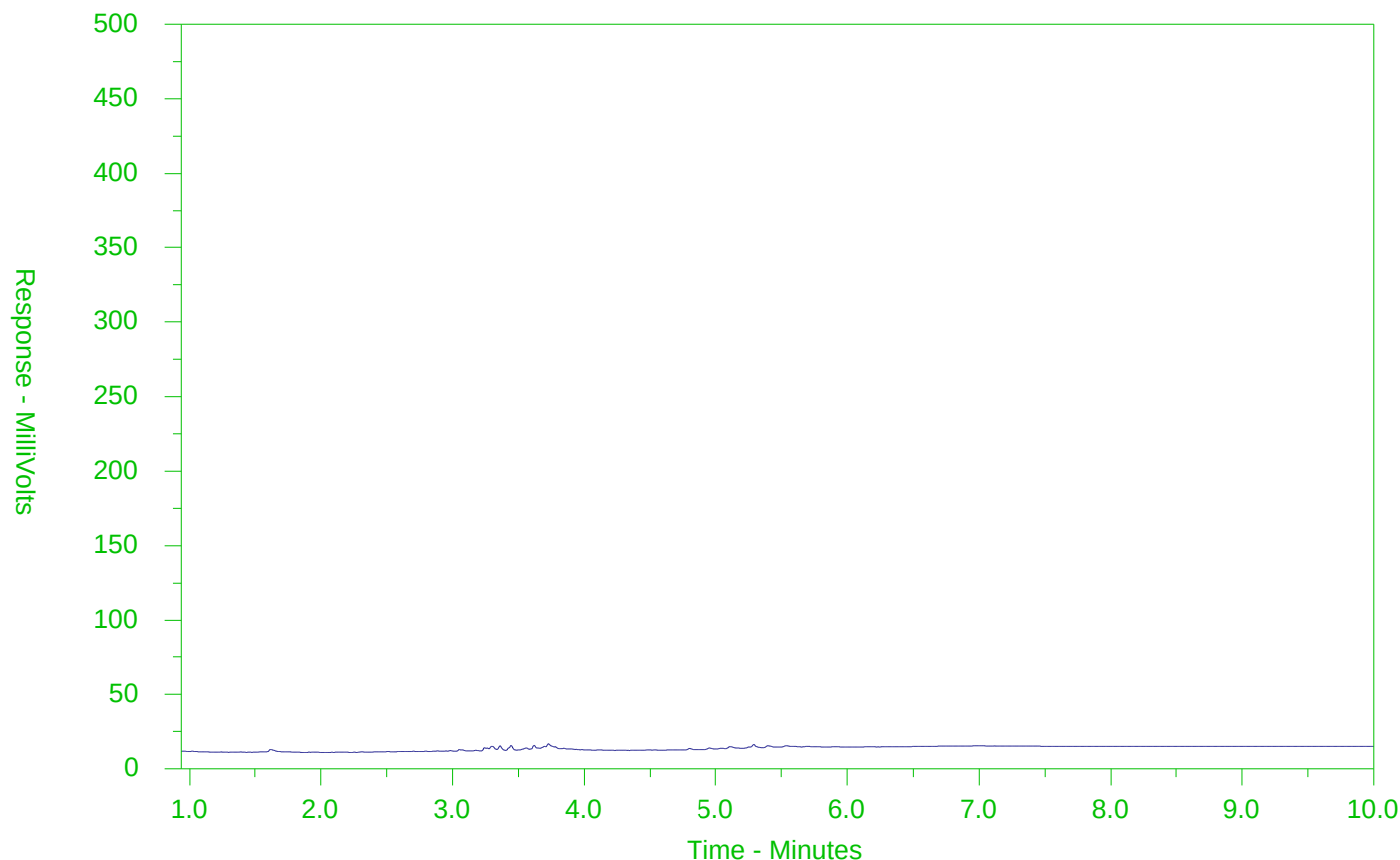
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2434748-3
Client Sample ID: BHM1-4 SS1



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

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

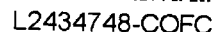
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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



Canada Toll Free: 1 800 668 9878



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JULY 2017 FROM

REFER TO BACK PAGE FOR ALL LOCATIONS AND SAMPLING INFORMATION

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

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



PALMER ENVIRONMENTAL CONSULTING
GROUP INC. (Richmond Hill)
ATTN: TED PAN
74 Berkeley Street
Toronto ON M5V 1E3

Date Received: 15-APR-20
Report Date: 22-APR-20 08:32 (MT)
Version: FINAL

Client Phone: 647-795-8153

Certificate of Analysis

Lab Work Order #: L2436757
Project P.O. #: NOT SUBMITTED
Job Reference: 2001801
C of C Numbers: 17-731596
Legal Site Desc:

Jennifer Barkshire-Paterson
Account Manager

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ADDRESS: 95 West Beaver Creek Road, Unit 1, Richmond Hill, ON L4B 1H2 Canada | Phone: +1 905 881 9887 | Fax: +1 905 881 8062
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ANALYTICAL REPORT

SOIL - Ontario Regulation 153/04 - April 15, 2011 Standards

ALS ID Sampled Date Sampled Time Sample ID			L2436757-1 13-APR-20 - BHM1-1 SS4	L2436757-2 13-APR-20 - BHM1-1 SS2
Grouping	Analyte	Unit		
Physical Tests	% Moisture	%	15.8	
Metals	Antimony (Sb)	ug/g		<1.0
	Arsenic (As)	ug/g		1.6
	Barium (Ba)	ug/g		9.0
	Beryllium (Be)	ug/g		<0.50
	Boron (B)	ug/g		<5.0
	Cadmium (Cd)	ug/g		<0.50
	Chromium (Cr)	ug/g		6.3
	Cobalt (Co)	ug/g		2.5
	Copper (Cu)	ug/g		12.8
	Lead (Pb)	ug/g		2.1
	Molybdenum (Mo)	ug/g		<1.0
	Nickel (Ni)	ug/g		5.2
	Selenium (Se)	ug/g		<1.0
	Silver (Ag)	ug/g		<0.20
	Thallium (Tl)	ug/g		<0.50
	Uranium (U)	ug/g		<1.0
	Vanadium (V)	ug/g		10.7
	Zinc (Zn)	ug/g		9.2
Volatile Organic Compounds	Acetone	ug/g	<0.50	
	Benzene	ug/g	<0.0068	
	Bromodichloromethane	ug/g	<0.050	
	Bromoform	ug/g	<0.050	
	Bromomethane	ug/g	<0.050	

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

ANALYTICAL REPORT

SOIL - Ontario Regulation 153/04 - April 15, 2011 Standards

ALS ID Sampled Date Sampled Time Sample ID			L2436757-1 13-APR-20 - BHM1-1 SS4	L2436757-2 13-APR-20 - BHM1-1 SS2
Grouping	Analyte	Unit		
Volatile Organic Compounds	Carbon tetrachloride	ug/g	<0.050	
	Chlorobenzene	ug/g	<0.050	
	Dibromochloromethane	ug/g	<0.050	
	Chloroform	ug/g	<0.050	
	1,2-Dibromoethane	ug/g	<0.050	
	1,2-Dichlorobenzene	ug/g	<0.050	
	1,3-Dichlorobenzene	ug/g	<0.050	
	1,4-Dichlorobenzene	ug/g	<0.050	
	Dichlorodifluoromethane	ug/g	<0.050	
	1,1-Dichloroethane	ug/g	<0.050	
	1,2-Dichloroethane	ug/g	<0.050	
	1,1-Dichloroethylene	ug/g	<0.050	
	cis-1,2-Dichloroethylene	ug/g	<0.050	
	trans-1,2-Dichloroethylene	ug/g	<0.050	
	Methylene Chloride	ug/g	<0.050	
	1,2-Dichloropropane	ug/g	<0.050	
	cis-1,3-Dichloropropene	ug/g	<0.030	
	trans-1,3-Dichloropropene	ug/g	<0.030	
	1,3-Dichloropropene (cis & trans)	ug/g	<0.042	
	Ethylbenzene	ug/g	<0.018	
	n-Hexane	ug/g	<0.050	
	Methyl Ethyl Ketone	ug/g	<0.50	
	Methyl Isobutyl Ketone	ug/g	<0.50	
	MTBE	ug/g	<0.050	

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

ANALYTICAL REPORT

SOIL - Ontario Regulation 153/04 - April 15, 2011 Standards

ALS ID Sampled Date Sampled Time Sample ID			L2436757-1 13-APR-20 - BHM1-1 SS4	L2436757-2 13-APR-20 - BHM1-1 SS2
Grouping	Analyte	Unit		
Volatile Organic Compounds	Styrene	ug/g	<0.050	
	1,1,1,2-Tetrachloroethane	ug/g	<0.050	
	1,1,2,2-Tetrachloroethane	ug/g	<0.050	
	Tetrachloroethylene	ug/g	<0.050	
	Toluene	ug/g	<0.080	
	1,1,1-Trichloroethane	ug/g	<0.050	
	1,1,2-Trichloroethane	ug/g	<0.050	
	Trichloroethylene	ug/g	<0.010	
	Trichlorofluoromethane	ug/g	<0.050	
	Vinyl chloride	ug/g	<0.020	
	o-Xylene	ug/g	<0.020	
	m+p-Xylenes	ug/g	<0.030	
	Xylenes (Total)	ug/g	<0.050	
	Surrogate: 4-Bromofluorobenzene	%	86.1	
	Surrogate: 1,4-Difluorobenzene	%	105.5	
Hydrocarbons	F1 (C6-C10)	ug/g	<5.0	
	F1-BTEX	ug/g	<5.0	
	F2 (C10-C16)	ug/g	<10	
	F3 (C16-C34)	ug/g	<50	
	F4 (C34-C50)	ug/g	<50	
	Total Hydrocarbons (C6-C50)	ug/g	<72	
	Chrom. to baseline at nC50		YES	
	Surrogate: 2-Bromobenzotrifluoride	%	91.5	
	Surrogate: 3,4-Dichlorotoluene	%	108.3	

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

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
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F1-F4-511-CALC-WT	Soil	F1-F4 Hydrocarbon Calculated Parameters	CCME CWS-PHC, Pub #1310, Dec 2001-S
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Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.

In samples where BTEX and F1 were analyzed, F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

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

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:

1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F1-HS-511-WT	Soil	F1-O.Reg 153/04 (July 2011)	E3398/CCME TIER 1-HS
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Fraction F1 is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/FID.

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

F2-F4-511-WT	Soil	F2-F4-O.Reg 153/04 (July 2011)	CCME Tier 1
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Petroleum Hydrocarbons (F2-F4 fractions) are extracted from soil with 1:1 hexane:acetone using a rotary extractor. Extracts are treated with silica gel to remove polar organic interferences. F2, F3, & F4 are analyzed by GC-FID. F4G-sg is analyzed gravimetrically.

Notes:

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

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

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

L2436757 CONT'D....
 Job Reference: 2001801
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 22-APR-20 08:32 (MT)

Methods Listed (if applicable):

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

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

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

MOISTURE-WT Soil % Moisture CCME PHC in Soil - Tier 1 (mod)

VOC-1,3-DCP-CALC-WT Soil Regulation 153 VOCs SW8260B/SW8270C

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

Soil and sediment samples are extracted in methanol and analyzed by headspace-GC/MS.

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

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

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

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

Chain of Custody Numbers:

17-731596

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

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

Reference Information

L2436757 CONT'D....
Job Reference: 2001801
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GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg ww - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

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

Quality Control Report

Workorder: L2436757

Report Date: 22-APR-20

Page 1 of 10

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT		Soil						
Batch	R5057176							
WG3308026-4	DUP	WG3308026-3						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	16-APR-20
WG3308026-2	LCS							
F1 (C6-C10)			112.7		%		80-120	16-APR-20
WG3308026-1	MB							
F1 (C6-C10)			<5.0		ug/g		5	16-APR-20
Surrogate: 3,4-Dichlorotoluene			92.9		%		60-140	16-APR-20
WG3308026-7	MS	L2435780-8						
F1 (C6-C10)			168.6	RRQC	%		60-140	16-APR-20
COMMENTS: Matrix spike recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified. Lcs is within DQOs.								
F2-F4-511-WT		Soil						
Batch	R5057292							
WG3308190-3	DUP	WG3308190-5						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	30	15-APR-20
F3 (C16-C34)		73	72		ug/g	2.0	30	15-APR-20
F4 (C34-C50)		144	98	J	ug/g	46	100	15-APR-20
WG3308190-2	LCS							
F2 (C10-C16)			110.3		%		80-120	15-APR-20
F3 (C16-C34)			109.8		%		80-120	15-APR-20
F4 (C34-C50)			105.5		%		80-120	15-APR-20
WG3308190-1	MB							
F2 (C10-C16)			<10		ug/g		10	15-APR-20
F3 (C16-C34)			<50		ug/g		50	15-APR-20
F4 (C34-C50)			<50		ug/g		50	15-APR-20
Surrogate: 2-Bromobenzotrifluoride			93.2		%		60-140	15-APR-20
WG3308190-4	MS	WG3308190-5						
F2 (C10-C16)			108.5		%		60-140	15-APR-20
F3 (C16-C34)			106.9		%		60-140	15-APR-20
F4 (C34-C50)			83.6		%		60-140	15-APR-20
MET-200.2-CCMS-WT		Soil						
Batch	R5057420							
WG3308424-2	CRM	WT-CANMET-TILL2						
Antimony (Sb)			78.7		%		70-130	16-APR-20
Arsenic (As)			106.8		%		70-130	16-APR-20
Barium (Ba)			103.1		%		70-130	16-APR-20

Quality Control Report

Workorder: L2436757

Report Date: 22-APR-20

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT		Soil						
Batch	R5057420							
WG3308424-2	CRM	WT-CANMET-TILL2						
Beryllium (Be)			90.4		%		70-130	16-APR-20
Boron (B)			3.0		mg/kg		0-8.6	16-APR-20
Cadmium (Cd)			96.7		%		70-130	16-APR-20
Chromium (Cr)			104.6		%		70-130	16-APR-20
Cobalt (Co)			105.8		%		70-130	16-APR-20
Copper (Cu)			104.2		%		70-130	16-APR-20
Lead (Pb)			98.9		%		70-130	16-APR-20
Molybdenum (Mo)			105.1		%		70-130	16-APR-20
Nickel (Ni)			106.1		%		70-130	16-APR-20
Selenium (Se)			0.36		mg/kg		0.15-0.55	16-APR-20
Silver (Ag)			0.27		mg/kg		0.16-0.36	16-APR-20
Thallium (Tl)			96.1		%		70-130	16-APR-20
Uranium (U)			90.0		%		70-130	16-APR-20
Vanadium (V)			104.5		%		70-130	16-APR-20
Zinc (Zn)			100.5		%		70-130	16-APR-20
WG3308424-6	DUP	WG3308424-5						
Antimony (Sb)		<0.10	<0.10	RPD-NA	ug/g	N/A	30	16-APR-20
Arsenic (As)		1.69	1.62		ug/g	4.2	30	16-APR-20
Barium (Ba)		55.6	54.0		ug/g	3.0	40	16-APR-20
Beryllium (Be)		0.31	0.28		ug/g	13	30	16-APR-20
Boron (B)		5.2	5.1		ug/g	1.0	30	16-APR-20
Cadmium (Cd)		0.078	0.079		ug/g	1.6	30	16-APR-20
Chromium (Cr)		14.8	14.7		ug/g	0.7	30	16-APR-20
Cobalt (Co)		4.21	4.10		ug/g	2.7	30	16-APR-20
Copper (Cu)		9.20	9.02		ug/g	2.0	30	16-APR-20
Lead (Pb)		12.4	12.0		ug/g	3.5	40	16-APR-20
Molybdenum (Mo)		0.43	0.40		ug/g	7.0	40	16-APR-20
Nickel (Ni)		9.06	8.76		ug/g	3.3	30	16-APR-20
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	16-APR-20
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	16-APR-20
Thallium (Tl)		0.077	0.074		ug/g	3.9	30	16-APR-20
Uranium (U)		0.439	0.402		ug/g	8.8	30	16-APR-20
Vanadium (V)		25.3	23.9		ug/g	5.7	30	16-APR-20

Quality Control Report

Workorder: L2436757

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT		Soil						
Batch	R5057420							
WG3308424-6	DUP	WG3308424-5						
Zinc (Zn)		28.0	28.0		ug/g	0.1	30	16-APR-20
WG3308424-4	LCS							
Antimony (Sb)			102.5		%		80-120	16-APR-20
Arsenic (As)			104.7		%		80-120	16-APR-20
Barium (Ba)			104.0		%		80-120	16-APR-20
Beryllium (Be)			93.3		%		80-120	16-APR-20
Boron (B)			84.9		%		80-120	16-APR-20
Cadmium (Cd)			96.3		%		80-120	16-APR-20
Chromium (Cr)			103.3		%		80-120	16-APR-20
Cobalt (Co)			102.7		%		80-120	16-APR-20
Copper (Cu)			100.8		%		80-120	16-APR-20
Lead (Pb)			96.0		%		80-120	16-APR-20
Molybdenum (Mo)			102.5		%		80-120	16-APR-20
Nickel (Ni)			102.2		%		80-120	16-APR-20
Selenium (Se)			96.6		%		80-120	16-APR-20
Silver (Ag)			100.2		%		80-120	16-APR-20
Thallium (Tl)			98.7		%		80-120	16-APR-20
Uranium (U)			92.2		%		80-120	16-APR-20
Vanadium (V)			107.0		%		80-120	16-APR-20
Zinc (Zn)			97.8		%		80-120	16-APR-20
WG3308424-1	MB							
Antimony (Sb)			<0.10		mg/kg		0.1	16-APR-20
Arsenic (As)			<0.10		mg/kg		0.1	16-APR-20
Barium (Ba)			<0.50		mg/kg		0.5	16-APR-20
Beryllium (Be)			<0.10		mg/kg		0.1	16-APR-20
Boron (B)			<5.0		mg/kg		5	16-APR-20
Cadmium (Cd)			<0.020		mg/kg		0.02	16-APR-20
Chromium (Cr)			<0.50		mg/kg		0.5	16-APR-20
Cobalt (Co)			<0.10		mg/kg		0.1	16-APR-20
Copper (Cu)			<0.50		mg/kg		0.5	16-APR-20
Lead (Pb)			<0.50		mg/kg		0.5	16-APR-20
Molybdenum (Mo)			<0.10		mg/kg		0.1	16-APR-20
Nickel (Ni)			<0.50		mg/kg		0.5	16-APR-20
Selenium (Se)			<0.20		mg/kg		0.2	16-APR-20

Quality Control Report

Workorder: L2436757

Report Date: 22-APR-20

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT								
Soil								
Batch	R5057420							
WG3308424-1 MB								
Silver (Ag)			<0.10		mg/kg		0.1	16-APR-20
Thallium (Tl)			<0.050		mg/kg		0.05	16-APR-20
Uranium (U)			<0.050		mg/kg		0.05	16-APR-20
Vanadium (V)			<0.20		mg/kg		0.2	16-APR-20
Zinc (Zn)			<2.0		mg/kg		2	16-APR-20
MOISTURE-WT								
Soil								
Batch	R5057189							
WG3308118-6 DUP		L2436398-2						
% Moisture		22.0	20.7		%	6.2	20	16-APR-20
WG3308118-5 LCS								
% Moisture			100.9		%		90-110	16-APR-20
WG3308118-4 MB								
% Moisture			<0.25		%		0.25	16-APR-20
VOC-511-HS-WT								
Soil								
Batch	R5057176							
WG3308026-4 DUP		WG3308026-3						
1,1,1,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
1,1,2,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
1,1,1,1-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
1,1,2-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
1,1-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
1,1-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
1,2-Dibromoethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
1,2-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
1,2-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
1,2-Dichloropropane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
1,3-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
1,4-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
Acetone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	16-APR-20
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	16-APR-20
Bromodichloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
Bromoform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
Bromomethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
Carbon tetrachloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20

Quality Control Report

Workorder: L2436757

Report Date: 22-APR-20

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Soil						
Batch	R5057176							
WG3308026-4	DUP	WG3308026-3						
Chlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
Chloroform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
cis-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
cis-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	16-APR-20
Dibromochloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
Dichlorodifluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	16-APR-20
n-Hexane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
Methylene Chloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
MTBE		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	16-APR-20
Methyl Ethyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	16-APR-20
Methyl Isobutyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	16-APR-20
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	16-APR-20
Styrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
Tetrachloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	16-APR-20
trans-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
trans-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	16-APR-20
Trichloroethylene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	16-APR-20
Trichlorofluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-APR-20
Vinyl chloride		<0.020	<0.020	RPD-NA	ug/g	N/A	40	16-APR-20
WG3308026-2	LCS							
1,1,1,2-Tetrachloroethane			108.9		%		60-130	16-APR-20
1,1,2,2-Tetrachloroethane			101.5		%		60-130	16-APR-20
1,1,1-Trichloroethane			103.4		%		60-130	16-APR-20
1,1,2-Trichloroethane			98.0		%		60-130	16-APR-20
1,1-Dichloroethane			110.9		%		60-130	16-APR-20
1,1-Dichloroethylene			95.7		%		60-130	16-APR-20
1,2-Dibromoethane			102.5		%		70-130	16-APR-20
1,2-Dichlorobenzene			109.5		%		70-130	16-APR-20
1,2-Dichloroethane			100.2		%		60-130	16-APR-20
1,2-Dichloropropane			109.7		%		70-130	16-APR-20

Quality Control Report

Workorder: L2436757

Report Date: 22-APR-20

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Soil						
Batch	R5057176							
WG3308026-2	LCS							
1,3-Dichlorobenzene			111.5		%		70-130	16-APR-20
1,4-Dichlorobenzene			118.4		%		70-130	16-APR-20
Acetone			103.8		%		60-140	16-APR-20
Benzene			109.8		%		70-130	16-APR-20
Bromodichloromethane			116.4		%		50-140	16-APR-20
Bromoform			106.2		%		70-130	16-APR-20
Bromomethane			115.7		%		50-140	16-APR-20
Carbon tetrachloride			104.4		%		70-130	16-APR-20
Chlorobenzene			112.8		%		70-130	16-APR-20
Chloroform			112.4		%		70-130	16-APR-20
cis-1,2-Dichloroethylene			109.0		%		70-130	16-APR-20
cis-1,3-Dichloropropene			106.6		%		70-130	16-APR-20
Dibromochloromethane			96.5		%		60-130	16-APR-20
Dichlorodifluoromethane			58.7		%		50-140	16-APR-20
Ethylbenzene			105.1		%		70-130	16-APR-20
n-Hexane			93.0		%		70-130	16-APR-20
Methylene Chloride			100.8		%		70-130	16-APR-20
MTBE			110.6		%		70-130	16-APR-20
m+p-Xylenes			108.6		%		70-130	16-APR-20
Methyl Ethyl Ketone			103.4		%		60-140	16-APR-20
Methyl Isobutyl Ketone			90.8		%		60-140	16-APR-20
o-Xylene			115.9		%		70-130	16-APR-20
Styrene			108.4		%		70-130	16-APR-20
Tetrachloroethylene			107.9		%		60-130	16-APR-20
Toluene			106.1		%		70-130	16-APR-20
trans-1,2-Dichloroethylene			100.8		%		60-130	16-APR-20
trans-1,3-Dichloropropene			101.7		%		70-130	16-APR-20
Trichloroethylene			114.8		%		60-130	16-APR-20
Trichlorofluoromethane			88.5		%		50-140	16-APR-20
Vinyl chloride			96.3		%		60-140	16-APR-20
WG3308026-1	MB							
1,1,1,2-Tetrachloroethane			<0.050		ug/g		0.05	16-APR-20
1,1,2,2-Tetrachloroethane			<0.050		ug/g		0.05	16-APR-20
1,1,1-Trichloroethane			<0.050		ug/g		0.05	16-APR-20

Quality Control Report

Workorder: L2436757

Report Date: 22-APR-20

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Soil						
Batch	R5057176							
WG3308026-1	MB							
1,1,2-Trichloroethane			<0.050		ug/g		0.05	16-APR-20
1,1-Dichloroethane			<0.050		ug/g		0.05	16-APR-20
1,1-Dichloroethylene			<0.050		ug/g		0.05	16-APR-20
1,2-Dibromoethane			<0.050		ug/g		0.05	16-APR-20
1,2-Dichlorobenzene			<0.050		ug/g		0.05	16-APR-20
1,2-Dichloroethane			<0.050		ug/g		0.05	16-APR-20
1,2-Dichloropropane			<0.050		ug/g		0.05	16-APR-20
1,3-Dichlorobenzene			<0.050		ug/g		0.05	16-APR-20
1,4-Dichlorobenzene			<0.050		ug/g		0.05	16-APR-20
Acetone			<0.50		ug/g		0.5	16-APR-20
Benzene			<0.0068		ug/g		0.0068	16-APR-20
Bromodichloromethane			<0.050		ug/g		0.05	16-APR-20
Bromoform			<0.050		ug/g		0.05	16-APR-20
Bromomethane			<0.050		ug/g		0.05	16-APR-20
Carbon tetrachloride			<0.050		ug/g		0.05	16-APR-20
Chlorobenzene			<0.050		ug/g		0.05	16-APR-20
Chloroform			<0.050		ug/g		0.05	16-APR-20
cis-1,2-Dichloroethylene			<0.050		ug/g		0.05	16-APR-20
cis-1,3-Dichloropropene			<0.030		ug/g		0.03	16-APR-20
Dibromochloromethane			<0.050		ug/g		0.05	16-APR-20
Dichlorodifluoromethane			<0.050		ug/g		0.05	16-APR-20
Ethylbenzene			<0.018		ug/g		0.018	16-APR-20
n-Hexane			<0.050		ug/g		0.05	16-APR-20
Methylene Chloride			<0.050		ug/g		0.05	16-APR-20
MTBE			<0.050		ug/g		0.05	16-APR-20
m+p-Xylenes			<0.030		ug/g		0.03	16-APR-20
Methyl Ethyl Ketone			<0.50		ug/g		0.5	16-APR-20
Methyl Isobutyl Ketone			<0.50		ug/g		0.5	16-APR-20
o-Xylene			<0.020		ug/g		0.02	16-APR-20
Styrene			<0.050		ug/g		0.05	16-APR-20
Tetrachloroethylene			<0.050		ug/g		0.05	16-APR-20
Toluene			<0.080		ug/g		0.08	16-APR-20
trans-1,2-Dichloroethylene			<0.050		ug/g		0.05	16-APR-20



Quality Control Report

Workorder: L2436757

Report Date: 22-APR-20

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Soil						
Batch	R5057176							
WG3308026-1 MB								
trans-1,3-Dichloropropene			<0.030		ug/g		0.03	16-APR-20
Trichloroethylene			<0.010		ug/g		0.01	16-APR-20
Trichlorofluoromethane			<0.050		ug/g		0.05	16-APR-20
Vinyl chloride			<0.020		ug/g		0.02	16-APR-20
Surrogate: 1,4-Difluorobenzene			120.5		%		50-140	16-APR-20
Surrogate: 4-Bromofluorobenzene			99.7		%		50-140	16-APR-20
WG3308026-5 MS		WG3308026-3						
1,1,1,2-Tetrachloroethane			110.3		%		50-140	16-APR-20
1,1,2,2-Tetrachloroethane			100.8		%		50-140	16-APR-20
1,1,1-Trichloroethane			106.2		%		50-140	16-APR-20
1,1,2-Trichloroethane			97.6		%		50-140	16-APR-20
1,1-Dichloroethane			114.5		%		50-140	16-APR-20
1,1-Dichloroethylene			98.5		%		50-140	16-APR-20
1,2-Dibromoethane			101.7		%		50-140	16-APR-20
1,2-Dichlorobenzene			110.2		%		50-140	16-APR-20
1,2-Dichloroethane			99.5		%		50-140	16-APR-20
1,2-Dichloropropane			110.3		%		50-140	16-APR-20
1,3-Dichlorobenzene			112.6		%		50-140	16-APR-20
1,4-Dichlorobenzene			119.4		%		50-140	16-APR-20
Acetone			105.0		%		50-140	16-APR-20
Benzene			111.7		%		50-140	16-APR-20
Bromodichloromethane			117.5		%		50-140	16-APR-20
Bromoform			105.0		%		50-140	16-APR-20
Bromomethane			116.8		%		50-140	16-APR-20
Carbon tetrachloride			107.5		%		50-140	16-APR-20
Chlorobenzene			114.1		%		50-140	16-APR-20
Chloroform			114.6		%		50-140	16-APR-20
cis-1,2-Dichloroethylene			110.3		%		50-140	16-APR-20
cis-1,3-Dichloropropene			105.3		%		50-140	16-APR-20
Dibromochloromethane			96.7		%		50-140	16-APR-20
Dichlorodifluoromethane			58.3		%		50-140	16-APR-20
Ethylbenzene			107.2		%		50-140	16-APR-20
n-Hexane			96.1		%		50-140	16-APR-20
Methylene Chloride			102.2		%		50-140	16-APR-20



Quality Control Report

Workorder: L2436757

Report Date: 22-APR-20

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Soil						
Batch	R5057176							
WG3308026-5	MS	WG3308026-3						
MTBE			111.9		%		50-140	16-APR-20
m+p-Xylenes			110.8		%		50-140	16-APR-20
Methyl Ethyl Ketone			84.0		%		50-140	16-APR-20
Methyl Isobutyl Ketone			87.9		%		50-140	16-APR-20
o-Xylene			117.1		%		50-140	16-APR-20
Styrene			107.7		%		50-140	16-APR-20
Tetrachloroethylene			110.0		%		50-140	16-APR-20
Toluene			108.4		%		50-140	16-APR-20
trans-1,2-Dichloroethylene			103.8		%		50-140	16-APR-20
trans-1,3-Dichloropropene			100.3		%		50-140	16-APR-20
Trichloroethylene			117.0		%		50-140	16-APR-20
Trichlorofluoromethane			91.0		%		50-140	16-APR-20
Vinyl chloride			97.7		%		50-140	16-APR-20

Quality Control Report

Workorder: L2436757

Report Date: 22-APR-20

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: TED PAN

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Legend:

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

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.
RRQC	Refer to report remarks for information regarding this QC result.

Hold Time Exceedances:

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

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

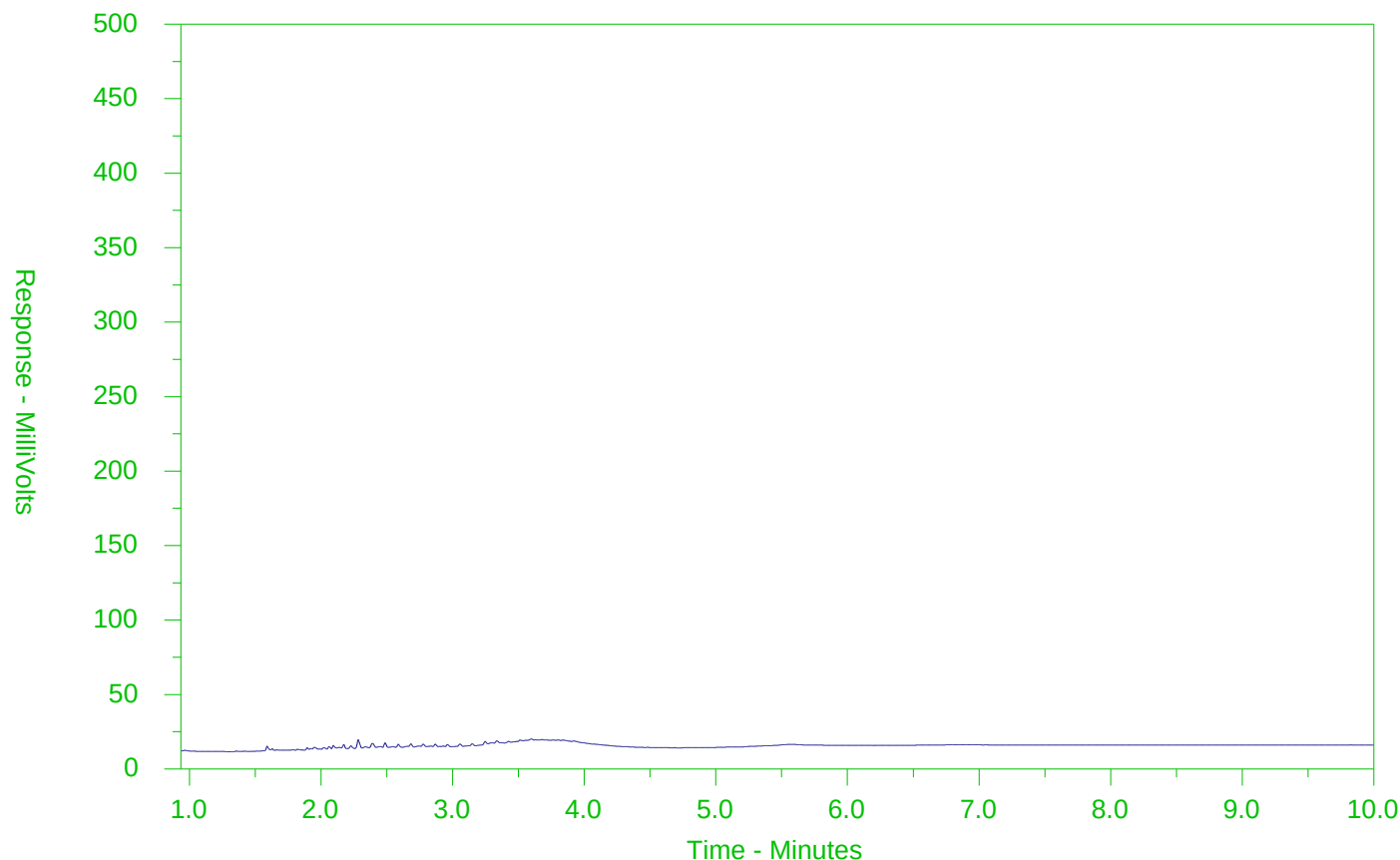
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2436757-1
Client Sample ID: BHM1-1 SS4



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

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

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

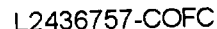
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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



Canada Toll Free: 1 800 668 9878

www.alsglobal.com



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REFER TO BACK PAGE FOR A'S LOCATIONS AND SAMPLING INFORMATION

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

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

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JULY 2017 FROM

Appendix C

Results of the Groundwater Chemical Analysis



PALMER ENVIRONMENTAL CONSULTING
GROUP INC. (Richmond Hill)
ATTN: TED PAN
74 Berkeley Street
Toronto ON M5V 1E3

Date Received: 20-APR-20
Report Date: 27-APR-20 08:07 (MT)
Version: FINAL

Client Phone: 647-795-8153

Certificate of Analysis

Lab Work Order #: L2438214
Project P.O. #: NOT SUBMITTED
Job Reference: 2001801
C of C Numbers: 17-799705
Legal Site Desc:

Jennifer Barkshire-Paterson
Account Manager

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

ADDRESS: 95 West Beaver Creek Road, Unit 1, Richmond Hill, ON L4B 1H2 Canada | Phone: +1 905 881 9887 | Fax: +1 905 881 8062
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ANALYTICAL REPORT

Summary of Guideline Exceedances

Guideline		Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
ALS ID							
Ontario Regulation 153/04 - April 15, 2011 Standards - T1-Ground Water-All Types of Property Uses							
L2438214-1	BHM1-1		Hydrocarbons	F3 (C16-C34)	860	500	ug/L
Ontario Regulation 153/04 - April 15, 2011 Standards - T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)							
L2438214-1	BHM1-1		Hydrocarbons	F3 (C16-C34)	860	500	ug/L

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



ANALYTICAL REPORT

Dissolved Metals - WATER

Analyte	Unit	Guide Limits		Lab ID	
		#1	#2	Sample Date	Sample ID
Dissolved Metals Filtration Location		-	-	L2438214-1 17-APR-20 BHM1-1	L2438214-2 17-APR-20 DUP1
Antimony (Sb)-Dissolved	ug/L	1.5	20000	0.50	0.44
Arsenic (As)-Dissolved	ug/L	13	1900	1.61	1.68
Barium (Ba)-Dissolved	ug/L	610	29000	83.1	77.1
Beryllium (Be)-Dissolved	ug/L	0.5	67	<0.10	<0.10
Boron (B)-Dissolved	ug/L	1700	45000	202	230
Cadmium (Cd)-Dissolved	ug/L	0.5	2.7	0.010	<0.010
Chromium (Cr)-Dissolved	ug/L	11	810	<0.50	<0.50
Cobalt (Co)-Dissolved	ug/L	3.8	66	0.33	0.35
Copper (Cu)-Dissolved	ug/L	5	87	3.72	0.94
Lead (Pb)-Dissolved	ug/L	1.9	25	0.128	0.099
Molybdenum (Mo)-Dissolved	ug/L	23	9200	5.85	5.44
Nickel (Ni)-Dissolved	ug/L	14	490	1.22	1.33
Selenium (Se)-Dissolved	ug/L	5	63	0.738	0.728
Silver (Ag)-Dissolved	ug/L	0.3	1.5	<0.050	<0.050
Sodium (Na)-Dissolved	ug/L	490000	2300000	191000 ^{DLHC}	189000 ^{DLHC}
Thallium (Tl)-Dissolved	ug/L	0.5	510	0.014	0.013
Uranium (U)-Dissolved	ug/L	8.9	420	3.07	3.03
Vanadium (V)-Dissolved	ug/L	3.9	250	0.86	1.02
Zinc (Zn)-Dissolved	ug/L	160	1100	2.6	1.3

Guide Limit #1: T1-Ground Water-All Types of Property Uses

Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

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



ANALYTICAL REPORT

Volatile Organic Compounds - WATER

		Lab ID		L2438214-1
		Sample Date		17-APR-20
		Sample ID		BHM1-1
		Guide Limits		
Analyte	Unit	#1	#2	
Acetone	ug/L	2700	130000	<30 ^{OWP}
Benzene	ug/L	0.5	44	<0.50 ^{OWP}
Bromodichloromethane	ug/L	2	85000	<2.0 ^{OWP}
Bromoform	ug/L	5	380	<5.0 ^{OWP}
Bromomethane	ug/L	0.89	5.6	<0.50 ^{OWP}
Carbon tetrachloride	ug/L	0.2	0.79	<0.20 ^{OWP}
Chlorobenzene	ug/L	0.5	630	<0.50 ^{OWP}
Dibromochloromethane	ug/L	2	82000	<2.0 ^{OWP}
Chloroform	ug/L	2	2.4	<1.0 ^{OWP}
1,2-Dibromoethane	ug/L	0.2	0.25	<0.20 ^{OWP}
1,2-Dichlorobenzene	ug/L	0.5	4600	<0.50 ^{OWP}
1,3-Dichlorobenzene	ug/L	0.5	9600	<0.50 ^{OWP}
1,4-Dichlorobenzene	ug/L	0.5	8	<0.50 ^{OWP}
Dichlorodifluoromethane	ug/L	590	4400	<2.0 ^{OWP}
1,1-Dichloroethane	ug/L	0.5	320	<0.50 ^{OWP}
1,2-Dichloroethane	ug/L	0.5	1.6	<0.50 ^{OWP}
1,1-Dichloroethylene	ug/L	0.5	1.6	<0.50 ^{OWP}
cis-1,2-Dichloroethylene	ug/L	1.6	1.6	<0.50 ^{OWP}
trans-1,2-Dichloroethylene	ug/L	1.6	1.6	<0.50 ^{OWP}
Methylene Chloride	ug/L	5	610	<5.0 ^{OWP}
1,2-Dichloropropane	ug/L	0.5	16	<0.50 ^{OWP}
cis-1,3-Dichloropropene	ug/L	-	-	<0.30 ^{OWP}
trans-1,3-Dichloropropene	ug/L	-	-	<0.30 ^{OWP}
1,3-Dichloropropene (cis & trans)	ug/L	0.5	5.2	<0.50
Ethylbenzene	ug/L	0.5	2300	<0.50 ^{OWP}
n-Hexane	ug/L	5	51	<0.50 ^{OWP}
Methyl Ethyl Ketone	ug/L	400	470000	<20 ^{OWP}
Methyl Isobutyl Ketone	ug/L	640	140000	<20 ^{OWP}
MTBE	ug/L	15	190	<2.0 ^{OWP}
Styrene	ug/L	0.5	1300	<0.50 ^{OWP}

Guide Limit #1: T1-Ground Water-All Types of Property Uses
Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)

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



ANALYTICAL REPORT

Hydrocarbons - WATER

		Lab ID	L2438214-1		
		Sample Date	17-APR-20		
		Sample ID	BHM1-1		
		Guide Limits			
Analyte	Unit	#1	#2		
F1 (C6-C10)	ug/L	420	750	<25	^{OWP}
F1-BTEX	ug/L	420	750	<25	
F2 (C10-C16)	ug/L	150	150	<100	^{OWP}
F3 (C16-C34)	ug/L	500	500	860	^{OWP}
F4 (C34-C50)	ug/L	500	500	400	^{OWP}
Total Hydrocarbons (C6-C50)	ug/L	-	-	1260	
Chrom. to baseline at nC50		-	-	YES	
Surrogate: 2-Bromobenzotrifluoride	%	-	-	79.0	
Surrogate: 3,4-Dichlorotoluene	%	-	-	77.1	

Guide Limit #1: T1-Ground Water-All Types of Property Uses

Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)

 Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

 Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

Reference Information

L2438214 CONT'D....
Job Reference: 2001801
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Qualifiers for Individual Parameters Listed:

Qualifier	Description
OWP	Organic water sample contained visible sediment (must be included as part of analysis). Measured concentrations of organic substances in water can be biased high due to presence of

Reference Information

sediment.

DLHC Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
F1-F4-511-CALC-WT	Water	F1-F4 Hydrocarbon Calculated Parameters	CCME CWS-PHC, Pub #1310, Dec 2001-L

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

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.

In samples where BTEX and F1 were analyzed, F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

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

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:

1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F1-HS-511-WT	Water	F1-O.Reg 153/04 (July 2011)	E3398/CCME TIER 1-HS
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Fraction F1 is determined by analyzing by headspace-GC/FID.

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

F2-F4-511-WT	Water	F2-F4-O.Reg 153/04 (July 2011)	EPA 3511/CCME Tier 1
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Petroleum Hydrocarbons (F2-F4 fractions) are extracted from water using a hexane micro-extraction technique. Instrumental analysis is by GC-FID, as per the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Tier 1 Method, CCME, 2001.

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

MET-D-UG/L-MS-WT	Water	Diss. Metals in Water by ICPMS (ug/L)	EPA 200.8
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The metal constituents of a non-acidified sample that pass through a membrane filter prior to ICP/MS analysis.

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

VOC-1,3-DCP-CALC-WT	Water	Regulation 153 VOCs	SW8260B/SW8270C
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VOC-511-HS-WT	Water	VOC by GCMS HS O.Reg 153/04 (July 2011)	SW846 8260
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Reference Information

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Job Reference: 2001801
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Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
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Liquid samples are analyzed by headspace GC/MSD.

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

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

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

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

Chain of Custody Numbers:

17-799705

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

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

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg ww - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

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

Quality Control Report

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT		Water						
Batch	R5058892							
WG3310493-4	DUP	WG3310493-3						
F1 (C6-C10)		<25	<25	RPD-NA	ug/L	N/A	30	21-APR-20
WG3310493-1	LCS							
F1 (C6-C10)			103.1		%		80-120	21-APR-20
WG3310493-2	MB							
F1 (C6-C10)			37	B	ug/L		25	21-APR-20
Surrogate: 3,4-Dichlorotoluene			105.4		%		60-140	21-APR-20
WG3310493-5	MS	WG3310493-3						
F1 (C6-C10)			90.5		%		60-140	21-APR-20
F2-F4-511-WT		Water						
Batch	R5059348							
WG3310606-2	LCS							
F2 (C10-C16)			100.2		%		70-130	21-APR-20
F3 (C16-C34)			102.4		%		70-130	21-APR-20
F4 (C34-C50)			100.5		%		70-130	21-APR-20
WG3310606-1	MB							
F2 (C10-C16)			<100		ug/L		100	21-APR-20
F3 (C16-C34)			<250		ug/L		250	21-APR-20
F4 (C34-C50)			<250		ug/L		250	21-APR-20
Surrogate: 2-Bromobenzotrifluoride			73.0		%		60-140	21-APR-20
MET-D-UG/L-MS-WT		Water						
Batch	R5059757							
WG3310556-4	DUP	WG3310556-3						
Antimony (Sb)-Dissolved		0.50	0.50		ug/L	1.0	20	21-APR-20
Arsenic (As)-Dissolved		1.61	1.65		ug/L	2.2	20	21-APR-20
Barium (Ba)-Dissolved		83.1	84.1		ug/L	1.1	20	21-APR-20
Beryllium (Be)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	21-APR-20
Boron (B)-Dissolved		202	203		ug/L	0.5	20	21-APR-20
Cadmium (Cd)-Dissolved		0.0101	0.0103		ug/L	2.0	20	21-APR-20
Chromium (Cr)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	21-APR-20
Cobalt (Co)-Dissolved		0.33	0.33		ug/L	1.6	20	21-APR-20
Copper (Cu)-Dissolved		3.72	3.84		ug/L	3.0	20	21-APR-20
Lead (Pb)-Dissolved		0.128	0.130		ug/L	1.7	20	21-APR-20
Molybdenum (Mo)-Dissolved		5.85	5.71		ug/L	2.4	20	21-APR-20
Nickel (Ni)-Dissolved		1.22	1.25		ug/L	2.4	20	21-APR-20

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT		Water						
Batch	R5059757							
WG3310556-4 DUP		WG3310556-3						
Selenium (Se)-Dissolved		0.738	0.732		ug/L	0.8	20	21-APR-20
Silver (Ag)-Dissolved		<0.050	<0.050	RPD-NA	ug/L	N/A	20	21-APR-20
Sodium (Na)-Dissolved		191000	193000		ug/L	1.3	20	21-APR-20
Thallium (Tl)-Dissolved		0.014	0.014		ug/L	3.6	20	21-APR-20
Uranium (U)-Dissolved		3.07	3.10		ug/L	0.8	20	21-APR-20
Vanadium (V)-Dissolved		0.86	0.87		ug/L	1.9	20	21-APR-20
Zinc (Zn)-Dissolved		2.6	2.5		ug/L	1.9	20	21-APR-20
WG3310556-2 LCS								
Antimony (Sb)-Dissolved			102.1		%		80-120	21-APR-20
Arsenic (As)-Dissolved			102.9		%		80-120	21-APR-20
Barium (Ba)-Dissolved			101.1		%		80-120	21-APR-20
Beryllium (Be)-Dissolved			96.7		%		80-120	21-APR-20
Boron (B)-Dissolved			94.2		%		80-120	21-APR-20
Cadmium (Cd)-Dissolved			101.4		%		80-120	21-APR-20
Chromium (Cr)-Dissolved			100.6		%		80-120	21-APR-20
Cobalt (Co)-Dissolved			96.3		%		80-120	21-APR-20
Copper (Cu)-Dissolved			99.97		%		80-120	21-APR-20
Lead (Pb)-Dissolved			102.9		%		80-120	21-APR-20
Molybdenum (Mo)-Dissolved			91.8		%		80-120	21-APR-20
Nickel (Ni)-Dissolved			100.1		%		80-120	21-APR-20
Selenium (Se)-Dissolved			102.6		%		80-120	21-APR-20
Silver (Ag)-Dissolved			101.3		%		80-120	21-APR-20
Sodium (Na)-Dissolved			103.4		%		80-120	21-APR-20
Thallium (Tl)-Dissolved			103.7		%		80-120	21-APR-20
Uranium (U)-Dissolved			104.3		%		80-120	21-APR-20
Vanadium (V)-Dissolved			101.8		%		80-120	21-APR-20
Zinc (Zn)-Dissolved			100.1		%		80-120	21-APR-20
WG3310556-1 MB								
Antimony (Sb)-Dissolved			<0.10		ug/L		0.1	21-APR-20
Arsenic (As)-Dissolved			<0.10		ug/L		0.1	21-APR-20
Barium (Ba)-Dissolved			<0.10		ug/L		0.1	21-APR-20
Beryllium (Be)-Dissolved			<0.10		ug/L		0.1	21-APR-20
Boron (B)-Dissolved			<10		ug/L		10	21-APR-20
Cadmium (Cd)-Dissolved			<0.0050		ug/L		0.005	21-APR-20

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Water						
Batch	R5058892							
WG3310493-4	DUP	WG3310493-3						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	21-APR-20
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	21-APR-20
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	21-APR-20
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	21-APR-20
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	21-APR-20
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	21-APR-20
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	21-APR-20
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	21-APR-20
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	21-APR-20
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	21-APR-20
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	21-APR-20
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	21-APR-20
Acetone		<30	<30	RPD-NA	ug/L	N/A	30	21-APR-20
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	21-APR-20
Bromodichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	21-APR-20
Bromoform		<5.0	<5.0	RPD-NA	ug/L	N/A	30	21-APR-20
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	21-APR-20
Carbon tetrachloride		<0.20	<0.20	RPD-NA	ug/L	N/A	30	21-APR-20
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	21-APR-20
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	21-APR-20
cis-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	21-APR-20
cis-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	21-APR-20
Dibromochloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	21-APR-20
Dichlorodifluoromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	21-APR-20
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	21-APR-20
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	21-APR-20
m+p-Xylenes		<0.40	<0.40	RPD-NA	ug/L	N/A	30	21-APR-20
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	21-APR-20
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	21-APR-20
Methylene Chloride		<5.0	<5.0	RPD-NA	ug/L	N/A	30	21-APR-20
MTBE		<2.0	<2.0	RPD-NA	ug/L	N/A	30	21-APR-20
o-Xylene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	21-APR-20
Styrene		<0.50	<0.50		ug/L			21-APR-20

Quality Control Report

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Water						
Batch	R5058892							
WG3310493-4 DUP		WG3310493-3						
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	21-APR-20
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	21-APR-20
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	21-APR-20
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	21-APR-20
trans-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	21-APR-20
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	21-APR-20
Trichlorofluoromethane		<5.0	<5.0	RPD-NA	ug/L	N/A	30	21-APR-20
Vinyl chloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	21-APR-20
WG3310493-1 LCS								
1,1,1,2-Tetrachloroethane			89.4		%		70-130	21-APR-20
1,1,1,2,2-Tetrachloroethane			98.7		%		70-130	21-APR-20
1,1,1-Trichloroethane			92.8		%		70-130	21-APR-20
1,1,2-Trichloroethane			91.9		%		70-130	21-APR-20
1,1-Dichloroethane			91.8		%		70-130	21-APR-20
1,1-Dichloroethylene			86.7		%		70-130	21-APR-20
1,2-Dibromoethane			92.1		%		70-130	21-APR-20
1,2-Dichlorobenzene			96.4		%		70-130	21-APR-20
1,2-Dichloroethane			94.4		%		70-130	21-APR-20
1,2-Dichloropropane			92.7		%		70-130	21-APR-20
1,3-Dichlorobenzene			98.8		%		70-130	21-APR-20
1,4-Dichlorobenzene			100.8		%		70-130	21-APR-20
Acetone			109.1		%		60-140	21-APR-20
Benzene			94.7		%		70-130	21-APR-20
Bromodichloromethane			96.1		%		70-130	21-APR-20
Bromoform			99.2		%		70-130	21-APR-20
Bromomethane			81.5		%		60-140	21-APR-20
Carbon tetrachloride			92.1		%		70-130	21-APR-20
Chlorobenzene			94.2		%		70-130	21-APR-20
Chloroform			94.5		%		70-130	21-APR-20
cis-1,2-Dichloroethylene			88.0		%		70-130	21-APR-20
cis-1,3-Dichloropropene			94.1		%		70-130	21-APR-20
Dibromochloromethane			89.4		%		70-130	21-APR-20
Dichlorodifluoromethane			91.8		%		50-140	21-APR-20



Quality Control Report

Workorder: L2438214

Report Date: 27-APR-20

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Water						
Batch	R5058892							
WG3310493-1	LCS							
Ethylbenzene			90.7		%		70-130	21-APR-20
n-Hexane			84.6		%		70-130	21-APR-20
m+p-Xylenes			92.0		%		70-130	21-APR-20
Methyl Ethyl Ketone			106.5		%		60-140	21-APR-20
Methyl Isobutyl Ketone			102.0		%		60-140	21-APR-20
Methylene Chloride			95.2		%		70-130	21-APR-20
MTBE			96.3		%		70-130	21-APR-20
o-Xylene			99.7		%		70-130	21-APR-20
Styrene			91.2		%		70-130	21-APR-20
Tetrachloroethylene			92.1		%		70-130	21-APR-20
Toluene			91.7		%		70-130	21-APR-20
trans-1,2-Dichloroethylene			92.4		%		70-130	21-APR-20
trans-1,3-Dichloropropene			93.0		%		70-130	21-APR-20
Trichloroethylene			93.8		%		70-130	21-APR-20
Trichlorofluoromethane			89.4		%		60-140	21-APR-20
Vinyl chloride			107.2		%		60-140	21-APR-20
WG3310493-2	MB							
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	21-APR-20
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	21-APR-20
1,1,1-Trichloroethane			<0.50		ug/L		0.5	21-APR-20
1,1,2-Trichloroethane			<0.50		ug/L		0.5	21-APR-20
1,1-Dichloroethane			<0.50		ug/L		0.5	21-APR-20
1,1-Dichloroethylene			<0.50		ug/L		0.5	21-APR-20
1,2-Dibromoethane			<0.20		ug/L		0.2	21-APR-20
1,2-Dichlorobenzene			<0.50		ug/L		0.5	21-APR-20
1,2-Dichloroethane			<0.50		ug/L		0.5	21-APR-20
1,2-Dichloropropane			<0.50		ug/L		0.5	21-APR-20
1,3-Dichlorobenzene			<0.50		ug/L		0.5	21-APR-20
1,4-Dichlorobenzene			<0.50		ug/L		0.5	21-APR-20
Acetone			<30		ug/L		30	21-APR-20
Benzene			<0.50		ug/L		0.5	21-APR-20
Bromodichloromethane			<2.0		ug/L		2	21-APR-20
Bromoform			<5.0		ug/L		5	21-APR-20
Bromomethane			<0.50		ug/L		0.5	21-APR-20



Quality Control Report

Workorder: L2438214

Report Date: 27-APR-20

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Water						
Batch	R5058892							
WG3310493-2 MB								
Carbon tetrachloride			<0.20		ug/L		0.2	21-APR-20
Chlorobenzene			<0.50		ug/L		0.5	21-APR-20
Chloroform			<1.0		ug/L		1	21-APR-20
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	21-APR-20
cis-1,3-Dichloropropene			<0.30		ug/L		0.3	21-APR-20
Dibromochloromethane			<2.0		ug/L		2	21-APR-20
Dichlorodifluoromethane			<2.0		ug/L		2	21-APR-20
Ethylbenzene			<0.50		ug/L		0.5	21-APR-20
n-Hexane			<0.50		ug/L		0.5	21-APR-20
m+p-Xylenes			<0.40		ug/L		0.4	21-APR-20
Methyl Ethyl Ketone			<20		ug/L		20	21-APR-20
Methyl Isobutyl Ketone			<20		ug/L		20	21-APR-20
Methylene Chloride			<5.0		ug/L		5	21-APR-20
MTBE			<2.0		ug/L		2	21-APR-20
o-Xylene			<0.30		ug/L		0.3	21-APR-20
Styrene			<0.50		ug/L		0.5	21-APR-20
Tetrachloroethylene			<0.50		ug/L		0.5	21-APR-20
Toluene			<0.50		ug/L		0.5	21-APR-20
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	21-APR-20
trans-1,3-Dichloropropene			<0.30		ug/L		0.3	21-APR-20
Trichloroethylene			<0.50		ug/L		0.5	21-APR-20
Trichlorofluoromethane			<5.0		ug/L		5	21-APR-20
Vinyl chloride			<0.50		ug/L		0.5	21-APR-20
Surrogate: 1,4-Difluorobenzene			100.2		%		70-130	21-APR-20
Surrogate: 4-Bromofluorobenzene			99.3		%		70-130	21-APR-20
WG3310493-5 MS		WG3310493-3						
1,1,1,2-Tetrachloroethane			88.5		%		50-140	21-APR-20
1,1,2,2-Tetrachloroethane			99.7		%		50-140	21-APR-20
1,1,1-Trichloroethane			92.5		%		50-140	21-APR-20
1,1,2-Trichloroethane			91.2		%		50-140	21-APR-20
1,1-Dichloroethane			90.6		%		50-140	21-APR-20
1,1-Dichloroethylene			85.0		%		50-140	21-APR-20
1,2-Dibromoethane			91.1		%		50-140	21-APR-20
1,2-Dichlorobenzene			96.6		%		50-140	21-APR-20

Quality Control Report

Workorder: L2438214

Report Date: 27-APR-20

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

Toronto ON M5V 1E3

Contact: TED PAN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Water						
Batch	R5058892							
WG3310493-5 MS		WG3310493-3						
1,2-Dichloroethane			94.8		%		50-140	21-APR-20
1,2-Dichloropropane			92.4		%		50-140	21-APR-20
1,3-Dichlorobenzene			98.4		%		50-140	21-APR-20
1,4-Dichlorobenzene			100.9		%		50-140	21-APR-20
Acetone			112.4		%		50-140	21-APR-20
Benzene			94.5		%		50-140	21-APR-20
Bromodichloromethane			96.8		%		50-140	21-APR-20
Bromoform			98.4		%		50-140	21-APR-20
Bromomethane			77.3		%		50-140	21-APR-20
Carbon tetrachloride			91.5		%		50-140	21-APR-20
Chlorobenzene			93.9		%		50-140	21-APR-20
Chloroform			94.8		%		50-140	21-APR-20
cis-1,2-Dichloroethylene			88.2		%		50-140	21-APR-20
cis-1,3-Dichloropropene			93.6		%		50-140	21-APR-20
Dibromochloromethane			87.8		%		50-140	21-APR-20
Dichlorodifluoromethane			80.1		%		50-140	21-APR-20
Ethylbenzene			88.5		%		50-140	21-APR-20
n-Hexane			82.3		%		50-140	21-APR-20
m+p-Xylenes			90.5		%		50-140	21-APR-20
Methyl Ethyl Ketone			109.9		%		50-140	21-APR-20
Methyl Isobutyl Ketone			102.6		%		50-140	21-APR-20
Methylene Chloride			94.6		%		50-140	21-APR-20
MTBE			96.3		%		50-140	21-APR-20
o-Xylene			97.6		%		50-140	21-APR-20
Styrene			88.5		%		50-140	21-APR-20
Tetrachloroethylene			90.8		%		50-140	21-APR-20
Toluene			89.7		%		50-140	21-APR-20
trans-1,2-Dichloroethylene			91.5		%		50-140	21-APR-20
trans-1,3-Dichloropropene			90.1		%		50-140	21-APR-20
Trichloroethylene			94.0		%		50-140	21-APR-20
Trichlorofluoromethane			85.8		%		50-140	21-APR-20
Vinyl chloride			100.0		%		50-140	21-APR-20

Quality Control Report

Workorder: L2438214

Report Date: 27-APR-20

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: TED PAN

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Legend:

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

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

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

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

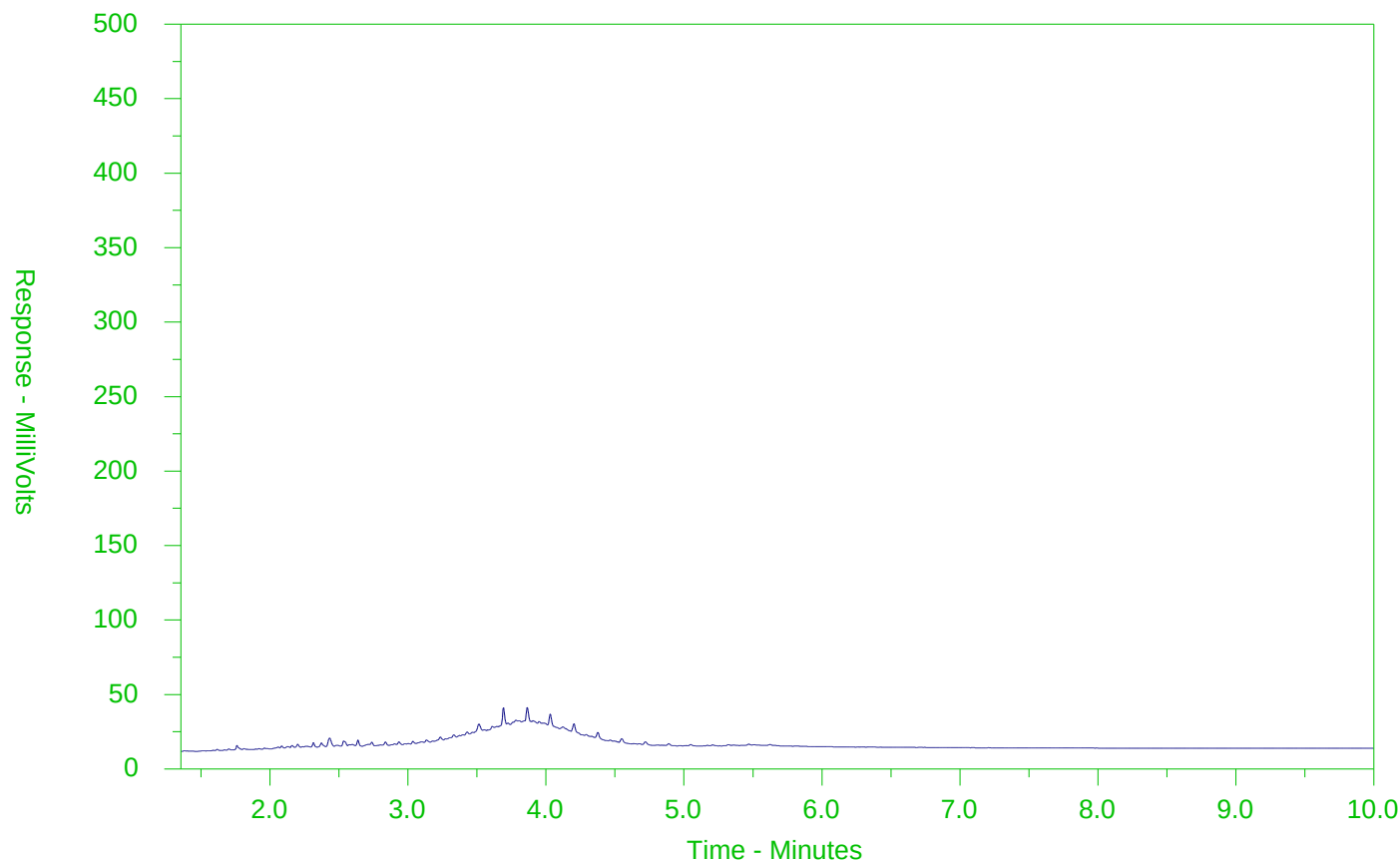
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2438214-1
Client Sample ID: BHM1-1



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

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

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

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

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



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com



L2438214-COFC

COC Number: 17 - 799705

BB

Page 1 of 1

Report To Contact and company name below will appear on the final report		Report Format / L		Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)	
Company:	Palmer	Select Report Format: ☒ PDF ☒ EXCEL ☐ EDD (DIGITAL)		Regular [R] ☒ Standard TAT If received by 3 pm - business days - no surcharges apply	
Contact:	Ted Poon	Quality Control (QC) Report with Report ☒ YES ☐ NO		4 day [P4-20%] ☐ 1 Business day [E - 100%] ☐	
Phone:	647-863-6076	☒ Compare Results to Criteria on Report - provide details below if box checked		3 day [P3-25%] ☐ Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐	
Company address below will appear on the final report		Select Distribution: ☒ EMAIL ☐ MAIL ☐ FAX		2 day [P2-50%] ☐	
Street:	74 Berkeley St	Email 1 or Fax ted.poon@perc-cu		Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm	
City/Province:	Toronto, ON	Email 2 bobby.kalanich@perc-cu		For tests that can not be performed according to the service level selected, you will be contacted.	
Postal Code:	M5A 2W7	Email 3 sarah.singh@perc-cu		Analysis Request	
Invoice To	Same as Report To ☒ YES ☐ NO	Invoice Distribution		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below	
	Copy of Invoice with Report ☐ YES ☒ NO	Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX		NUMBER OF CONTAINERS	
Company:		Email 1 or Fax		pHc/VOC	
Contact:		Email 2		ICPMS Metals	
Project Information		Oil and Gas Required Fields (client use)		SAMPLES ON HOLD	
ALS Account # / Quote #:		AFE/Cost Center: PO#		SUSPECTED HAZARDOUS (see Special Instructions)	
Job #:	2001801	Major/Minor Code: Routing Code:			
PO / AFE:		Requisitioner:			
LSD:		Location:			
ALS Lab Work Order # (lab use only): L2438214RQ		ALS Contact:		Sampler:	
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	
	BHMI-1	17-Apr-20	AM	Water	5 X X
	DUP1	17	A	11	1 X
Drinking Water (DW) Samples (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		SAMPLE CONDITION AS RECEIVED (lab use only)	
Are samples taken from a Regulated DW System?	☐ YES ☐ NO	O. Reg 153 Table 1&3		Frozen ☐ SIF Observations Yes ☐ No ☐	
Are samples for human consumption/ use?	☐ YES ☐ NO			Ice Packs ☐ Ice Cubes ☒ Custody seal intact Yes ☐ No ☐	
				Cooling Initiated ☐	
				INITIAL COOLER TEMPERATURES °C 0.5 FINAL COOLER TEMPERATURES °C 2.1	
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)		FINAL SHIPMENT RECEPTION (lab use only)	
Released by: Ted Poon	Date: Apr 17, 2020	Time: 6:10 PM	Received by: [Signature]	Date: 20/4/20	Time: 9:00
				Received by: [Signature]	Date: 20 APR 20

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY

YELLOW - CLIENT COPY



PALMER ENVIRONMENTAL CONSULTING
GROUP INC. (Richmond Hill)
ATTN: Sarah Sipak
74 Berkeley Street
Toronto ON M5V 1E3

Date Received: 14-MAY-20
Report Date: 20-MAY-20 11:38 (MT)
Version: FINAL

Client Phone: 647-795-8153

Certificate of Analysis

Lab Work Order #: L2447392

Project P.O. #: 2001801

Job Reference: 2001801

C of C Numbers:

Legal Site Desc:

Jennifer Barkshire-Paterson
Account Manager

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

ADDRESS: 95 West Beaver Creek Road, Unit 1, Richmond Hill, ON L4B 1H2 Canada | Phone: +1 905 881 9887 | Fax: +1 905 881 8062
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



L2447392 CONT'D....
Job Reference: 2001801
PAGE 2 of 8
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Summary of Guideline Exceedances

Guideline						
ALS ID	Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
Ontario Regulation 153/04 - April 15, 2011 Standards - T3-Non-Potable Ground Water-All Types of Property Uses (Coarse) (No parameter exceedances)						
Ontario Regulation 153/04 - April 15, 2011 Standards - T3-Non-Potable Ground Water-All Types of Property Uses (Fine) (No parameter exceedances)						



L2447392 CONT'D....
Job Reference: 2001801
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Volatile Organic Compounds - WATER

Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)
Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)



Environmental

ANALYTICAL REPORT

Volatile Organic Compounds - WATER

Lab ID L2447392-2
 Sample Date 13-MAY-20
 Sample ID BH-M1-2

Analyte	Unit	Guide Limits		
		#1	#2	
1,1,1,2-Tetrachloroethane	ug/L	3.3	28	<0.50
1,1,2,2-Tetrachloroethane	ug/L	3.2	15	<0.50
Tetrachloroethylene	ug/L	1.6	17	<0.50
Toluene	ug/L	18000	18000	<0.50
1,1,1-Trichloroethane	ug/L	640	6700	<0.50
1,1,2-Trichloroethane	ug/L	4.7	30	<0.50
Trichloroethylene	ug/L	1.6	17	<0.50
Trichlorofluoromethane	ug/L	2500	2500	<5.0
Vinyl chloride	ug/L	0.5	1.7	<0.50
o-Xylene	ug/L	-	-	<0.30
m+p-Xylenes	ug/L	-	-	<0.40
Xylenes (Total)	ug/L	4200	4200	<0.50
Surrogate: 4-Bromofluorobenzene	%	-	-	97.2
Surrogate: 1,4-Difluorobenzene	%	-	-	99.2

Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)

Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)

 Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

 Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.



ANALYTICAL REPORT

Hydrocarbons - WATER

Analyte	Unit	Guide Limits			
		#1	#2		
F1 (C6-C10)	ug/L	750	750		<25
F1-BTEX	ug/L	750	750		<25
F2 (C10-C16)	ug/L	150	150	<100	<100
F3 (C16-C34)	ug/L	500	500	<250	<250
F4 (C34-C50)	ug/L	500	500	<250	<250
Total Hydrocarbons (C6-C50)	ug/L	-	-		<370
Chrom. to baseline at nC50		-	-	YES	YES
Surrogate: 2-Bromobenzotrifluoride	%	-	-	88.2	93.2
Surrogate: 3,4-Dichlorotoluene	%	-	-		77.7

Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)

Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

Reference Information

L2447392 CONT'D....
Job Reference: 2001801
PAGE 7 of 8
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Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
F1-F4-511-CALC-WT	Water	F1-F4 Hydrocarbon Calculated Parameters	CCME CWS-PHC, Pub #1310, Dec 2001-L
Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC. In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons. In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1. In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3. Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range: 1. All extraction and analysis holding times were met. 2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene. 3. Linearity of gasoline response within 15% throughout the calibration range. Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges: 1. All extraction and analysis holding times were met. 2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average. 3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors. 4. Linearity of diesel or motor oil response within 15% throughout the calibration range.			
F1-HS-511-WT	Water	F1-O.Reg 153/04 (July 2011)	E3398/CCME TIER 1-HS
Fraction F1 is determined by analyzing by headspace-GC/FID. Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).			
F2-F4-511-WT	Water	F2-F4-O.Reg 153/04 (July 2011)	EPA 3511/CCME Tier 1
Petroleum Hydrocarbons (F2-F4 fractions) are extracted from water using a hexane micro-extraction technique. Instrumental analysis is by GC-FID, as per the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Tier 1 Method, CCME, 2001. Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).			
MET-D-UG/L-MS-WT	Water	Diss. Metals in Water by ICPMS (ug/L)	EPA 200.8
The metal constituents of a non-acidified sample that pass through a membrane filter prior to ICP/MS analysis. Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).			
VOC-1,3-DCP-CALC-WT	Water	Regulation 153 VOCs	SW8260B/SW8270C
VOC-511-HS-WT	Water	VOC by GCMS HS O.Reg 153/04 (July 2011)	SW846 8260
Liquid samples are analyzed by headspace GC/MSD. Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).			
XYLENES-SUM-CALC-WT	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Reference Information

L2447392 CONT'D....
Job Reference: 2001801
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20-MAY-20 11:38 (MT)

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
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Total xylenes represents the sum of o-xylene and m&p-xylene.

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

Chain of Custody Numbers:

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

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

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg ww - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

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

Quality Control Report

Workorder: L2447392

Report Date: 20-MAY-20

Page 1 of 9

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

Toronto ON M5V 1E3

Contact: Sarah Sipak

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT		Water						
Batch	R5091284							
WG3324016-4	DUP	WG3324016-3						
F1 (C6-C10)		<25	<25	RPD-NA	ug/L	N/A	30	19-MAY-20
WG3324016-1	LCS							
F1 (C6-C10)			92.0		%		80-120	19-MAY-20
WG3324016-2	MB							
F1 (C6-C10)			<25		ug/L		25	19-MAY-20
Surrogate: 3,4-Dichlorotoluene			96.9		%		60-140	19-MAY-20
WG3324016-5	MS	WG3324016-3						
F1 (C6-C10)			77.1		%		60-140	19-MAY-20
F2-F4-511-WT		Water						
Batch	R5088216							
WG3323915-2	LCS							
F2 (C10-C16)			103.2		%		70-130	15-MAY-20
F3 (C16-C34)			106.3		%		70-130	15-MAY-20
F4 (C34-C50)			105.9		%		70-130	15-MAY-20
WG3323915-1	MB							
F2 (C10-C16)			<100		ug/L		100	15-MAY-20
F3 (C16-C34)			<250		ug/L		250	15-MAY-20
F4 (C34-C50)			<250		ug/L		250	15-MAY-20
Surrogate: 2-Bromobenzotrifluoride			85.3		%		60-140	15-MAY-20
MET-D-UG/L-MS-WT		Water						
Batch	R5086444							
WG3323857-4	DUP	WG3323857-3						
Antimony (Sb)-Dissolved		0.14	0.13		ug/L	3.8	20	15-MAY-20
Arsenic (As)-Dissolved		0.51	0.54		ug/L	4.2	20	15-MAY-20
Barium (Ba)-Dissolved		13.9	13.7		ug/L	1.2	20	15-MAY-20
Beryllium (Be)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	15-MAY-20
Boron (B)-Dissolved		<10	<10	RPD-NA	ug/L	N/A	20	15-MAY-20
Cadmium (Cd)-Dissolved		0.503	0.507		ug/L	0.7	20	15-MAY-20
Chromium (Cr)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	15-MAY-20
Cobalt (Co)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	15-MAY-20
Copper (Cu)-Dissolved		2.99	3.04		ug/L	1.7	20	15-MAY-20
Lead (Pb)-Dissolved		0.087	0.087		ug/L	0.3	20	15-MAY-20
Molybdenum (Mo)-Dissolved		0.202	0.198		ug/L	1.6	20	15-MAY-20
Nickel (Ni)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	15-MAY-20

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

Toronto ON M5V 1E3

Contact: Sarah Sipak

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT		Water						
Batch	R5086444							
WG3323857-4 DUP		WG3323857-3						
Selenium (Se)-Dissolved		<0.050	<0.050	RPD-NA	ug/L	N/A	20	15-MAY-20
Silver (Ag)-Dissolved		<0.050	<0.050	RPD-NA	ug/L	N/A	20	15-MAY-20
Sodium (Na)-Dissolved		1910	1930		ug/L	1.2	20	15-MAY-20
Thallium (Tl)-Dissolved		<0.010	<0.010	RPD-NA	ug/L	N/A	20	15-MAY-20
Uranium (U)-Dissolved		0.095	0.093		ug/L	1.9	20	15-MAY-20
Vanadium (V)-Dissolved		0.53	0.52		ug/L	2.4	20	15-MAY-20
Zinc (Zn)-Dissolved		7.3	7.2		ug/L	0.7	20	15-MAY-20
WG3323857-2 LCS								
Antimony (Sb)-Dissolved			103.5		%		80-120	15-MAY-20
Arsenic (As)-Dissolved			102.2		%		80-120	15-MAY-20
Barium (Ba)-Dissolved			98.2		%		80-120	15-MAY-20
Beryllium (Be)-Dissolved			103.1		%		80-120	15-MAY-20
Boron (B)-Dissolved			101.9		%		80-120	15-MAY-20
Cadmium (Cd)-Dissolved			100.4		%		80-120	15-MAY-20
Chromium (Cr)-Dissolved			103.1		%		80-120	15-MAY-20
Cobalt (Co)-Dissolved			101.4		%		80-120	15-MAY-20
Copper (Cu)-Dissolved			101.4		%		80-120	15-MAY-20
Lead (Pb)-Dissolved			104.8		%		80-120	15-MAY-20
Molybdenum (Mo)-Dissolved			97.1		%		80-120	15-MAY-20
Nickel (Ni)-Dissolved			100.9		%		80-120	15-MAY-20
Selenium (Se)-Dissolved			99.7		%		80-120	15-MAY-20
Silver (Ag)-Dissolved			102.0		%		80-120	15-MAY-20
Sodium (Na)-Dissolved			104.9		%		80-120	15-MAY-20
Thallium (Tl)-Dissolved			104.5		%		80-120	15-MAY-20
Uranium (U)-Dissolved			102.2		%		80-120	15-MAY-20
Vanadium (V)-Dissolved			103.5		%		80-120	15-MAY-20
Zinc (Zn)-Dissolved			102.3		%		80-120	15-MAY-20
WG3323857-1 MB								
Antimony (Sb)-Dissolved			<0.10		ug/L		0.1	15-MAY-20
Arsenic (As)-Dissolved			<0.10		ug/L		0.1	15-MAY-20
Barium (Ba)-Dissolved			<0.10		ug/L		0.1	15-MAY-20
Beryllium (Be)-Dissolved			<0.10		ug/L		0.1	15-MAY-20
Boron (B)-Dissolved			<10		ug/L		10	15-MAY-20
Cadmium (Cd)-Dissolved			<0.0050		ug/L		0.005	15-MAY-20

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

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Contact: Sarah Sipak

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Water						
Batch	R5091284							
WG3324016-4	DUP	WG3324016-3						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-MAY-20
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-MAY-20
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-MAY-20
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-MAY-20
1,1-Dichloroethane		3.28	2.95		ug/L	11	30	19-MAY-20
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-MAY-20
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	19-MAY-20
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-MAY-20
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-MAY-20
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-MAY-20
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-MAY-20
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-MAY-20
Acetone		<30	<30	RPD-NA	ug/L	N/A	30	19-MAY-20
Benzene		1.27	1.22		ug/L	4.0	30	19-MAY-20
Bromodichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	19-MAY-20
Bromoform		<5.0	<5.0	RPD-NA	ug/L	N/A	30	19-MAY-20
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-MAY-20
Carbon tetrachloride		<0.20	<0.20	RPD-NA	ug/L	N/A	30	19-MAY-20
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-MAY-20
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	19-MAY-20
cis-1,2-Dichloroethylene		2.45	2.39		ug/L	2.5	30	19-MAY-20
cis-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	19-MAY-20
Dibromochloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	19-MAY-20
Dichlorodifluoromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	19-MAY-20
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-MAY-20
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-MAY-20
m+p-Xylenes		<0.40	<0.40	RPD-NA	ug/L	N/A	30	19-MAY-20
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	19-MAY-20
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	19-MAY-20
Methylene Chloride		<5.0	<5.0	RPD-NA	ug/L	N/A	30	19-MAY-20
MTBE		<2.0	<2.0	RPD-NA	ug/L	N/A	30	19-MAY-20
o-Xylene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	19-MAY-20
Styrene		<0.50	<0.50		ug/L			19-MAY-20

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74 Berkeley Street

Toronto ON M5V 1E3

Contact: Sarah Sipak

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Water						
Batch	R5091284							
WG3324016-4 DUP		WG3324016-3						
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-MAY-20
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-MAY-20
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-MAY-20
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-MAY-20
trans-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	19-MAY-20
Trichloroethylene		0.56	0.50		ug/L	11	30	19-MAY-20
Trichlorofluoromethane		<5.0	<5.0	RPD-NA	ug/L	N/A	30	19-MAY-20
Vinyl chloride		0.94	0.88		ug/L	6.6	30	19-MAY-20
WG3324016-1 LCS								
1,1,1,2-Tetrachloroethane			91.2		%		70-130	19-MAY-20
1,1,2,2-Tetrachloroethane			81.2		%		70-130	19-MAY-20
1,1,1-Trichloroethane			95.3		%		70-130	19-MAY-20
1,1,2-Trichloroethane			98.0		%		70-130	19-MAY-20
1,1-Dichloroethane			102.1		%		70-130	19-MAY-20
1,1-Dichloroethylene			94.6		%		70-130	19-MAY-20
1,2-Dibromoethane			95.0		%		70-130	19-MAY-20
1,2-Dichlorobenzene			94.0		%		70-130	19-MAY-20
1,2-Dichloroethane			95.6		%		70-130	19-MAY-20
1,2-Dichloropropane			102.9		%		70-130	19-MAY-20
1,3-Dichlorobenzene			94.5		%		70-130	19-MAY-20
1,4-Dichlorobenzene			95.6		%		70-130	19-MAY-20
Acetone			103.2		%		60-140	19-MAY-20
Benzene			102.5		%		70-130	19-MAY-20
Bromodichloromethane			104.5		%		70-130	19-MAY-20
Bromoform			90.4		%		70-130	19-MAY-20
Bromomethane			116.1		%		60-140	19-MAY-20
Carbon tetrachloride			94.1		%		70-130	19-MAY-20
Chlorobenzene			96.8		%		70-130	19-MAY-20
Chloroform			101.6		%		70-130	19-MAY-20
cis-1,2-Dichloroethylene			97.3		%		70-130	19-MAY-20
cis-1,3-Dichloropropene			92.4		%		70-130	19-MAY-20
Dibromochloromethane			90.0		%		70-130	19-MAY-20
Dichlorodifluoromethane			88.1		%		50-140	19-MAY-20



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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

Toronto ON M5V 1E3

Contact: Sarah Sipak

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Water						
Batch	R5091284							
WG3324016-1	LCS							
Ethylbenzene			95.5		%		70-130	19-MAY-20
n-Hexane			102.3		%		70-130	19-MAY-20
m+p-Xylenes			95.4		%		70-130	19-MAY-20
Methyl Ethyl Ketone			109.9		%		60-140	19-MAY-20
Methyl Isobutyl Ketone			97.8		%		60-140	19-MAY-20
Methylene Chloride			102.8		%		70-130	19-MAY-20
MTBE			97.8		%		70-130	19-MAY-20
o-Xylene			102.4		%		70-130	19-MAY-20
Styrene			95.1		%		70-130	19-MAY-20
Tetrachloroethylene			95.1		%		70-130	19-MAY-20
Toluene			96.5		%		70-130	19-MAY-20
trans-1,2-Dichloroethylene			96.3		%		70-130	19-MAY-20
trans-1,3-Dichloropropene			92.6		%		70-130	19-MAY-20
Trichloroethylene			97.3		%		70-130	19-MAY-20
Trichlorofluoromethane			90.1		%		60-140	19-MAY-20
Vinyl chloride			110.9		%		60-140	19-MAY-20
WG3324016-2	MB							
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	19-MAY-20
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	19-MAY-20
1,1,1-Trichloroethane			<0.50		ug/L		0.5	19-MAY-20
1,1,2-Trichloroethane			<0.50		ug/L		0.5	19-MAY-20
1,1-Dichloroethane			<0.50		ug/L		0.5	19-MAY-20
1,1-Dichloroethylene			<0.50		ug/L		0.5	19-MAY-20
1,2-Dibromoethane			<0.20		ug/L		0.2	19-MAY-20
1,2-Dichlorobenzene			<0.50		ug/L		0.5	19-MAY-20
1,2-Dichloroethane			<0.50		ug/L		0.5	19-MAY-20
1,2-Dichloropropane			<0.50		ug/L		0.5	19-MAY-20
1,3-Dichlorobenzene			<0.50		ug/L		0.5	19-MAY-20
1,4-Dichlorobenzene			<0.50		ug/L		0.5	19-MAY-20
Acetone			<30		ug/L		30	19-MAY-20
Benzene			<0.50		ug/L		0.5	19-MAY-20
Bromodichloromethane			<2.0		ug/L		2	19-MAY-20
Bromoform			<5.0		ug/L		5	19-MAY-20
Bromomethane			<0.50		ug/L		0.5	19-MAY-20



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Toronto ON M5V 1E3

Contact: Sarah Sipak

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Water						
Batch	R5091284							
WG3324016-2 MB								
Carbon tetrachloride			<0.20		ug/L		0.2	19-MAY-20
Chlorobenzene			<0.50		ug/L		0.5	19-MAY-20
Chloroform			<1.0		ug/L		1	19-MAY-20
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	19-MAY-20
cis-1,3-Dichloropropene			<0.30		ug/L		0.3	19-MAY-20
Dibromochloromethane			<2.0		ug/L		2	19-MAY-20
Dichlorodifluoromethane			<2.0		ug/L		2	19-MAY-20
Ethylbenzene			<0.50		ug/L		0.5	19-MAY-20
n-Hexane			<0.50		ug/L		0.5	19-MAY-20
m+p-Xylenes			<0.40		ug/L		0.4	19-MAY-20
Methyl Ethyl Ketone			<20		ug/L		20	19-MAY-20
Methyl Isobutyl Ketone			<20		ug/L		20	19-MAY-20
Methylene Chloride			<5.0		ug/L		5	19-MAY-20
MTBE			<2.0		ug/L		2	19-MAY-20
o-Xylene			<0.30		ug/L		0.3	19-MAY-20
Styrene			<0.50		ug/L		0.5	19-MAY-20
Tetrachloroethylene			<0.50		ug/L		0.5	19-MAY-20
Toluene			<0.50		ug/L		0.5	19-MAY-20
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	19-MAY-20
trans-1,3-Dichloropropene			<0.30		ug/L		0.3	19-MAY-20
Trichloroethylene			<0.50		ug/L		0.5	19-MAY-20
Trichlorofluoromethane			<5.0		ug/L		5	19-MAY-20
Vinyl chloride			<0.50		ug/L		0.5	19-MAY-20
Surrogate: 1,4-Difluorobenzene			99.3		%		70-130	19-MAY-20
Surrogate: 4-Bromofluorobenzene			98.9		%		70-130	19-MAY-20
WG3324016-5 MS		WG3324016-3						
1,1,1,2-Tetrachloroethane			90.2		%		50-140	19-MAY-20
1,1,2,2-Tetrachloroethane			80.0		%		50-140	19-MAY-20
1,1,1-Trichloroethane			93.6		%		50-140	19-MAY-20
1,1,2-Trichloroethane			99.98		%		50-140	19-MAY-20
1,1-Dichloroethane			104.3		%		50-140	19-MAY-20
1,1-Dichloroethylene			92.0		%		50-140	19-MAY-20
1,2-Dibromoethane			97.9		%		50-140	19-MAY-20
1,2-Dichlorobenzene			93.7		%		50-140	19-MAY-20

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Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)

74 Berkeley Street

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Contact: Sarah Sipak

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Water						
Batch	R5091284							
WG3324016-5 MS		WG3324016-3						
1,2-Dichloroethane			99.3		%		50-140	19-MAY-20
1,2-Dichloropropane			104.1		%		50-140	19-MAY-20
1,3-Dichlorobenzene			96.5		%		50-140	19-MAY-20
1,4-Dichlorobenzene			97.7		%		50-140	19-MAY-20
Acetone			110.8		%		50-140	19-MAY-20
Benzene			102.5		%		50-140	19-MAY-20
Bromodichloromethane			105.7		%		50-140	19-MAY-20
Bromoform			89.3		%		50-140	19-MAY-20
Bromomethane			114.6		%		50-140	19-MAY-20
Carbon tetrachloride			92.2		%		50-140	19-MAY-20
Chlorobenzene			96.8		%		50-140	19-MAY-20
Chloroform			102.2		%		50-140	19-MAY-20
cis-1,2-Dichloroethylene			98.2		%		50-140	19-MAY-20
cis-1,3-Dichloropropene			95.8		%		50-140	19-MAY-20
Dibromochloromethane			90.0		%		50-140	19-MAY-20
Dichlorodifluoromethane			76.6		%		50-140	19-MAY-20
Ethylbenzene			94.7		%		50-140	19-MAY-20
n-Hexane			98.0		%		50-140	19-MAY-20
m+p-Xylenes			95.2		%		50-140	19-MAY-20
Methyl Ethyl Ketone			118.6		%		50-140	19-MAY-20
Methyl Isobutyl Ketone			99.8		%		50-140	19-MAY-20
Methylene Chloride			104.4		%		50-140	19-MAY-20
MTBE			97.6		%		50-140	19-MAY-20
o-Xylene			101.4		%		50-140	19-MAY-20
Styrene			93.9		%		50-140	19-MAY-20
Tetrachloroethylene			95.4		%		50-140	19-MAY-20
Toluene			96.2		%		50-140	19-MAY-20
trans-1,2-Dichloroethylene			95.9		%		50-140	19-MAY-20
trans-1,3-Dichloropropene			96.4		%		50-140	19-MAY-20
Trichloroethylene			97.3		%		50-140	19-MAY-20
Trichlorofluoromethane			86.0		%		50-140	19-MAY-20
Vinyl chloride			104.6		%		50-140	19-MAY-20

Quality Control Report

Workorder: L2447392

Report Date: 20-MAY-20

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: Sarah Sipak

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Legend:

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

Sample Parameter Qualifier Definitions:

Qualifier	Description
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MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

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

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

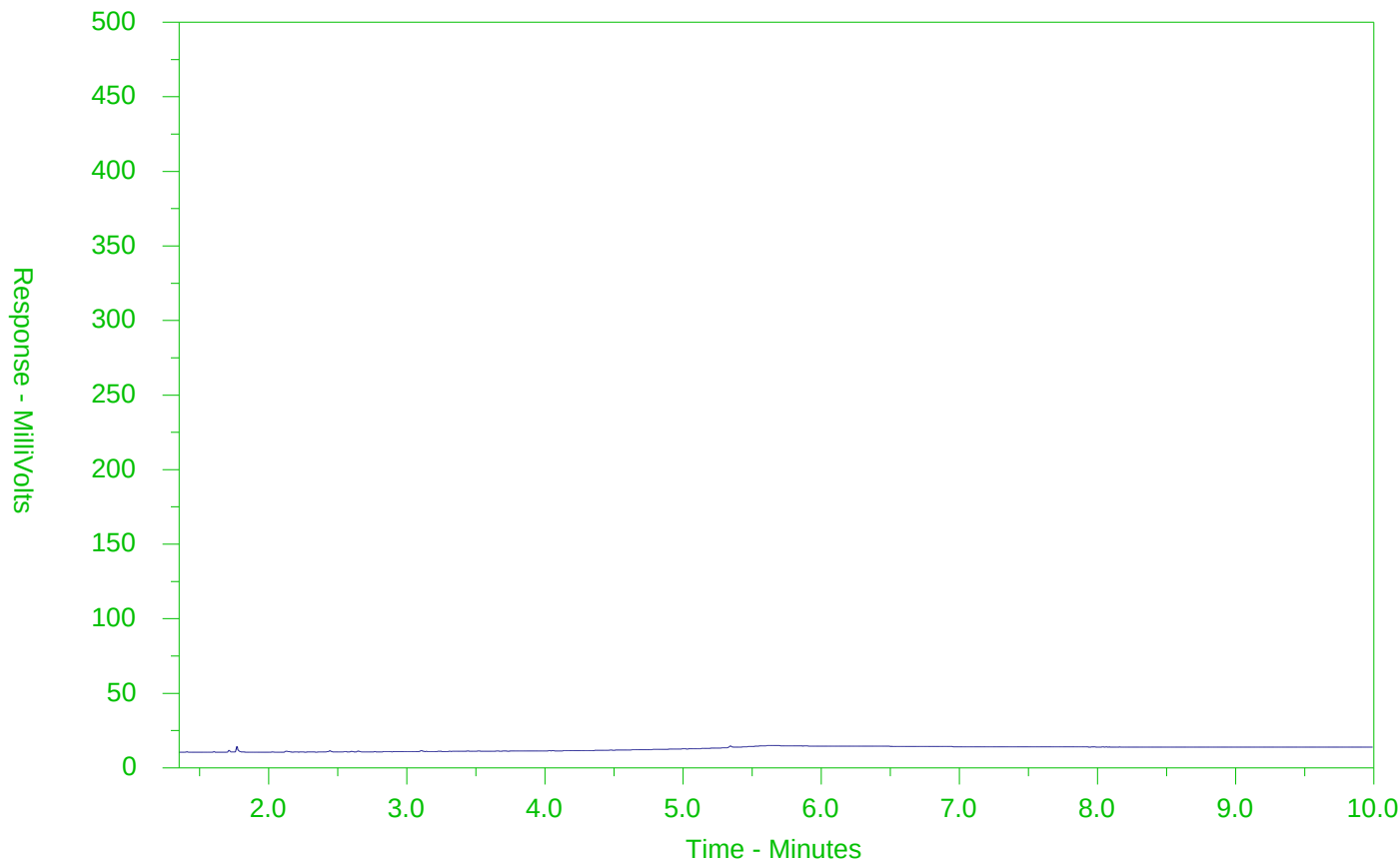
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2447392-1
Client Sample ID: BH-M1-1



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

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

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

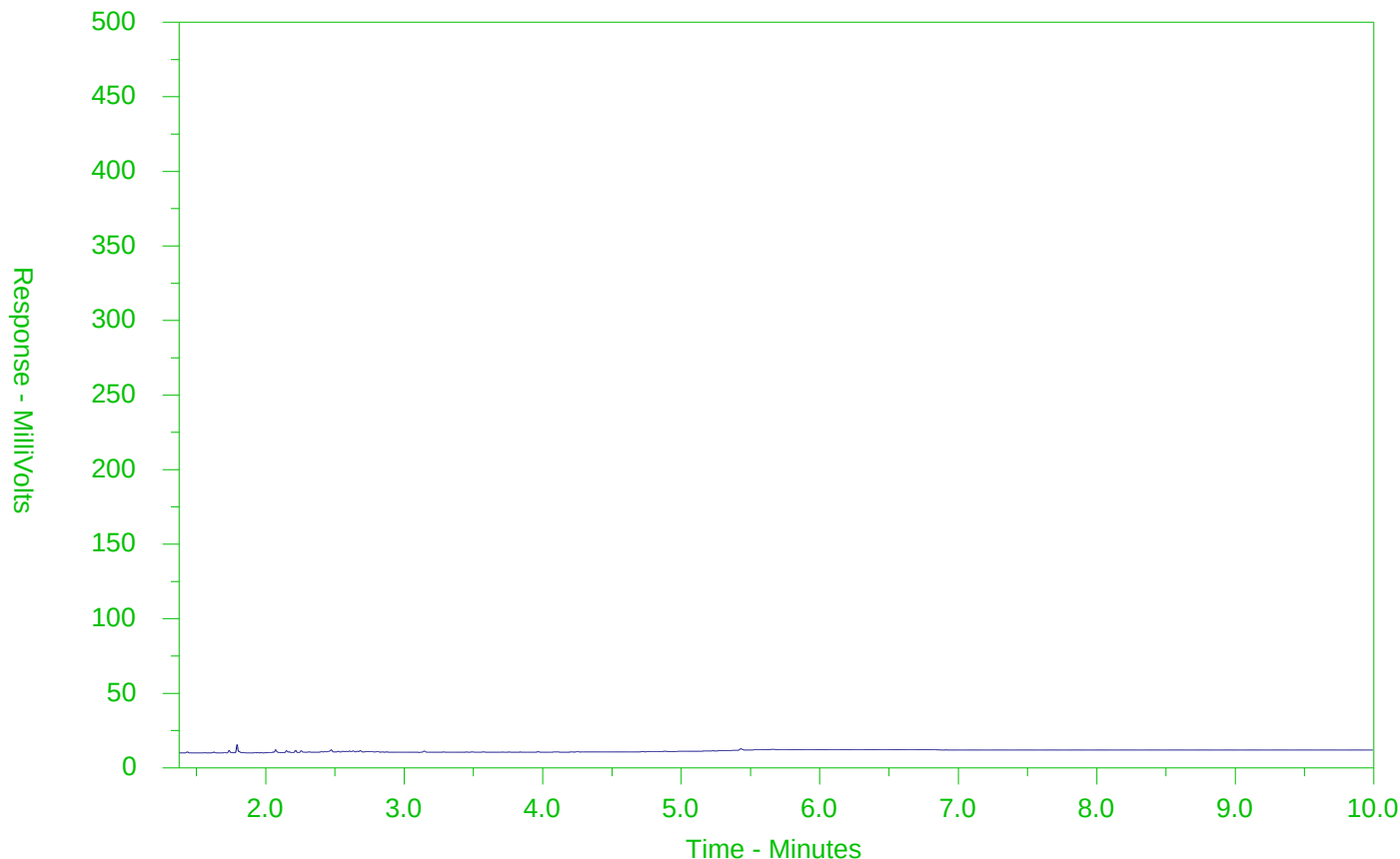
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2447392-2
Client Sample ID: BH-M1-2



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

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

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

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

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



www.alsglobal.com

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REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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OCTOBER 2015 EBC

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

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