



CHUNG & VANDER DOELEN
ENGINEERING LTD.

PHASE II ENVIRONMENTAL SITE ASSESSMENT

1894 & 1922 WITMER ROAD
PETERSBURG, ONTARIO

SUBMITTED TO:
Mr. Rick Esbaugh
Tri City Lands
P.O. Box 209
Petersburg, ON
N0B 2H0

FILE NO.: E17413 / July 20, 2017



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July 20, 2017
FILE NO.: E17413

Mr. Rick Esbaugh
Tri City Lands
P.O. Box 209
Petersburg, ON
N0B 2H0

Dear Mr. Esbaugh:

RE: PHASE II ENVIRONMENTAL SITE ASSESSMENT
1894 & 1922 WITMER ROAD
PETERSBURG, ONTARIO

We are enclosing one (1) copy of our Phase I ESA report conducted for the above-referenced property.

If you have any questions or clarifications are required, please contact the undersigned at your convenience.

We thank you for giving us this opportunity to be of service to you.

Yours truly,

CHUNG & VANDER DOELEN ENGINEERING LTD.

Michael J. Lefebvre, P.Geo.
Manager, Environmental Services

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1.0 EXECUTIVE SUMMARY

CHUNG AND VANDER DOELEN ENGINEERING LTD. (CVD) was retained by Mr. Rick Esbaugh of Tri City Lands to conduct a Phase II Environmental Site Assessment (ESA) of the property located at 1894 & 1922 Witmer Road in Petersburg, Ontario (hereinafter referred to as the "Site").

The purpose of the Phase II ESA was to investigate the soil and groundwater conditions at the Site within areas of potential environmental concerns (APECs) that were identified in the CVD Phase I ESA. The scope of work included the removal of underground storage tanks (USTs), waste oil drum disposal, excavation of hydrocarbon impacted soils, and the installation of a monitoring well. It is understood that this Phase II ESA investigation is for due diligence purposes for a real estate transaction and that a Record of Site Condition (RSC) is not intended for the Site at this time.

The Site is an irregular-shaped agricultural and rural residential property that covers a plan area of approximately 65.3 ha. Surrounding land uses are primarily agricultural and rural residential. The southeast corner of the Site is addressed as 1894 Witmer Road and is improved with a bungalow for rural residential land use since 1961. The remainder of the property is addressed as 1922 Witmer Road and is primarily agricultural fields with derelict and/or demolished commercial farm structures (i.e. barns, silos, livestock pens, feed processing facility) on the southern end of the property.

The Phase II ESA scope of work was based on providing a due diligence evaluation of the soil and groundwater conditions within APECs identified in a CVD Phase I ESA of the Site. The APECs were identified from potentially contaminating activities (PCAs) associated with historical commercial farming activities at the Site.

As such, CVD conducted the following scope of work:

- One (1) borehole (MW1) was advanced on the Site to characterize the underlying soil conditions. A monitoring well was installed in MW1 to assess the groundwater conditions.
- UST Removal: Two (2) underground storage tanks (USTs) that were identified in the CVD Phase I ESA were excavated for disposal. Hydrocarbon impacted soils identified during the tank pull were excavated and stockpiled on-Site for bioremediation.
- Waste Oil Drum Disposal and Cleanup: Corroded waste oil drums that were identified in the CVD Phase I ESA were emptied by a vacuum truck and transported off-Site for disposal. The hydrocarbon stained concrete pad and some underlying soils were excavated for disposal and bioremediation, respectively.
- Soil samples were submitted for chemical analyses which included metals, benzene, toluene, ethylbenzene and xylenes (BTEX) and petroleum hydrocarbons (PHC) F1-F4.
- Groundwater samples were submitted for chemical analyses, including volatile organic compounds (VOCs), benzene, toluene, ethylbenzene and xylenes (BTEX), PHC F1-F4, and dissolved metals.



- A report of findings and conclusions was prepared.

The borehole was located in the following area with the following rationale (Figure 2):

- MW1 was located between the former private fuel outlet and the maintenance shop building. The purpose of MW1 was to assess the soil and groundwater conditions adjacent to the former USTs beneath the private fuel outlet and former aboveground storage tanks (ASTs) within the maintenance shop building.

The Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act dated April 15, 2011 established in accordance with the amended Ontario Regulation 153/04 was consulted in the assessment of the soil and groundwater on the property.

The Township of Wilmot relies on groundwater as a source of potable water and the Site include a pond. The analytical results were therefore compared to the Ministry of the Environment & Climate Change (MOECC) Table 8, Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Ground Water Condition. The Site is currently used for agricultural and residential land uses, therefore, the soil and groundwater results were compared to the residential / parkland / institutional / industrial / commercial / community property use (herein referred to as the “applicable Table 8 standards”).

The overall findings of the Phase II ESA conclude the following:

- One (1) borehole (MW1) was advanced on the Site to characterize the underlying soil conditions. A monitoring well was installed in borehole MW1 to assess the groundwater conditions.
- The analytical results of soil samples selected for analysis from MW1 reported concentrations of metals, BTEX and PHC F1-F4, that were either not detected or were below the applicable Table 8 standards.
- The analytical results of groundwater samples selected for analysis from MW1 reported concentrations of dissolved metals, VOCs, BTEX and PHC F1-F4 that were either not detected or were below the applicable Table 8 standards.
- The USTs related to the private fuel outlet and hydrocarbon impacted soil associated with the USTs were removed by a licensed contractor. The analytical results of confirmatory soil samples taken from the tank pull and soil excavation reported concentrations of metals, BTEX and PHC F1-F4, that were either not detected or were below the applicable Table 8 standards. Based on these results, it is expected that all hydrocarbon impacted soils have been removed from this area.



- Waste oil drums that were identified on the Site were emptied and disposed by A-1 Sanitation and Ground Force Environmental Inc., respectively. The waste oil stained concrete pad and hydrocarbon impacted soils were subsequently excavated for disposal and bioremediation, respectively. The analytical results of the final confirmatory soil samples taken from below the concrete pad reported that all BTEX and PHC F1-F4 parameters were either not detected or were below the applicable Table 8 standards. Based on these results, it is expected that all hydrocarbon impacted soils have been removed from this area.
- A test pit and soil sampling program that was completed to investigate the imported fill material (construction debris mixed with soil) that was identified on the east central portion of the Site. Analytical results did not identify any metal parameters that exceeded the applicable Table 8 standards. The fill is not expected to pose environmental liabilities to the Site.
- Hydrocarbon impacted soils that were excavated from where the USTs were located and the waste drum oil area have been stockpiled on-Site for bioremediation treatment by Ground Force Environmental Inc.



2.0 INTRODUCTION

2.1 Site Description

CHUNG AND VANDER DOELEN ENGINEERING LTD. (CVD) was retained by Mr. Rick Esbaugh of Tri City Lands to conduct a Phase II Environmental Site Assessment (ESA) of the property located at 1894 & 1922 Witmer Road in Petersburg, Ontario (hereinafter referred to as the "Site").

The purpose of the Phase II ESA was to investigate the soil and groundwater conditions at the Site within areas of potential environmental concerns (APECs) that were identified in the CVD Phase I ESA. The scope of work included the removal of underground storage tanks (USTs), waste oil drum disposal, excavation of hydrocarbon impacted soils, and the installation of a monitoring well. It is understood that this Phase II ESA investigation is for due diligence purposes for a real estate transaction and that a Record of Site Condition (RSC) is not intended for the Site at this time.

The Site is an irregular-shaped agricultural and rural residential property that covers a plan area of approximately 65.3 ha. Surrounding land uses are primarily agricultural and rural residential. The southeast corner of the Site is addressed as 1894 Witmer Road and is improved with a bungalow for rural residential land use since 1961. The remainder of the property is addressed as 1922 Witmer Road and is primarily agricultural fields with derelict and/or demolished commercial farm structures (i.e. barns, silos, livestock pens, feed processing facility) on the southern end of the property.

A key plan of the Site is provided in Figure 1. A borehole location plan is enclosed in Figure 2.

2.2 Applicable Site Condition Standard

The Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act dated April 15, 2011 established in accordance with the amended Ontario Regulation 153/04 was consulted in the assessment of the soil and groundwater on the property.

The Township of Wilmot relies on groundwater as a source of potable water and the Site include a pond. The analytical results were therefore compared to the Ministry of the Environment & Climate Change (MOECC) Table 8, Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Ground Water Condition.

The Site is currently used for agricultural and residential land uses, therefore, the soil and groundwater results were compared to the residential / parkland / institutional / industrial / commercial / community property use (herein referred to as the "applicable Table 8 standards").



3.0 BACKGROUND INFORMATION

3.1 Physical Setting

According to the Ministry of Northern Development and Mines Map 2559 entitled “Quaternary Geology, Stratford Area,” the Site is located in a physiographic region of Late Wisconsinan undivided ice-contact sand and gravel.

According to Map 2544, “Bedrock Geology of Southern Ontario, Southern Sheet”, the bedrock in the area generally consists of Upper Silurian limestone, dolostone, shale, sandstone, gypsum and salt of the Salina Formation.

The nearest surficial body of water is a pond located along the mid-eastern limits of the Site.

3.2 Past Investigations

A Phase I ESA of the Site was completed by CVD in May 2017. The findings and conclusions of the Environmental Investigation was documented in the following report:

- “Phase I Environmental Site Assessment, 1894 & 1922 Witmer Road, Petersburg, Ontario” dated May, 2017.

The Phase I ESA identified potential contaminating activities (PCAs) and APECs on the Site that were associated with historical commercial farming activities. These included the storage of corroded waste oil drums adjacent to the silos, a private fuel outlet with USTs, and imported fill material (construction debris mixed with soil).

A Phase II ESA was recommended to evaluate the potential environmental liabilities associated with the PCAs and APECs identified by the Phase I ESA. In addition, the removal of the USTs, waste oil drum disposal and cleanup, and an evaluation and/or disposal of imported fill materials were recommended.

As identified in the CVD Phase I ESA, a test pit and soil sampling program was completed by CVD in May 2017 to evaluate the potential environmental liabilities of the imported fill material (construction debris mixed with soil). The findings and conclusions of the Environmental Investigation was documented in the following summary letter:

- “Test Pit and Soil Sampling Program, 1894 & 1922 Witmer Road, Petersburg, Ontario” dated May, 2017.

The analytical results of imported fill (construction debris) from test pits did not identify any metals parameters that exceeded the applicable Table 8 standards. Therefore, the imported fill material was concluded to be “clean” and not pose an environmental concern to the Site at this time. A copy of the investigation is included in Appendix F.



4.0 SCOPE OF THE INVESTIGATION

4.1 Overview of the Investigation

The Phase II ESA scope of work was based on providing a due diligence evaluation of the soil and groundwater conditions within APECs identified in a CVD Phase I ESA of the Site. The APECs were identified from potentially contaminating activities (PCAs) associated with historical commercial farming activities at the Site.

As such, CVD conducted the following scope of work:

- One (1) borehole (MW1) was advanced on the Site to characterize the underlying soil conditions. A monitoring well was installed in MW1 to assess the groundwater conditions.
- UST Removal: Two (2) underground storage tanks (USTs) that were identified in the CVD Phase I ESA were excavated for disposal. Hydrocarbon impacted soils identified during the tank pull were excavated and stockpiled on-Site for bioremediation.
- Waste Oil Drum Disposal and Cleanup: Corroded waste oil drums that were identified in the CVD Phase I ESA were emptied by a vacuum truck and transported off-Site for disposal. The hydrocarbon stained concrete pad and some underlying soils were excavated for disposal and bioremediation, respectively.
- Soil samples were submitted for chemical analyses which included metals, benzene, toluene, ethylbenzene and xylenes (BTEX) and petroleum hydrocarbons (PHC) F1-F4.
- Groundwater samples were submitted for chemical analyses, including volatile organic compounds (VOCs), benzene, toluene, ethylbenzene and xylenes (BTEX), PHC F1-F4, and dissolved metals.

A report of findings and conclusions was prepared.

4.2 Media Investigated

The borehole was located in the following area with the following rationale (Figure 2):

- MW1 was located between the former private fuel outlet and the maintenance shop building. The purpose of MW1 was to assess the soil and groundwater conditions adjacent to the former USTs beneath the private fuel outlet and former aboveground storage tanks (ASTs) within the maintenance shop building.



5.0 INVESTIGATION METHOD

5.1 General

The Phase II ESA was completed using standard engineering and scientific judgement, principles and practices, and was conducted in general accordance with the amended Ontario Regulation 153/04.

The drilling program was conducted on July 4th, 2017. The work was overseen by a representative of CVD, and was conducted using standard field protocols. A photograph of the drilling activities is provided in Appendix E.

The removal of two (2) USTs and the removal of hydrocarbon impacted soil was conducted on June 15, 2017. The work was overseen by a representative of CVD, and was conducted using standard field protocols. A photograph of the tank pull is provided in Appendix E.

Waste oil drums disposal and cleanup of hydrocarbon impacted concrete/soil was conducted between June 15 and June 16, 2017. The work was overseen by a representative of CVD, and was conducted using standard field protocols. A photograph of the excavation is provided in Appendix E.

Prior to commencing the drilling activities, the locations of natural gas, sewer, water, telephone and electrical services were located and cleared by contacting Ontario One Call.

5.2 Borehole Drilling

CVD directed and supervised the advancement of one (1) borehole using a track-mounted CME-75 drill rig with hollow stem augers that was operated by Aardvark Drilling Inc. of Guelph, Ontario. The borehole locations are provided on Figure 2.

Soil samples were collected from each spilt spoon interval. The boreholes were advanced to depths of up to 19.81 metres below ground surface (mbgs), where sufficient groundwater was available for sampling and native soil deposits were fully exposed.

5.3 UST Removal and Soil Excavation

CVD directed and supervised the removal of two (2) 500-gallon fuel USTs associated with a private fuel outlet. Excavation and removal activities were performed by Ground Force Environmental Inc., a PM2 Petroleum Equipment Mechanic licensed by the Technical Standards and Safety Authority (TSSA), using a track-mounted excavator.

The first UST was observed to be in good condition upon removal from the excavation with limited pitting, corrosion or perforations on the walls and/or base of the tank. The second UST was observed to be in poor condition upon removal from the excavation, with many perforations on the base of the tank. Hydrocarbon impacted soil was identified directly beneath the USTs and were excavated and stockpiled on-Site for bioremediation to be completed by Ground Force Environmental Inc.



The resulting excavation area measured approximately 7 m in length and 7 m in width (49 m²) with a final depth of 5.5 m.

Confirmatory sampling and testing was conducted in accordance with requirements of Section 4 of the Use of the MOECC's Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario (GSAM). The procedure recommended by this guidance document involves collecting samples from excavated sidewalls on a 5 m² grid pattern and the excavated floor on a 10 m² grid pattern for CSV headspace measurements, and submitting the samples exhibiting the highest CSV readings for chemical analysis. The confirmatory sampling and testing was also in accordance with the TSSA's requirements and Best Management Practice (BMP).

Based on the laboratory testing requirements of GSAM Table 4.1a for excavation greater than 25 m² but less than 50 m², confirmatory samples 1-1 to 1-3: Floor, 1-4: North Wall, 1-5: East Wall, 1-6: South Wall, 1-7: West Wall were submitted for chemical analysis of benzene, toluene, ethyl benzene, and xylenes (BTEX) and petroleum hydrocarbon fraction F1 to F4 (PHC F1-F4) to ALS Laboratory Group, a Canadian Association for Laboratory Accreditation Inc. (CALA) and Standards Council of Canada (SCC) accredited lab, in Waterloo, Ontario.

5.4 Waste Oil Drum Disposal and Cleanup

CVD directed and supervised the disposal of waste oil drums and the excavation of the underlying oil stained concrete pad and soils. The waste oils within the drums were pumped out via a vacuum truck operated by A-1 Sanitation of Puslinch, Ontario on June 15, 2017. The drums were subsequently removed for off-Site disposal by Ground Force Environmental Inc.

The waste oil stained concrete pad was excavated by Ground Force Environmental Inc. on June 16, 2017. The concrete waste was removed for off-Site disposal. The excavation area measured approximately 12 m in length and 13 m in width (156 m²) with a depth of up to 0.15 m (thickness of the concrete pad).

Confirmatory sampling and testing for hydrocarbons was conducted on soils underlying the concrete pad. Four (4) floor samples, 2-1 to 2-4, were initially collected and submitted for chemical analysis of BTEX and PHC F1-F4 to ALS Laboratory Group. Analytical results identified that the PHC F3-F4 concentrations of sample 2-1 exceeded the applicable Table 8 standards.

Soil excavation in the area of impact, as identified by sample 2-1, was conducted on June 23, 2017. The final confirmatory floor sample, 2-5, was taken to confirm all hydrocarbon impacted soil underlying the concrete pad has been removed.



5.5 Soil Sampling / Field Screen Measurements

All collected soil samples were logged for physical characteristics, as well as olfactory and visual evidence of contamination. In addition to visual and olfactory observations, soil samples were field screened for head space VOC concentrations using the MiniRAE 3000 PID to further direct the investigation. Soil vapour readings were not registered above 0.0 ppm.

Where soil samples were suspected of being impacted, five (5) grams of the soil was collected using a designated sampler and placed into a pre-weighed laboratory supplied vial of methanol. As well, a portion of the soil sample was placed directly into a laboratory supplied glass jar. The samples were either kept in a refrigerated environment or on ice until such time as they could be delivered to an accredited laboratory for chemical analysis.

5.6 Groundwater Monitoring Well Installation

A monitoring well was installed in MW1. The groundwater monitoring well were constructed of a clean 50 mm diameter 'Triloc' PVC pipe with a 3 m long screened interval. The riser portion of the well was backfilled with bentonite. A 0.3 m concrete seal was placed above the backfill. The monitoring wells were capped and covered with aluminum flush-mount well casings.

5.7 Groundwater Sampling

Groundwater sampling was conducted in accordance with the Ministry of the Environment & Climate Change (MOECC) document entitled "Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario" dated December 1996 and the amended Ontario Regulation 153/04.

New dedicated, Waterra tubing was installed in the monitoring wells to obtain groundwater samples. The monitoring wells were developed by purging three or more well volumes prior to sampling. Groundwater samples were collected from pumping the Waterra tubing with an attached foot valve. The groundwater samples were placed in laboratory prepared containers and either refrigerated or stored in a cooler with ice from the time of sampling until delivery to the laboratory.

5.8 Analytical Testing

Soil and groundwater samples were submitted to ALS Laboratory Group (CAEAL accredited laboratory) in Waterloo, Ontario, for chemical analyses. The soil and groundwater samples submitted to the laboratory were representative of the conditions encountered during the drilling program. The following tables summarize the selected soil and groundwater samples tested.



Borehole and Monitoring Well:

Sample Id.	Depth (m)	Matrix	Testing Rationale	Laboratory Analyses
MW1-2	0.76 – 1.37	Soil	Verify pH value in surficial soil is within the acceptable range of 5.0 to 9.0.	pH
MW1-3	1.52 – 2.13	Soil	Chemical characterisation of subsurface soil at depth below former USTs.	Metals, BTEX, PHC F1-F4
MW1-7	4.57 – 5.18	Soil	Chemical characterisation of subsurface soil at a depth equivalent to the bottom end of the UST excavation pit; Verify subsurface soil is within the acceptable range of 5.0 to 11.0.	Metals, BTEX, PHC F1-F4, pH
MW1	17.45	Groundwater	Chemical characterisation of groundwater at the location adjacent to former fuel USTs and the former AST within the maintenance shop building.	Metals, BTEX, PHC F1-F4

Tank Pull and Soil Excavation:

Sample Id.	Depth (m)	Matrix	Testing Rationale	Laboratory Analyses
1-1	5.49 – 5.79	Soil	Confirmatory soil sampling of subsurface soil at the base of the UST excavation pit.	BTEX, PHC F1-F4
1-2	5.49 – 5.79	Soil	Confirmatory soil sampling of subsurface soil at the base of the UST excavation pit.	Metals, BTEX, PHC F1-F4
1-3	5.49 – 5.79	Soil	Confirmatory soil sampling of subsurface soil at the base of the UST excavation pit.	BTEX, PHC F1-F4
1-4	4.57 – 4.88	Soil	Confirmatory soil sampling of subsurface soil at the northern face of the UST excavation pit.	BTEX, PHC F1-F4
1-5	4.57 – 4.88	Soil	Confirmatory soil sampling of subsurface soil at the eastern face of the UST excavation pit	BTEX, PHC F1-F4
1-6	4.57 – 4.88	Soil	Confirmatory soil sampling of subsurface soil at the southern face of the UST excavation pit	BTEX, PHC F1-F4
1-7	4.57 – 4.88	Soil	Confirmatory soil sampling of subsurface soil at the western face of the UST excavation pit	BTEX, PHC F1-F4



Waste Oil Drum Disposal and Cleanup:

Sample Id.	Depth (m)	Matrix	Testing Rationale	Laboratory Analyses
2-1	0.15 – 0.31	Soil	Confirmatory soil sampling of surface soil underlying the waste oil drum storage pad.	BTEX, PHC F1-F4
2-2	0.15 – 0.31	Soil	Confirmatory soil sampling of surface soil underlying the waste oil drum storage pad.	BTEX, PHC F1-F4
2-3	0.15 – 0.31	Soil	Confirmatory soil sampling of surface soil underlying the waste oil drum storage pad.	BTEX, PHC F1-F4
2-4	0.15 – 0.31	Soil	Confirmatory soil sampling of surface soil underlying the waste oil drum storage pad.	BTEX, PHC F1-F4
2-5	0.46 – 0.61	Soil	Confirmatory soil sampling of surface soil underlying the waste oil drum storage pad.	BTEX, PHC F1-F4

6.0 REVIEW AND EVALUATION

6.1 Geology

As determined from the borehole log, the Site stratigraphy consists of fine to medium sand with trace gravel to a depth of 19.81 mbgs. Borehole logs are provided in Appendix B.

6.2 Groundwater Elevations and Flow Direction

A comprehensive groundwater elevation survey could not be completed on the Site as a minimum of three (3) groundwater monitoring wells are required to establish a groundwater flow direction. The direction of groundwater flow is inferred to follow topography and flow east towards a pond and Alder Creek.

Groundwater was measured in the monitoring well at 17.45 mbgs on July 5, 2017.

6.3 Soil Quality

The analytical results of the soil samples selected for analysis from borehole MW1 reported that all metals, BTEX, and PHC F1-F4 parameters were either not detected or were below the applicable Table 8 standards.



The analytical results of the confirmatory soil samples from the UST removal reported that all metals, BTEX and PHC F1-F4 parameters were either not detected or were below the applicable Table 8 standards. Based on these results, it is expected that all hydrocarbon impacted soils related to the USTs have been excavated for bioremediation.

The analytical results of the confirmatory soil samples from the waste oil drum removal and cleanup reported PHC F3-F4 parameters from sample 2-1 that exceeded the applicable Table 8 standards. An additional 0.30 m of soil was excavated from the top of the impacted zone and the additional confirmatory soil sample (2-5) that was taken reported that all BTEX and PHC F1-F4 parameters were either not detected or were below the applicable Table 8 standards. Based on these results, it is expected that all hydrocarbon impacted soils underlying the oil stained concrete pad have been excavated for bioremediation.

Highly acidic or alkaline soil can cause contaminants to behave differently from the manner assumed in the generic models, making the generic standards inappropriate for use at a property with pH levels outside the acceptable pH range.

The pH result from sample MW1-2 (7.60) indicates that the surface soil chemistry on the Site is within the acceptable pH range of 5.0 to 9.0. The pH result from MW1-7 (8.02) indicates that the subsurface soil chemistry on the Site is within the acceptable pH range of 5.0 to 11.0. Surface soil is defined as soil that is no more than 1.5 metres beneath the soil surface. Subsurface soil is defined as soil that is more than 1.5 metres beneath the soil surface.

The certificates of chemical analysis and results are enclosed in Appendix D. A comparison of the soil chemistry results to the applicable Table 8 standards is included in Appendix C.

6.4 Groundwater Quality

The analytical results of the groundwater samples selected for analysis from monitoring well MW1 reported that all metals, BTEX, and PHC F1-F4 parameters were either not detected or were below the applicable Table 8 standards.

The certificates of chemical analysis and results are enclosed in Appendix D. A comparison of the groundwater chemistry results to the applicable Table 8 standards is included in Appendix C.

6.5 Quality Assurance and Quality Control Results

Soil and groundwater samples are submitted to ALS Laboratory Group (CAEAL accredited laboratory) in Waterloo, Ontario, for chemical analyses. CAEAL accredited laboratories provide internal quality control measures. Quality control measures include instrument quality control and method quality control.

Instrument QC samples demonstrate control for the instrumental portion of a method. Instrument QC requirements must be successfully met before the analysis of method QC or samples may proceed.



Instrument QC includes the following:

- Verification of initial calibration - criteria varies with each test.
- Second source Calibration Verification Standard (CVS) – at minimum, with each initial calibration.
- Continuing Calibration Verification (CCV) – frequency varies by test
- Instrument blanks – usage and frequency varies by test.

Results of laboratory analyses are carefully examined and compared to field observations including headspace readings. Where appropriate, re-sampling is conducted to ensure validity of all results. CVD followed standard QA/QC field protocols, which included dedicated sampling equipment, gloves, sample preservation, etc.

CVD has reviewed the Report of Analysis and QC Summary furnished by ALS Laboratory Group, and has determined that sampling, data, and reporting quality requirements were fulfilled. The results of the chemical analyses are therefore considered reliable and complete.



7.0 CONCLUSIONS

CVD conducted a Phase II ESA on the property located at 1894 & 1922 Witmer Road in Petersburg, Ontario. The purpose of the Phase II ESA was to investigate the soil and groundwater conditions at the Site within APECs identified by the CVD Phase I ESA.

The overall findings of the Phase II ESA conclude the following:

- One (1) borehole (MW1) was advanced on the Site to characterize the underlying soil conditions. A monitoring well was installed in borehole MW1 to assess the groundwater conditions.
- The analytical results of soil samples selected for analysis from MW1 reported concentrations of metals, BTEX and PHC F1-F4, that were either not detected or were below the applicable Table 8 standards.
- The analytical results of groundwater samples selected for analysis from MW1 reported concentrations of dissolved metals, VOCs, BTEX and PHC F1-F4 that were either not detected or were below the applicable Table 8 standards.
- The USTs related to the private fuel outlet and hydrocarbon impacted soil associated with the USTs were removed by a licensed contractor. The analytical results of confirmatory soil samples taken from the tank pull and soil excavation reported concentrations of metals, BTEX and PHC F1-F4, that were either not detected or were below the applicable Table 8 standards. Based on these results, it is expected that all hydrocarbon impacted soils have been removed from this area.
- Waste oil drums that were identified on the Site were emptied and disposed by A-1 Sanitation and Ground Force Environmental Inc, respectively. The waste oil stained concrete pad and hydrocarbon impacted soils were subsequently excavated for disposal and bioremediation, respectively. The analytical results of the final confirmatory soil samples taken from below the concrete pad reported that all BTEX and PHC F1-F4 parameters were either not detected or were below the applicable Table 8 standards. Based on these results, it is expected that all hydrocarbon impacted soils have been removed from this area.
- A test pit and soil sampling program that was completed to investigate the imported fill material (construction debris mixed with soil) that was identified on the east central portion of the Site. Analytical results did not identify any metal parameters that exceeded the applicable Table 8 standards. The fill is not expected to pose environmental liabilities to the Site.
- Hydrocarbon impacted soils that were excavated from where the USTs were located and the waste drum oil area have been stockpiled on-Site for bioremediation treatment by Ground Force Environmental Inc.



8.0 CLOSURE

The American Society of Testing and Materials Standard of Practice notes that no environmental site assessment can wholly eliminate uncertainty regarding the potential for recognized environmental conditions in connection with a property. Performance of a standardized environmental site assessment protocol is intended to reduce, but not eliminate, uncertainty regarding the potential for recognized environmental conditions in connection with the property, given reasonable limits of time and cost.

This report has been prepared for the exclusive use of Tri City Lands for specific application to this project property. The environmental investigation was conducted in accordance with the verbal and written requests from the Client, and generally accepted assessment practices. No other warranty, expressed or implied, is made. The limitations of this report are specified in Appendix A.

Respectfully submitted,

CHUNG & VANDER DOLEN ENGINEERING LTD.

Peter Dao, M.Sc., P.Geo.
Environmental Scientist

Eric Y. Chung, M.Eng., P.Eng.
Principal Engineer



9.0 REFERENCES

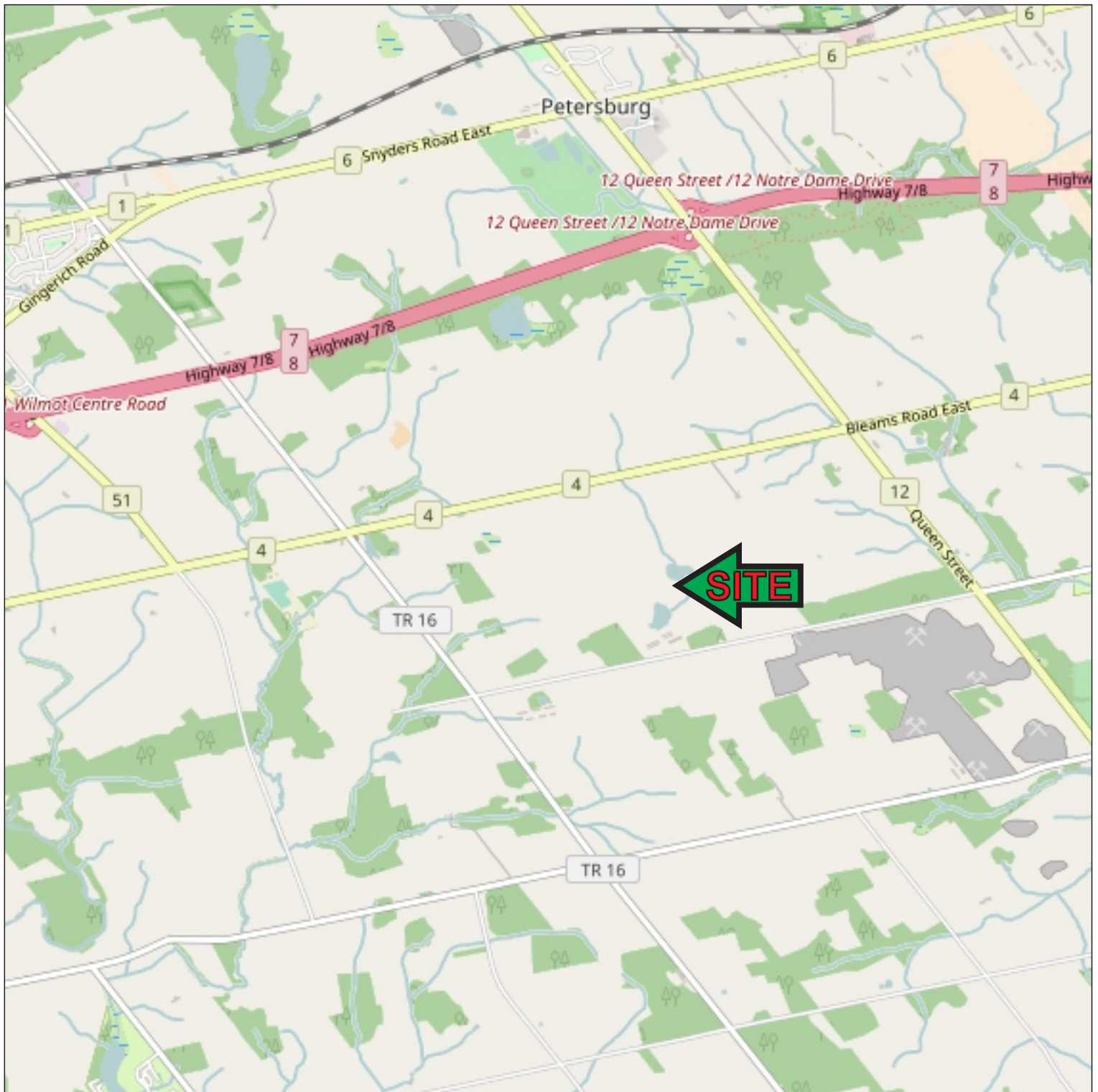
The following documents, maps, or other publications may have been used in the preparation of this report.

- Chung & Vander Doelen Engineering Ltd., "Phase I Environmental Site Assessment, 1894 & 1922 Witmer Road, Petersburg, Ontario", Dated May 2017.
- Chung & Vander Doelen Engineering Ltd., "Re: Test Pit and Soil Sampling Program, 1894 & 1922 Witmer Road, Petersburg, Ontario", Dated May 2017.
- Ontario Ministry of Northern Development and Mines, Map 2544, "Bedrock Geology of Southern Ontario – Southern Sheet," 1991.
- Ministry of Northern Development and Mines Map 2559, "Quaternary Geology, Stratford Area," 1993.



FIGURE 1
KEY PLAN





**CHUNG & VANDER DOELEN
ENGINEERING LTD.**

311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979



KEY PLAN 1894 & 1922 WITMER ROAD PETERSBURG, ONTARIO	Date:	JULY 2017
	Scale:	NTS
	File No.:	E17413
	Figure:	1

FIGURE 2
BOREHOLE LOCATION AND
EXCAVATION PLAN





LEGEND



UST EXCAVATION



OIL DRUMS EXCAVATION



MONITORING WELL



CHUNG & VANDER DOELEN
ENGINEERING LTD.

311 Victoria Street North
Kitchener / Ontario / N2H 5E1
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BOREHOLE LOCATION AND EXCAVATION PLAN 1894 & 1922 WITMER ROAD PETERSBURG, ONTARIO	Date:	JULY 2017
	Scale:	NTS
	File No.:	E17413
	Figure:	2

FIGURE 3
CHEMICAL CONCENTRATIONS IN
SOIL & GROUNDWATER PLAN





LEGEND



UST EXCAVATION



OIL DRUMS EXCAVATION



MONITORING WELL



**CHUNG & VANDER DOELEN
ENGINEERING LTD.**

311 Victoria Street North
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CHEMICAL CONCENTRATION PLAN

1894 & 1922 WITMER ROAD
PETERSBURG, ONTARIO

Date: JULY 2017

Scale: NTS

File No.: E17413

Figure: 3

APPENDIX A LIMITATIONS



STATEMENT OF LIMITATIONS

1. The work performed in this report was carried out in accordance with the Standard Terms of Conditions made part of our contract. The conclusions presented herein are based solely upon the scope of services and time and budgetary limitations described in our contract.
2. The report has been prepared in accordance with generally accepted environmental study and/or engineering practices. No other warranties, either expressed or implied, are made as to the professional services provided under the terms of our contract and included in this report.
3. The services performed and outlined in this report were based, in part, upon visual observations of the site and attendant structures. Our opinion cannot be extended to portions of the site which were unavailable for direct observation, reasonably beyond the control of CHUNG & VANDER DOELEN ENGINEERING LTD.
4. The objective of this report was to assess environmental conditions at the site, within the context of our contract and existing environmental regulations within the applicable jurisdiction. Evaluating compliance of past or future owners with applicable local, provincial and federal government laws and regulations was not included in our contract for services.
5. CHUNG & VANDER DOELEN ENGINEERING LTD. has relied in good faith on information and services provided by others while conducting the record search. We accept no responsibility for any deficiency, misstatements or inaccuracies contained in this report as a result of omission, misinterpretation or fraudulent acts of the services used.
6. It should be noted that the observations and recommendations presented in this report are limited to the actual locations explored. The information presented in terms of the thickness and types of the subsoils encountered, groundwater levels, and chemical testing results, etc., are only applicable to the actual locations explored. Variations may be present between these locations. Should significant variation become apparent during later investigations, it may be necessary to reevaluate the findings of this report.
7. The conclusions of this report are based in part, on the information provided by others. The possibility remains that unexpected environmental conditions may be encountered at the site in locations not specifically investigated. Should such an event occur, CHUNG & VANDER DOELEN ENGINEERING LTD. must be notified in order that we may determine if modifications to our conclusions are necessary.



APPENDIX B

BOREHOLE LOGS



FILE No: E17413**BOREHOLE No. MW1**Client: **Tri City Lands**Project: **Phase II Environmental Site Assessment**Location: **1894 & 1922 Witmer Road, Petersburg, Ontario****EQUIPMENT DATA**Machine: **CME-75**Method: **Hollow Stem Auger**Size: **107 mm I.D.**Date: **Jul 04 / 17 TO Jul 04 / 17**

SOIL LITHOLOGY			SAMPLE			SHEAR STRENGTH (kPa)				WATER CONTENT (%)			WELL DATA	DEPTH (m)	REMARKS	
ELEV./ DEPTH (m)	DESCRIPTION	DEPTH (m)	SYMBOL	SAMPLE ID	TYPE	N-VALUE	FIELD VANE: Peak ⊗ Rem. × LAB TEST: Unc. ■ P.P. □ 50 100 150 200				W _p W W _L ↗ ○ ↖ 10 20 30					
	Ground Elevation:						PENETRATION RESISTANCE STANDARD ● DYN. CONE ○									
0.61	TOPSOIL	0.5		1-1	SS	11	●									steel monument casing set in concrete
	sand, trace silt, rootlets, organics, brown, moist	1.0		1-2	SS	2	●									
		loose to compact, brown	1.5		1-3	SS	10	●								
	SAND		2.0		1-4	SS	37									
		fine to medium sand, trace gravel	2.5					●								
	dry to saturated		3.0		1-5	SS	31									
			3.5					●								
		4.0		1-6	SS	41										bentonite seal
		4.5														
		5.0		1-7	SS	38										
		5.5		1-8	SS	38										
		6.0														
		6.5														
		7.0														
		7.5														
		8.0														50 mm I.D. PVC riser
	8.5															
	9.0															
	9.5															
	10.0															
	10.5															
	11.0															
	11.5															
	12.0															
	12.5															
	13.0															
	13.5															
	14.0															
	14.5															
	15.0															
	15.5															
	16.0															
	16.5															
	17.0															
	17.5														water level at 17.45 m depth on July 5, 2017	
	18.0															
	18.5															
	19.0														3.0 m long, 50 mm I.D. PVC screen with sandpack	
	19.5															
19.81	End of Borehole	20.0														
		20.5														

PROJECT MANAGER: **PD****CHUNG & VANDER DOELEN
ENGINEERING LTD.**311 Victoria Street North
Kitchener, Ontario N2H 5E1
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APPENDIX C
COMPARISON OF CHEMISTRY
RESULTS TO THE APPLICABLE
REGULATORY STANDARDS



ANALYTICAL RESULTS FOR GROUNDWATER

MOECC Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011

Table 8: Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Ground Water Condition for All Types of Property Use

		Table 8 standard	MW1
Metals	Antimony (Sb)-Dissolved	6	<0.10
	Arsenic (As)-Dissolved	25	0.21
	Barium (Ba)-Dissolved	1000	81.8
	Beryllium (Be)-Dissolved	4	<0.10
	Boron (B)-Dissolved	5000	30
	Cadmium (Cd)-Dissolved	2.7	0.017
	Chromium (Cr)-Dissolved	50	<0.50
	Cobalt (Co)-Dissolved	3.8	1.59
	Copper (Cu)-Dissolved	87	12.4
	Lead (Pb)-Dissolved	10	<0.050
	Molybdenum (Mo)-Dissolved	70	0.615
	Nickel (Ni)-Dissolved	100	2.21
	Selenium (Se)-Dissolved	10	0.223
	Silver (Ag)-Dissolved	1.5	<0.050
	Thallium (Tl)-Dissolved	2	0.056
	Uranium (U)-Dissolved	20	0.833
	Vanadium (V)-Dissolved	6.2	<0.50
	Zinc (Zn)-Dissolved	1100	6.3
Volatile Organic Compounds (VOCs)	Acetone	2700	<30
	Benzene	5	<0.50
	Bromodichloromethane	16	<2.0
	Bromoform	25	<5.0
	Bromomethane	0.89	<0.50
	Carbon tetrachloride	0.79	<0.20
	Chlorobenzene	30	<0.50
	Dibromochloromethane	25	<2.0
	Chloroform	2.4	<1.0
	1,2-Dibromoethane	0.2	<0.20
	1,2-Dichlorobenzene	3	<0.50
	1,3-Dichlorobenzene	59	<0.50
	1,4-Dichlorobenzene	1	<0.50
	Dichlorodifluoromethane	590	<2.0
	1,1-Dichloroethane	5	<0.50
	1,2-Dichloroethane	1.6	<0.50
	1,1-Dichloroethylene	1.6	<0.50
	cis-1,2-Dichloroethylene	1.6	<0.50
	trans-1,2-Dichloroethylene	1.6	<0.50
	Methylene Chloride	50	<5.0
	1,2-Dichloropropane	5	<0.50
	1,3-Dichloropropene (cis & trans)	0.5	<0.50
	Ethylbenzene	2.4	<0.50
	n-Hexane	51	<0.50
	Methyl Ethyl Ketone	1800	<20
	Methyl Isobutyl Ketone	640	<20
	MTBE	15	<2.0
	Styrene	5.4	<0.50
	1,1,1,2-Tetrachloroethane	1.1	<0.50
	1,1,2,2-Tetrachloroethane	1	<0.50
	Tetrachloroethylene	1.6	<0.50
	Toluene	22	<0.50
	1,1,1-Trichloroethane	200	<0.50
	1,1,2-Trichloroethane	4.7	<0.50
	Trichloroethylene	1.6	<0.50
	Trichlorofluoromethane	150	<5.0
	Vinyl chloride	0.5	<0.50
	Xylenes (Total)	300	<0.50
Petroleum Hydrocarbons (F1-F4)	F1 (C6-C10)	750	<25
	F1-BTEX	750	<25
	F2 (C10-C16)	150	<100
	F3 (C16-C34)	500	<250
	F4 (C34-C50)	500	<250

NOTES:

1. Units = ug/L

2. "-" = Parameter not included in chemical analysis

ANALYTICAL RESULTS FOR SOIL

MOECC Soil, Ground Water and Sediment Standards

for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011

Table 8: Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Ground Water Condition for Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use

		Table 8 standard	MW1-2 (0.76-1.37 m)	MW1-3 (1.52-2.13 m)	MW1-7 (4.57-5.18 m)	1-1 (5.49-5.79 m)	1-2 (5.49-5.79 m)	1-3 (5.49-5.79 m)	1-4 (4.57-4.88 m)	1-5 (4.57-4.88 m)
Metals	pH		7.6	-	8.02	-	-	-	-	-
	Antimony (Sb)	1.3	-	<1.0	<1.0	-	<1.0	-	-	-
	Arsenic (As)	18	-	2.1	1.7	-	1.3	-	-	-
	Barium (Ba)	220	-	15.4	6.9	-	6.6	-	-	-
	Beryllium (Be)	2.5	-	<0.50	<0.50	-	<0.50	-	-	-
	Boron (B)	36	-	6.6	<5.0	-	<5.0	-	-	-
	Cadmium (Cd)	1.2	-	<0.50	<0.50	-	<0.50	-	-	-
	Chromium (Cr)	70	-	7.3	4	-	5	-	-	-
	Cobalt (Co)	22	-	3.1	1.6	-	1.6	-	-	-
	Copper (Cu)	92	-	14.8	6.6	-	5.5	-	-	-
	Lead (Pb)	120	-	6.8	5.6	-	4.8	-	-	-
	Molybdenum (Mo)	2	-	<1.0	<1.0	-	<1.0	-	-	-
	Nickel (Ni)	82	-	6.3	3.4	-	3.5	-	-	-
	Selenium (Se)	1.5	-	<1.0	<1.0	-	<1.0	-	-	-
	Silver (Ag)	0.5	-	<0.20	<0.20	-	<0.20	-	-	-
	Thallium (Tl)	1	-	<0.50	<0.50	-	<0.50	-	-	-
	Uranium (U)	2.5	-	<1.0	<1.0	-	<1.0	-	-	-
	Vanadium (V)	86	-	14.8	9.4	-	11	-	-	-
	Zinc (Zn)	290	-	32.8	38.1	-	31.4	-	-	-
BTEX	Benzene	0.02	-	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
	Ethylbenzene	0.05	-	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
	Toluene	0.2	-	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
	Xylenes (Total)	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Petroleum Hydrocarbons (PHC)	F1 (C6-C10)	25	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	F1-BTEX	25	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	F2 (C10-C16)	10	-	<10	<10	<10	<10	<10	<10	<10
	F3 (C16-C34)	240	-	<50	<50	<50	<50	<50	<50	<50
	F4 (C34-C50)	120	-	<50	<50	<50	<50	<50	<50	<50

NOTES:

1. Units = ug/g (unless otherwise specified)
2. "-" = Parameter not included in chemical analysis

ANALYTICAL RESULTS FOR SOIL

MOECC Soil, Ground Water and Sediment Standards

for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011

Table 8: Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Ground Water Condition for Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use

		Table 8 standard	1-6 (4.57-4.88 m)	1-7 (4.57-4.88 m)	2-1 (0.15-0.31 m)	2-2 (0.15-0.31 m)	2-3 (0.15-0.31 m)	2-4 (0.15-0.31 m)	2-5 (0.46-0.61 m)
Metals	pH		-	-	-	-	-	-	-
	Antimony (Sb)	1.3	-	-	-	-	-	-	-
	Arsenic (As)	18	-	-	-	-	-	-	-
	Barium (Ba)	220	-	-	-	-	-	-	-
	Beryllium (Be)	2.5	-	-	-	-	-	-	-
	Boron (B)	36	-	-	-	-	-	-	-
	Cadmium (Cd)	1.2	-	-	-	-	-	-	-
	Chromium (Cr)	70	-	-	-	-	-	-	-
	Cobalt (Co)	22	-	-	-	-	-	-	-
	Copper (Cu)	92	-	-	-	-	-	-	-
	Lead (Pb)	120	-	-	-	-	-	-	-
	Molybdenum (Mo)	2	-	-	-	-	-	-	-
	Nickel (Ni)	82	-	-	-	-	-	-	-
	Selenium (Se)	1.5	-	-	-	-	-	-	-
	Silver (Ag)	0.5	-	-	-	-	-	-	-
	Thallium (Tl)	1	-	-	-	-	-	-	-
	Uranium (U)	2.5	-	-	-	-	-	-	-
	Vanadium (V)	86	-	-	-	-	-	-	-
	Zinc (Zn)	290	-	-	-	-	-	-	-
BTX	Benzene	0.02	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
	Ethylbenzene	0.05	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
	Toluene	0.2	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
	Xylenes (Total)	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Petroleum Hydrocarbons (PHC)	F1 (C6-C10)	25	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	F1-BTEX	25	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	F2 (C10-C16)	10	<10	<10	<10	<10	<10	<10	<10
	F3 (C16-C34)	240	<50	<50	2390	153	148	<50	<50
	F4 (C34-C50)	120	<50	<50	698	<50	54	<50	<50

NOTES:

1. Units = ug/g (unless otherwise specified)

2. "-" = Parameter not included in chemical analysis

3. Test results shown in bold and highlighted text exceed the applicable Table 8 standard

APPENDIX D

CERTIFICATES OF ANALYSIS





CHUNG AND VANDER DOELEN
ATTN: PETER DAO
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Date Received: 15-JUN-17
Report Date: 12-JUL-17 11:07 (MT)
Version: FINAL REV. 2

Client Phone: 519-742-8979

Certificate of Analysis

Lab Work Order #: L1942778
Project P.O. #: E17413
Job Reference: WITMER TANK PULL - SOIL
C of C Numbers: 15-555983
Legal Site Desc:

Mary-Lynn Pike
Client Services Supervisor

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

ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047
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ANALYTICAL GUIDELINE REPORT

L1942778 CONTD....

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12-JUL-17 11:07 (MT)

WITMER TANK PULL - SOIL

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte						#1	#2	#3	
L1942778-1	1-1									
Sampled By:	P D on 15-JUN-17									
Matrix:	SOIL									
Physical Tests										
% Moisture		7.46		0.10	%	16-JUN-17				
Volatile Organic Compounds										
Benzene		<0.0068		0.0068	ug/g	16-JUN-17	0.02	0.02		
Ethylbenzene		<0.018		0.018	ug/g	16-JUN-17	0.05	0.05		
Toluene		<0.080		0.080	ug/g	16-JUN-17	0.2	0.2		
o-Xylene		<0.020		0.020	ug/g	16-JUN-17				
m+p-Xylenes		<0.030		0.030	ug/g	16-JUN-17				
Xylenes (Total)		<0.050		0.050	ug/g	19-JUN-17	0.05	0.05		
Surrogate: 4-Bromofluorobenzene		90.1		50-140	%	16-JUN-17				
Surrogate: 1,4-Difluorobenzene		93.1		50-140	%	16-JUN-17				
Hydrocarbons										
F1 (C6-C10)		<5.0		5.0	ug/g	16-JUN-17	17	25		
F1-BTEX		<5.0		5.0	ug/g	19-JUN-17	17	25		
F2 (C10-C16)		<10		10	ug/g	16-JUN-17	10	10		
F3 (C16-C34)		<50		50	ug/g	16-JUN-17	240	240		
F4 (C34-C50)		<50		50	ug/g	16-JUN-17	120	120		
Total Hydrocarbons (C6-C50)		<72		72	ug/g	19-JUN-17				
Chrom. to baseline at nC50		YES			No Unit	16-JUN-17				
Surrogate: 2-Bromobenzotrifluoride		81.9		60-140	%	16-JUN-17				
Surrogate: 3,4-Dichlorotoluene		86.5		60-140	%	16-JUN-17				
L1942778-2	1-2									
Sampled By:	P D on 15-JUN-17									
Matrix:	SOIL									
Physical Tests										
% Moisture		5.80		0.10	%	16-JUN-17				
Metals										
Antimony (Sb)		<1.0		1.0	ug/g	20-JUN-17	1	1.3		
Arsenic (As)		1.3		1.0	ug/g	20-JUN-17	11	18	6	
Barium (Ba)		6.6		1.0	ug/g	20-JUN-17	210	220		
Beryllium (Be)		<0.50		0.50	ug/g	20-JUN-17	2.5	2.5		
Boron (B)		<5.0		5.0	ug/g	20-JUN-17	36	36		
Cadmium (Cd)		<0.50		0.50	ug/g	20-JUN-17	1	1.2	0.6	
Chromium (Cr)		5.0		1.0	ug/g	20-JUN-17	67	70	26	
Cobalt (Co)		1.6		1.0	ug/g	20-JUN-17	22	22	50	
Copper (Cu)		5.5		1.0	ug/g	20-JUN-17	62	92	16	
Lead (Pb)		4.8		1.0	ug/g	20-JUN-17	45	120	31	
Molybdenum (Mo)		<1.0		1.0	ug/g	20-JUN-17	2	2		
Nickel (Ni)		3.5		1.0	ug/g	20-JUN-17	37	82	16	
Selenium (Se)		<1.0		1.0	ug/g	20-JUN-17	1.2	1.5		
Silver (Ag)		<0.20		0.20	ug/g	20-JUN-17	0.5	0.5	0.5	
Thallium (Tl)		<0.50		0.50	ug/g	20-JUN-17	1	1		
Uranium (U)		<1.0		1.0	ug/g	20-JUN-17	1.9	2.5		
Vanadium (V)		11.0		1.0	ug/g	20-JUN-17	86	86		
Zinc (Zn)		31.4		5.0	ug/g	20-JUN-17	290	290	120	
Volatile Organic Compounds										

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

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T8-ALL-SOIL-CATEGORIES

#1: T8-Soil-Agricultural or Other Property Use

#2: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#3: T8-Sediment-All Types of Property Uses



ANALYTICAL GUIDELINE REPORT

L1942778 CONTD....

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12-JUL-17 11:07 (MT)

WITMER TANK PULL - SOIL

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte						#1	#2	#3	
L1942778-2	1-2									
Sampled By:	P D on 15-JUN-17									
Matrix:	SOIL									
Volatile Organic Compounds										
Benzene		<0.0068		0.0068	ug/g	16-JUN-17	0.02	0.02		
Ethylbenzene		<0.018		0.018	ug/g	16-JUN-17	0.05	0.05		
Toluene		<0.080		0.080	ug/g	16-JUN-17	0.2	0.2		
o-Xylene		<0.020		0.020	ug/g	16-JUN-17				
m+p-Xylenes		<0.030		0.030	ug/g	16-JUN-17				
Xylenes (Total)		<0.050		0.050	ug/g	19-JUN-17	0.05	0.05		
Surrogate: 4-Bromofluorobenzene		87.6		50-140	%	16-JUN-17				
Surrogate: 1,4-Difluorobenzene		94.1		50-140	%	16-JUN-17				
Hydrocarbons										
F1 (C6-C10)		<5.0		5.0	ug/g	16-JUN-17	17	25		
F1-BTEX		<5.0		5.0	ug/g	19-JUN-17	17	25		
F2 (C10-C16)		<10		10	ug/g	16-JUN-17	10	10		
F3 (C16-C34)		<50		50	ug/g	16-JUN-17	240	240		
F4 (C34-C50)		<50		50	ug/g	16-JUN-17	120	120		
Total Hydrocarbons (C6-C50)		<72		72	ug/g	19-JUN-17				
Chrom. to baseline at nC50		YES			No Unit	16-JUN-17				
Surrogate: 2-Bromobenzotrifluoride		85.0		60-140	%	16-JUN-17				
Surrogate: 3,4-Dichlorotoluene		96.9		60-140	%	16-JUN-17				
L1942778-3	1-3									
Sampled By:	P D on 15-JUN-17									
Matrix:	SOIL									
Physical Tests										
% Moisture		6.22		0.10	%	16-JUN-17				
Volatile Organic Compounds										
Benzene		<0.0068		0.0068	ug/g	16-JUN-17	0.02	0.02		
Ethylbenzene		<0.018		0.018	ug/g	16-JUN-17	0.05	0.05		
Toluene		<0.080		0.080	ug/g	16-JUN-17	0.2	0.2		
o-Xylene		<0.020		0.020	ug/g	16-JUN-17				
m+p-Xylenes		<0.030		0.030	ug/g	16-JUN-17				
Xylenes (Total)		<0.050		0.050	ug/g	19-JUN-17	0.05	0.05		
Surrogate: 4-Bromofluorobenzene		84.1		50-140	%	16-JUN-17				
Surrogate: 1,4-Difluorobenzene		90.0		50-140	%	16-JUN-17				
Hydrocarbons										
F1 (C6-C10)		<5.0		5.0	ug/g	16-JUN-17	17	25		
F1-BTEX		<5.0		5.0	ug/g	19-JUN-17	17	25		
F2 (C10-C16)		<10		10	ug/g	16-JUN-17	10	10		
F3 (C16-C34)		<50		50	ug/g	16-JUN-17	240	240		
F4 (C34-C50)		<50		50	ug/g	16-JUN-17	120	120		
Total Hydrocarbons (C6-C50)		<72		72	ug/g	19-JUN-17				
Chrom. to baseline at nC50		YES			No Unit	16-JUN-17				
Surrogate: 2-Bromobenzotrifluoride		81.1		60-140	%	16-JUN-17				
Surrogate: 3,4-Dichlorotoluene		86.2		60-140	%	16-JUN-17				

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

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T8-ALL-SOIL-CATEGORIES

#1: T8-Soil-Agricultural or Other Property Use

#2: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#3: T8-Sediment-All Types of Property Uses



ANALYTICAL GUIDELINE REPORT

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WITMER TANK PULL - SOIL

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte						#1	#2	#3	
L1942778-4	1-4									
Sampled By: P D on 15-JUN-17										
Matrix: SOIL										
Physical Tests										
% Moisture		7.47		0.10	%	16-JUN-17				
Volatile Organic Compounds										
Benzene		<0.0068		0.0068	ug/g	16-JUN-17	0.02	0.02		
Ethylbenzene		<0.018		0.018	ug/g	16-JUN-17	0.05	0.05		
Toluene		<0.080		0.080	ug/g	16-JUN-17	0.2	0.2		
o-Xylene		<0.020		0.020	ug/g	16-JUN-17				
m+p-Xylenes		<0.030		0.030	ug/g	16-JUN-17				
Xylenes (Total)		<0.050		0.050	ug/g	19-JUN-17	0.05	0.05		
Surrogate: 4-Bromofluorobenzene		90.0		50-140	%	16-JUN-17				
Surrogate: 1,4-Difluorobenzene		95.8		50-140	%	16-JUN-17				
Hydrocarbons										
F1 (C6-C10)		<5.0		5.0	ug/g	16-JUN-17	17	25		
F1-BTEX		<5.0		5.0	ug/g	19-JUN-17	17	25		
F2 (C10-C16)		<10		10	ug/g	16-JUN-17	10	10		
F3 (C16-C34)		<50		50	ug/g	16-JUN-17	240	240		
F4 (C34-C50)		<50		50	ug/g	16-JUN-17	120	120		
Total Hydrocarbons (C6-C50)		<72		72	ug/g	19-JUN-17				
Chrom. to baseline at nC50		YES			No Unit	16-JUN-17				
Surrogate: 2-Bromobenzotrifluoride		86.4		60-140	%	16-JUN-17				
Surrogate: 3,4-Dichlorotoluene		91.7		60-140	%	16-JUN-17				
L1942778-5	1-5									
Sampled By: P D on 15-JUN-17										
Matrix: SOIL										
Physical Tests										
% Moisture		6.71		0.10	%	16-JUN-17				
Volatile Organic Compounds										
Benzene		<0.0068		0.0068	ug/g	16-JUN-17	0.02	0.02		
Ethylbenzene		<0.018		0.018	ug/g	16-JUN-17	0.05	0.05		
Toluene		<0.080		0.080	ug/g	16-JUN-17	0.2	0.2		
o-Xylene		<0.020		0.020	ug/g	16-JUN-17				
m+p-Xylenes		<0.030		0.030	ug/g	16-JUN-17				
Xylenes (Total)		<0.050		0.050	ug/g	19-JUN-17	0.05	0.05		
Surrogate: 4-Bromofluorobenzene		84.9		50-140	%	16-JUN-17				
Surrogate: 1,4-Difluorobenzene		92.4		50-140	%	16-JUN-17				
Hydrocarbons										
F1 (C6-C10)		<5.0		5.0	ug/g	16-JUN-17	17	25		
F1-BTEX		<5.0		5.0	ug/g	19-JUN-17	17	25		
F2 (C10-C16)		<10		10	ug/g	16-JUN-17	10	10		
F3 (C16-C34)		<50		50	ug/g	16-JUN-17	240	240		
F4 (C34-C50)		<50		50	ug/g	16-JUN-17	120	120		
Total Hydrocarbons (C6-C50)		<72		72	ug/g	19-JUN-17				
Chrom. to baseline at nC50		YES			No Unit	16-JUN-17				
Surrogate: 2-Bromobenzotrifluoride		80.1		60-140	%	16-JUN-17				
Surrogate: 3,4-Dichlorotoluene		90.7		60-140	%	16-JUN-17				

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

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Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T8-ALL-SOIL-CATEGORIES

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ANALYTICAL GUIDELINE REPORT

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WITMER TANK PULL - SOIL

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte						#1	#2	#3	
L1942778-6	1-6									
Sampled By:	P D on 15-JUN-17									
Matrix:	SOIL									
Physical Tests										
% Moisture		5.36		0.10	%	16-JUN-17				
Volatile Organic Compounds										
Benzene		<0.0068		0.0068	ug/g	16-JUN-17	0.02	0.02		
Ethylbenzene		<0.018		0.018	ug/g	16-JUN-17	0.05	0.05		
Toluene		<0.080		0.080	ug/g	16-JUN-17	0.2	0.2		
o-Xylene		<0.020		0.020	ug/g	16-JUN-17				
m+p-Xylenes		<0.030		0.030	ug/g	16-JUN-17				
Xylenes (Total)		<0.050		0.050	ug/g	16-JUN-17	0.05	0.05		
Surrogate: 4-Bromofluorobenzene		88.4		50-140	%	16-JUN-17				
Surrogate: 1,4-Difluorobenzene		93.4		50-140	%	16-JUN-17				
Hydrocarbons										
F1 (C6-C10)		<5.0		5.0	ug/g	16-JUN-17	17	25		
F1-BTEX		<5.0		5.0	ug/g	19-JUN-17	17	25		
F2 (C10-C16)		<10		10	ug/g	16-JUN-17	10	10		
F3 (C16-C34)		<50		50	ug/g	16-JUN-17	240	240		
F4 (C34-C50)		<50		50	ug/g	16-JUN-17	120	120		
Total Hydrocarbons (C6-C50)		<72		72	ug/g	19-JUN-17				
Chrom. to baseline at nC50		YES			No Unit	16-JUN-17				
Surrogate: 2-Bromobenzotrifluoride		84.4		60-140	%	16-JUN-17				
Surrogate: 3,4-Dichlorotoluene		88.7		60-140	%	16-JUN-17				
L1942778-7	1-7									
Sampled By:	P D on 15-JUN-17									
Matrix:	SOIL									
Physical Tests										
% Moisture		18.2		0.10	%	16-JUN-17				
Volatile Organic Compounds										
Benzene		<0.0068		0.0068	ug/g	16-JUN-17	0.02	0.02		
Ethylbenzene		<0.018		0.018	ug/g	16-JUN-17	0.05	0.05		
Toluene		<0.080		0.080	ug/g	16-JUN-17	0.2	0.2		
o-Xylene		<0.020		0.020	ug/g	16-JUN-17				
m+p-Xylenes		<0.030		0.030	ug/g	16-JUN-17				
Xylenes (Total)		<0.050		0.050	ug/g	16-JUN-17	0.05	0.05		
Surrogate: 4-Bromofluorobenzene		86.6		50-140	%	16-JUN-17				
Surrogate: 1,4-Difluorobenzene		91.4		50-140	%	16-JUN-17				
Hydrocarbons										
F1 (C6-C10)		<5.0		5.0	ug/g	16-JUN-17	17	25		
F1-BTEX		<5.0		5.0	ug/g	19-JUN-17	17	25		
F2 (C10-C16)		<10		10	ug/g	16-JUN-17	10	10		
F3 (C16-C34)		<50		50	ug/g	16-JUN-17	240	240		
F4 (C34-C50)		<50		50	ug/g	16-JUN-17	120	120		
Total Hydrocarbons (C6-C50)		<72		72	ug/g	19-JUN-17				
Chrom. to baseline at nC50		YES			No Unit	16-JUN-17				
Surrogate: 2-Bromobenzotrifluoride		81.2		60-140	%	16-JUN-17				
Surrogate: 3,4-Dichlorotoluene		87.5		60-140	%	16-JUN-17				

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

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Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T8-ALL-SOIL-CATEGORIES

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#3: T8-Sediment-All Types of Property Uses

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference***
BTX-511-HS-WT	Soil	BTEX-O.Reg 153/04 (July 2011)	SW846 8260

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

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

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)	MOE DECPH-E3398/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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This method uses a heated strong acid digestion with HNO₃ and HCl and is intended to liberate metals that may be environmentally available. Silicate minerals are not solubilized. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. Analysis is by Collision/Reaction Cell ICPMS.

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	Gravimetric: Oven Dried
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Reference Information

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:

15-555983

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	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 wwt - milligrams per kilogram based on wet weight of sample

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

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

< - Less than.

D.L. - The reporting limit.

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

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

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

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

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information.



Environmental

Quality Control Report

Workorder: L1942778

Report Date: 12-JUL-17

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Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTX-511-HS-WT		Soil						
Batch	R3749138							
WG2549755-4	DUP	WG2549755-3						
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	16-JUN-17
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	16-JUN-17
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	16-JUN-17
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	16-JUN-17
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	16-JUN-17
WG2549755-2	LCS							
Benzene			104.0		%		70-130	16-JUN-17
Ethylbenzene			101.8		%		70-130	16-JUN-17
m+p-Xylenes			105.7		%		70-130	16-JUN-17
o-Xylene			104.7		%		70-130	16-JUN-17
Toluene			103.9		%		70-130	16-JUN-17
WG2549755-1	MB							
Benzene			<0.0068		ug/g		0.0068	16-JUN-17
Ethylbenzene			<0.018		ug/g		0.018	16-JUN-17
m+p-Xylenes			<0.030		ug/g		0.03	16-JUN-17
o-Xylene			<0.020		ug/g		0.02	16-JUN-17
Toluene			<0.080		ug/g		0.08	16-JUN-17
Surrogate: 1,4-Difluorobenzene			95.8		%		50-140	16-JUN-17
Surrogate: 4-Bromofluorobenzene			91.6		%		50-140	16-JUN-17
WG2549755-5	MS	WG2549755-3						
Benzene			103.0		%		60-140	16-JUN-17
Ethylbenzene			99.3		%		60-140	16-JUN-17
m+p-Xylenes			102.9		%		60-140	16-JUN-17
o-Xylene			102.2		%		60-140	16-JUN-17
Toluene			101.8		%		60-140	16-JUN-17
Batch	R3749393							
WG2549296-4	DUP	WG2549296-3						
Benzene		0.0630	0.0618		ug/g	1.9	40	16-JUN-17
Ethylbenzene		1.59	1.62		ug/g	1.7	40	16-JUN-17
m+p-Xylenes		5.92	6.04		ug/g	2.0	40	16-JUN-17
o-Xylene		4.56	4.56		ug/g	0.1	40	16-JUN-17
Toluene		1.00	1.02		ug/g	1.9	40	16-JUN-17
WG2549296-2	LCS							
Benzene			102.8		%		70-130	16-JUN-17



Environmental

Quality Control Report

Workorder: L1942778

Report Date: 12-JUL-17

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Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT	Soil							
Batch	R3749393							
WG2549296-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	16-JUN-17
Surrogate: 3,4-Dichlorotoluene			100.6		%		60-140	16-JUN-17
WG2549296-7 MS		WG2549296-6						
F1 (C6-C10)			97.8		%		60-140	16-JUN-17
F2-F4-511-WT	Soil							
Batch	R3750503							
WG2549687-3 CRM		ALS PHC2 IRM						
F2 (C10-C16)			99.2		%		70-130	16-JUN-17
F3 (C16-C34)			100.5		%		70-130	16-JUN-17
F4 (C34-C50)			92.0		%		70-130	16-JUN-17
WG2549687-5 DUP		WG2549687-4						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	30	16-JUN-17
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	30	16-JUN-17
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	30	16-JUN-17
WG2549687-2 LCS								
F2 (C10-C16)			91.5		%		80-120	16-JUN-17
F3 (C16-C34)			91.1		%		80-120	16-JUN-17
F4 (C34-C50)			96.0		%		80-120	16-JUN-17
WG2549687-1 MB								
F2 (C10-C16)			<10		ug/g		10	16-JUN-17
F3 (C16-C34)			<50		ug/g		50	16-JUN-17
F4 (C34-C50)			<50		ug/g		50	16-JUN-17
Surrogate: 2-Bromobenzotrifluoride			76.0		%		60-140	16-JUN-17
MET-200.2-CCMS-WT	Soil							
Batch	R3751735							
WG2552210-2 CRM		WT-SS-1						
Arsenic (As)			110.7		%		70-130	20-JUN-17
Barium (Ba)			110.7		%		70-130	20-JUN-17
Beryllium (Be)			94.7		%		70-130	20-JUN-17
Cadmium (Cd)			98.7		%		70-130	20-JUN-17
Chromium (Cr)			95.3		%		70-130	20-JUN-17
Cobalt (Co)			101.0		%		70-130	20-JUN-17
Copper (Cu)			98.4		%		70-130	20-JUN-17
Lead (Pb)			97.2		%		70-130	20-JUN-17
Molybdenum (Mo)			98.1				70-130	



Quality Control Report

Workorder: L1942778

Report Date: 12-JUL-17

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Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT		Soil						
Batch	R3751735							
WG2552210-2	CRM	WT-SS-1						
Molybdenum (Mo)			98.1		%		70-130	20-JUN-17
Nickel (Ni)			103.8		%		70-130	20-JUN-17
Selenium (Se)			86.6		%		70-130	20-JUN-17
Silver (Ag)			100.9		%		70-130	20-JUN-17
Thallium (Tl)			102.8		%		70-130	20-JUN-17
Vanadium (V)			108.9		%		70-130	20-JUN-17
Zinc (Zn)			96.9		%		70-130	20-JUN-17
WG2552210-6	DUP	WG2552210-5						
Antimony (Sb)		0.38	0.39		ug/g	4.5	30	20-JUN-17
Arsenic (As)		3.34	3.46		ug/g	3.5	30	20-JUN-17
Barium (Ba)		114	108		ug/g	5.9	40	20-JUN-17
Beryllium (Be)		0.51	0.51		ug/g	0.3	30	20-JUN-17
Boron (B)		12.9	13.0		ug/g	0.7	30	20-JUN-17
Cadmium (Cd)		0.120	0.117		ug/g	2.7	30	20-JUN-17
Chromium (Cr)		26.3	27.1		ug/g	3.1	30	20-JUN-17
Cobalt (Co)		7.79	8.07		ug/g	3.6	30	20-JUN-17
Copper (Cu)		19.4	19.9		ug/g	2.6	30	20-JUN-17
Lead (Pb)		80.5	74.2		ug/g	8.2	40	20-JUN-17
Molybdenum (Mo)		0.59	0.62		ug/g	5.1	40	20-JUN-17
Nickel (Ni)		17.7	18.5		ug/g	4.2	30	20-JUN-17
Selenium (Se)		0.28	0.29		ug/g	2.9	30	20-JUN-17
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	20-JUN-17
Thallium (Tl)		0.108	0.107		ug/g	0.6	30	20-JUN-17
Uranium (U)		0.469	0.451		ug/g	3.9	30	20-JUN-17
Vanadium (V)		33.0	33.4		ug/g	1.3	30	20-JUN-17
Zinc (Zn)		57.0	59.0		ug/g	3.5	30	20-JUN-17
WG2552210-4	LCS							
Antimony (Sb)			100.4		%		80-120	20-JUN-17
Arsenic (As)			95.7		%		80-120	20-JUN-17
Barium (Ba)			98.2		%		80-120	20-JUN-17
Beryllium (Be)			92.5		%		80-120	20-JUN-17
Boron (B)			94.5		%		80-120	20-JUN-17
Cadmium (Cd)			91.8		%		80-120	20-JUN-17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT		Soil						
Batch	R3751735							
WG2552210-4	LCS							
Chromium (Cr)			94.9		%		80-120	20-JUN-17
Cobalt (Co)			95.2		%		80-120	20-JUN-17
Copper (Cu)			93.3		%		80-120	20-JUN-17
Lead (Pb)			98.0		%		80-120	20-JUN-17
Molybdenum (Mo)			97.2		%		80-120	20-JUN-17
Nickel (Ni)			93.9		%		80-120	20-JUN-17
Selenium (Se)			94.2		%		80-120	20-JUN-17
Silver (Ag)			90.9		%		80-120	20-JUN-17
Thallium (Tl)			93.6		%		80-120	20-JUN-17
Uranium (U)			92.0		%		80-120	20-JUN-17
Vanadium (V)			98.0		%		80-120	20-JUN-17
Zinc (Zn)			89.2		%		80-120	20-JUN-17
WG2552210-1	MB							
Antimony (Sb)			<0.10		mg/kg		0.1	20-JUN-17
Arsenic (As)			<0.10		mg/kg		0.1	20-JUN-17
Barium (Ba)			<0.50		mg/kg		0.5	20-JUN-17
Beryllium (Be)			<0.10		mg/kg		0.1	20-JUN-17
Boron (B)			<5.0		mg/kg		5	20-JUN-17
Cadmium (Cd)			<0.020		mg/kg		0.02	20-JUN-17
Chromium (Cr)			<0.50		mg/kg		0.5	20-JUN-17
Cobalt (Co)			<0.10		mg/kg		0.1	20-JUN-17
Copper (Cu)			<0.50		mg/kg		0.5	20-JUN-17
Lead (Pb)			<0.50		mg/kg		0.5	20-JUN-17
Molybdenum (Mo)			<0.10		mg/kg		0.1	20-JUN-17
Nickel (Ni)			<0.50		mg/kg		0.5	20-JUN-17
Selenium (Se)			<0.20		mg/kg		0.2	20-JUN-17
Silver (Ag)			<0.10		mg/kg		0.1	20-JUN-17
Thallium (Tl)			<0.050		mg/kg		0.05	20-JUN-17
Uranium (U)			<0.050		mg/kg		0.05	20-JUN-17
Vanadium (V)			<0.20		mg/kg		0.2	20-JUN-17
Zinc (Zn)			<2.0		mg/kg		2	20-JUN-17
MOISTURE-WT		Soil						



Quality Control Report

Workorder: L1942778

Report Date: 12-JUL-17

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Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT		Soil						
Batch	R3748977							
WG2549546-3	DUP	L1942778-1						
% Moisture		7.46	7.88		%	5.4	20	16-JUN-17
WG2549546-2	LCS							
% Moisture			99.4		%		90-110	16-JUN-17
WG2549546-1	MB							
% Moisture			<0.10		%		0.1	16-JUN-17
Batch	R3748986							
WG2549781-3	DUP	L1942386-3						
% Moisture		2.42	2.59		%	6.8	20	16-JUN-17
WG2549781-2	LCS							
% Moisture			99.9		%		90-110	16-JUN-17
WG2549781-1	MB							
% Moisture			<0.10		%		0.1	16-JUN-17

Quality Control Report

Workorder: L1942778

Report Date: 12-JUL-17

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

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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
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.

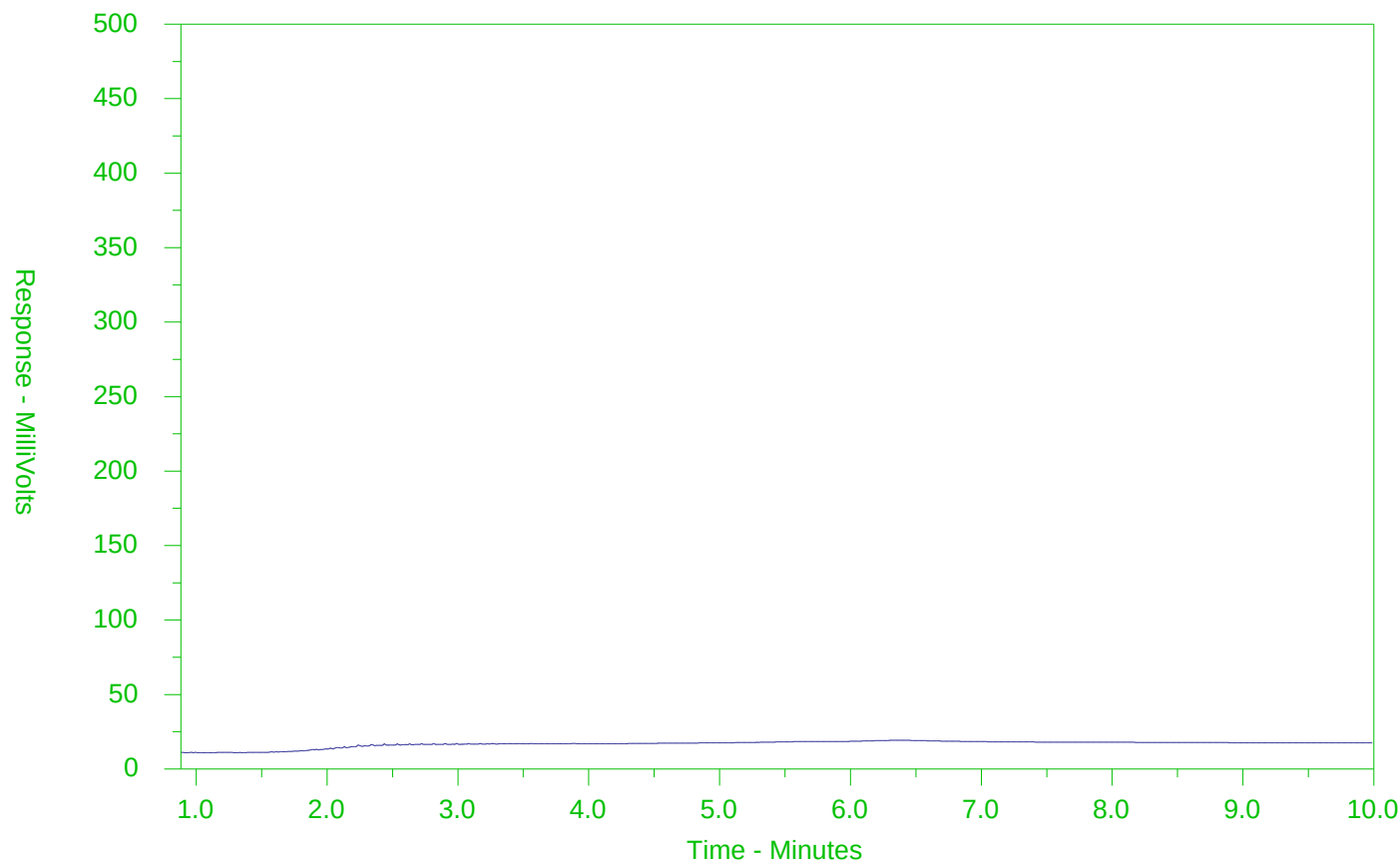
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide 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: L1942778-1
Client Sample ID: 1-1



← 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.

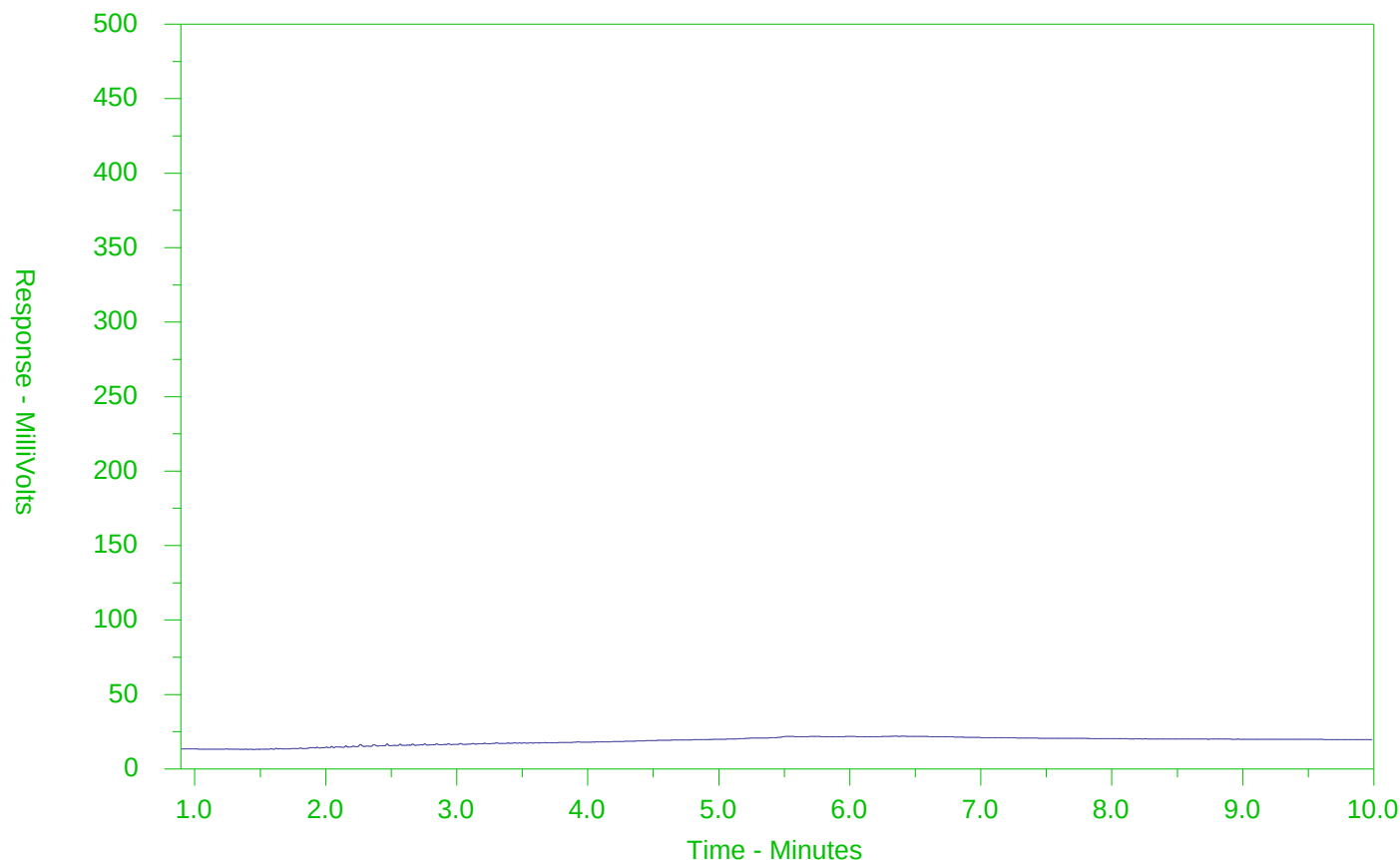
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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: L1942778-2
Client Sample ID: 1-2



← 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.

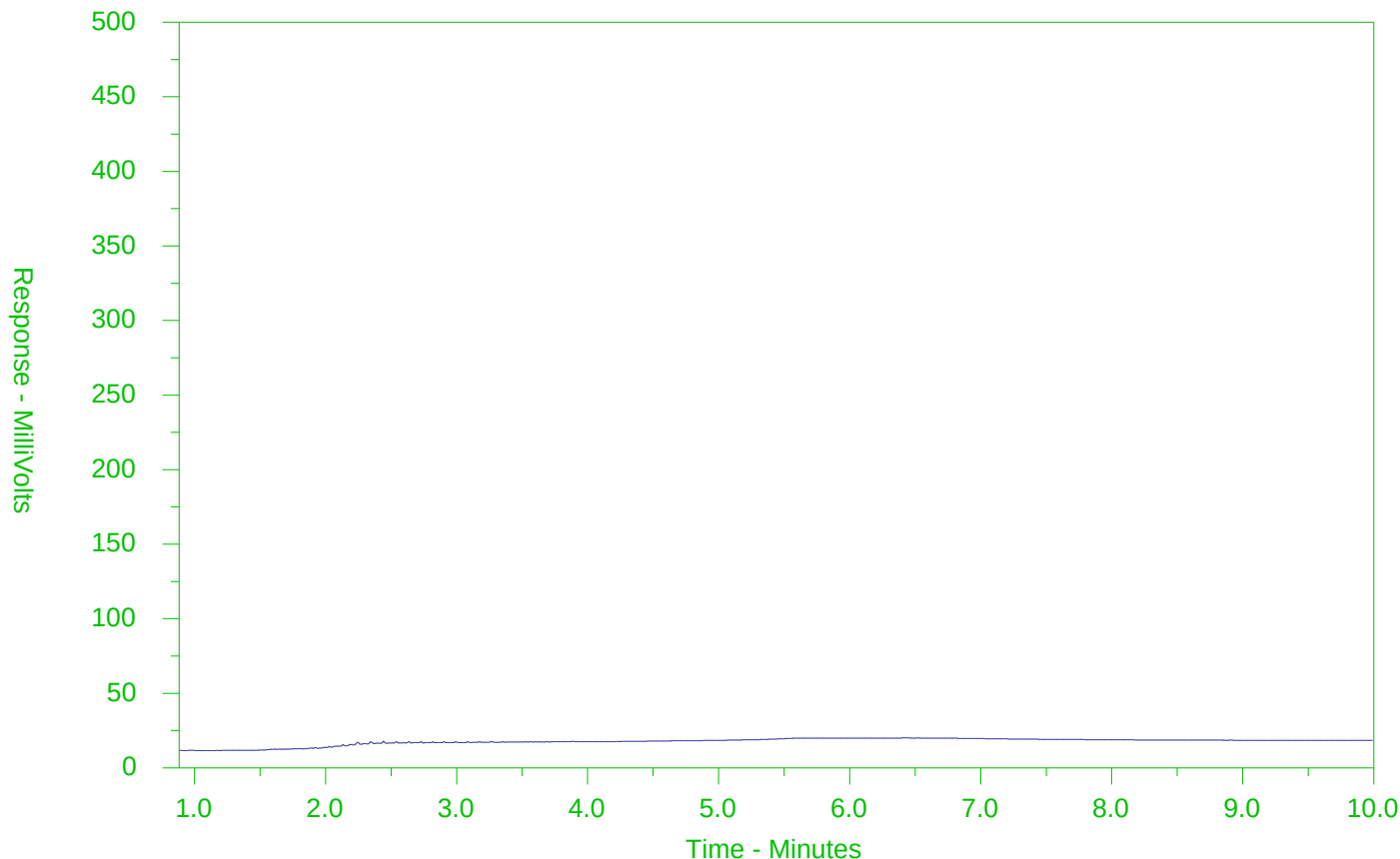
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L1942778-3
Client Sample ID: 1-3



← 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.

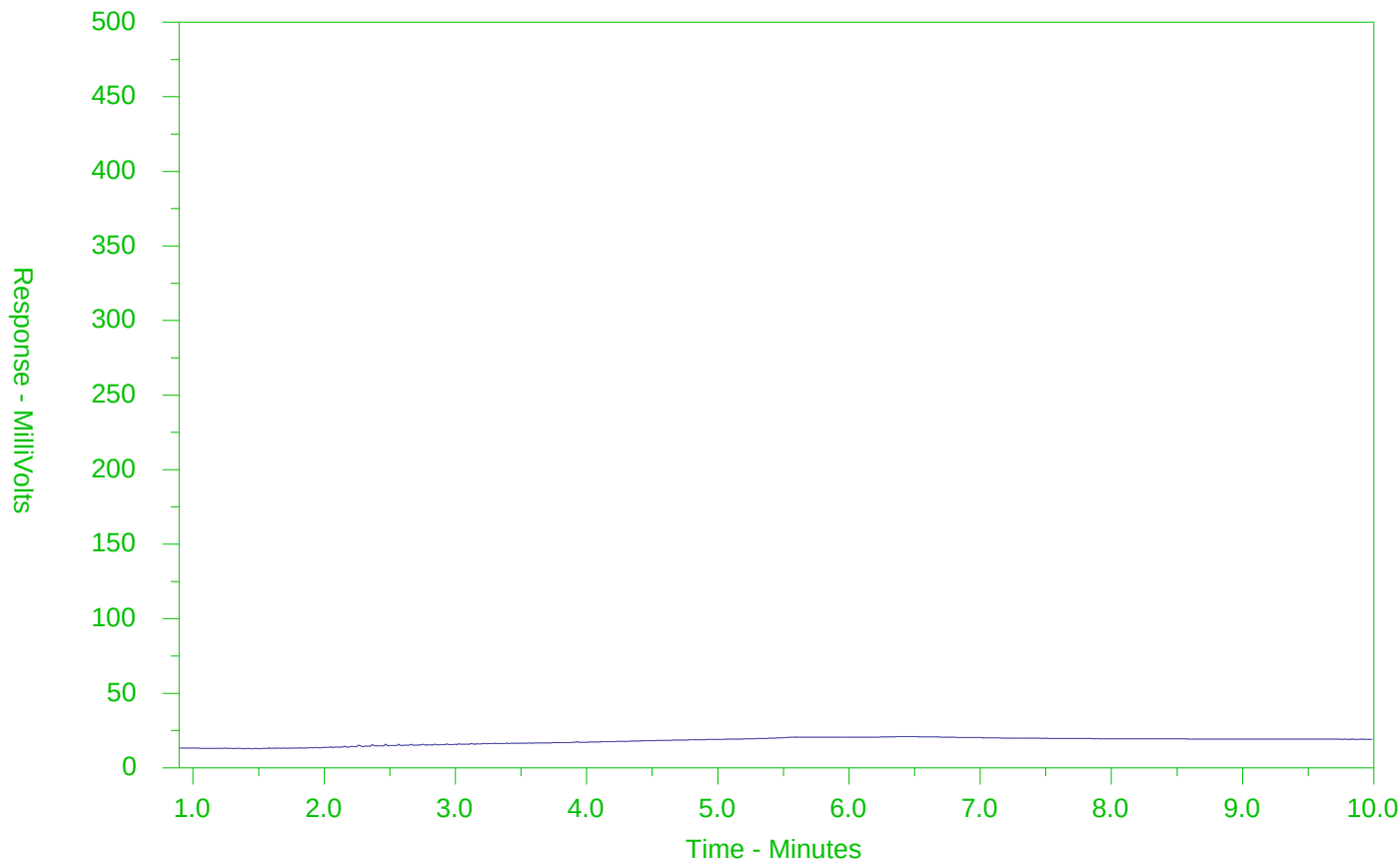
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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: L1942778-4
Client Sample ID: 1-4



← 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.

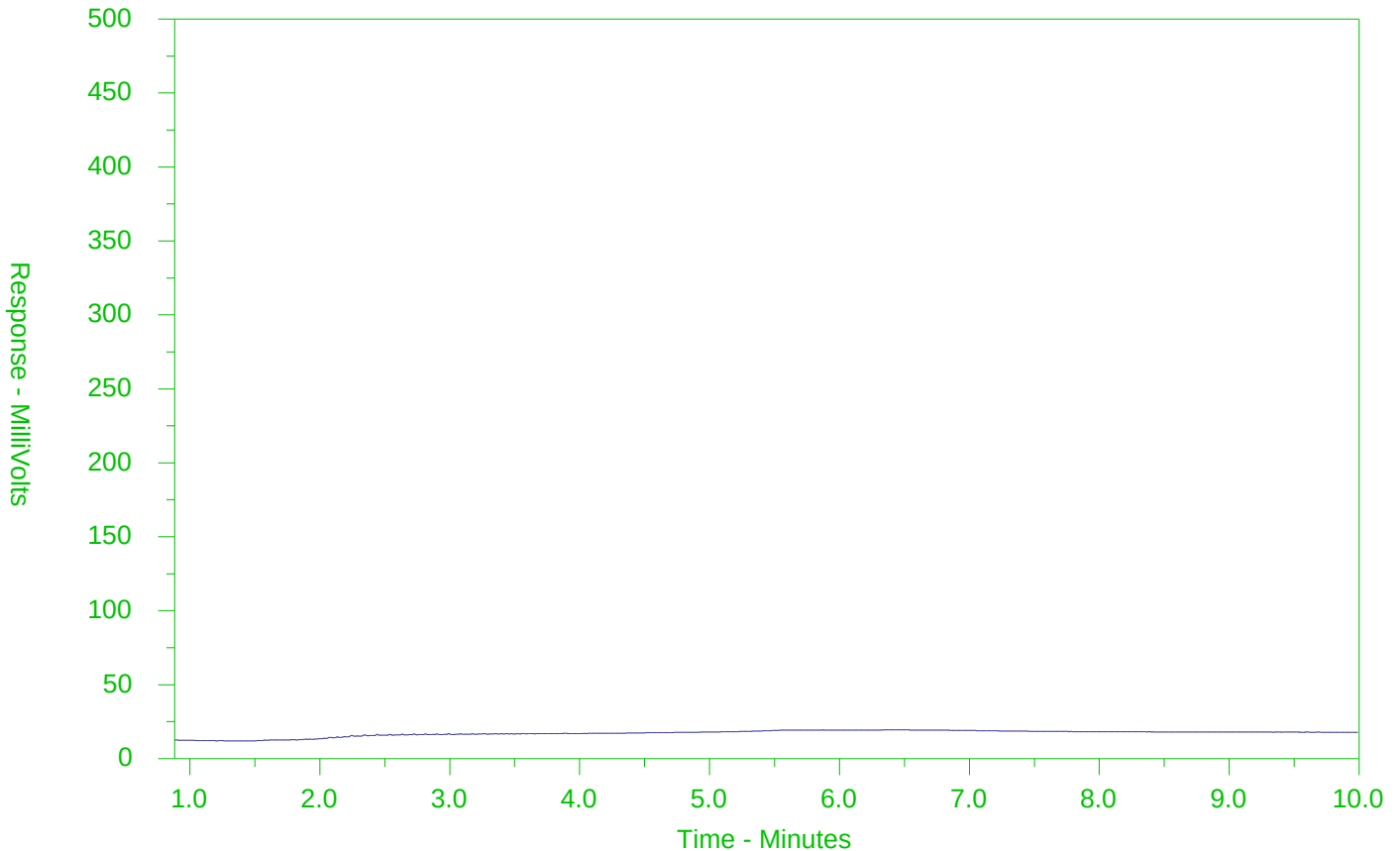
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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: L1942778-5
Client Sample ID: 1-5



← 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.

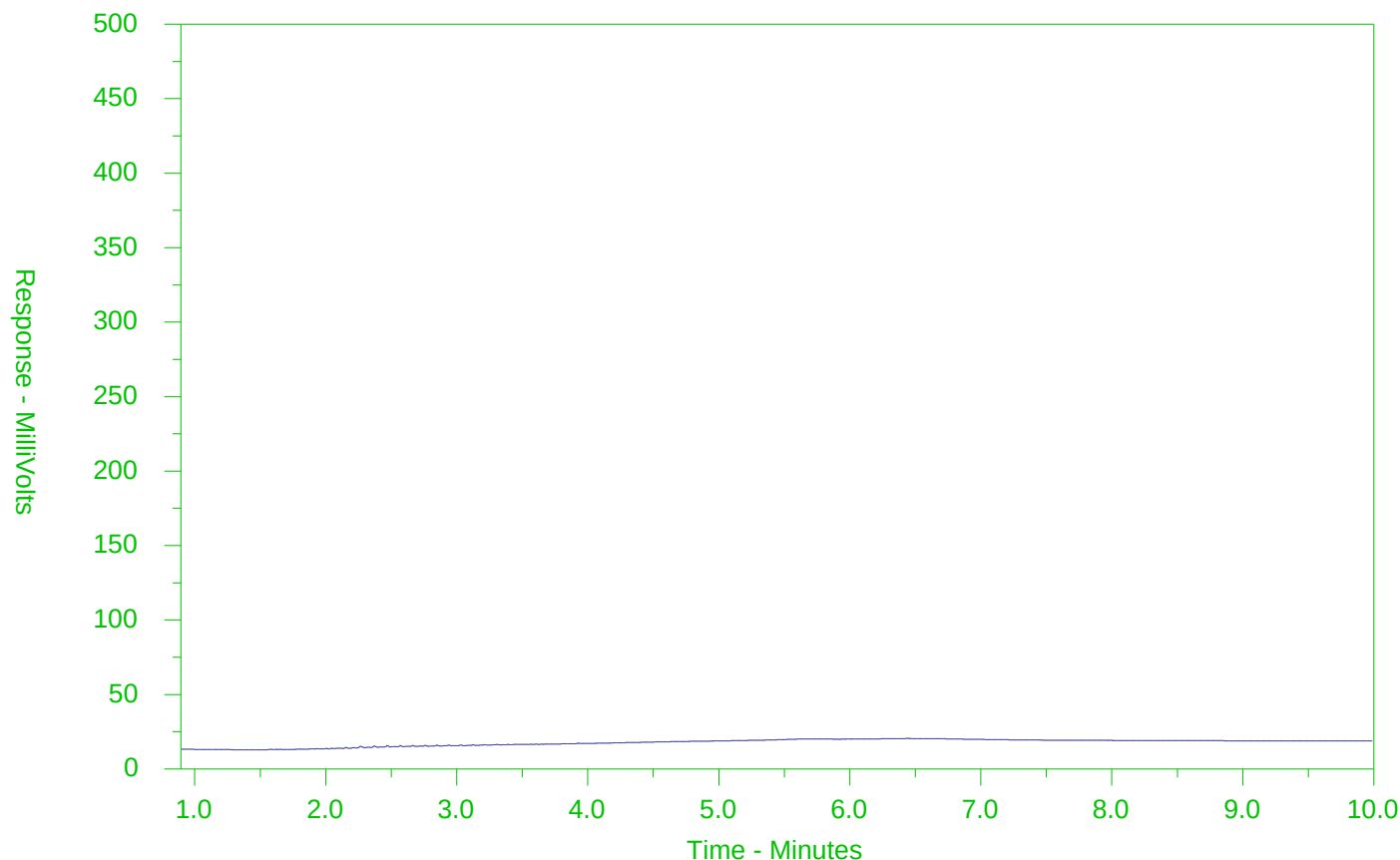
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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: L1942778-6
Client Sample ID: 1-6



← 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.

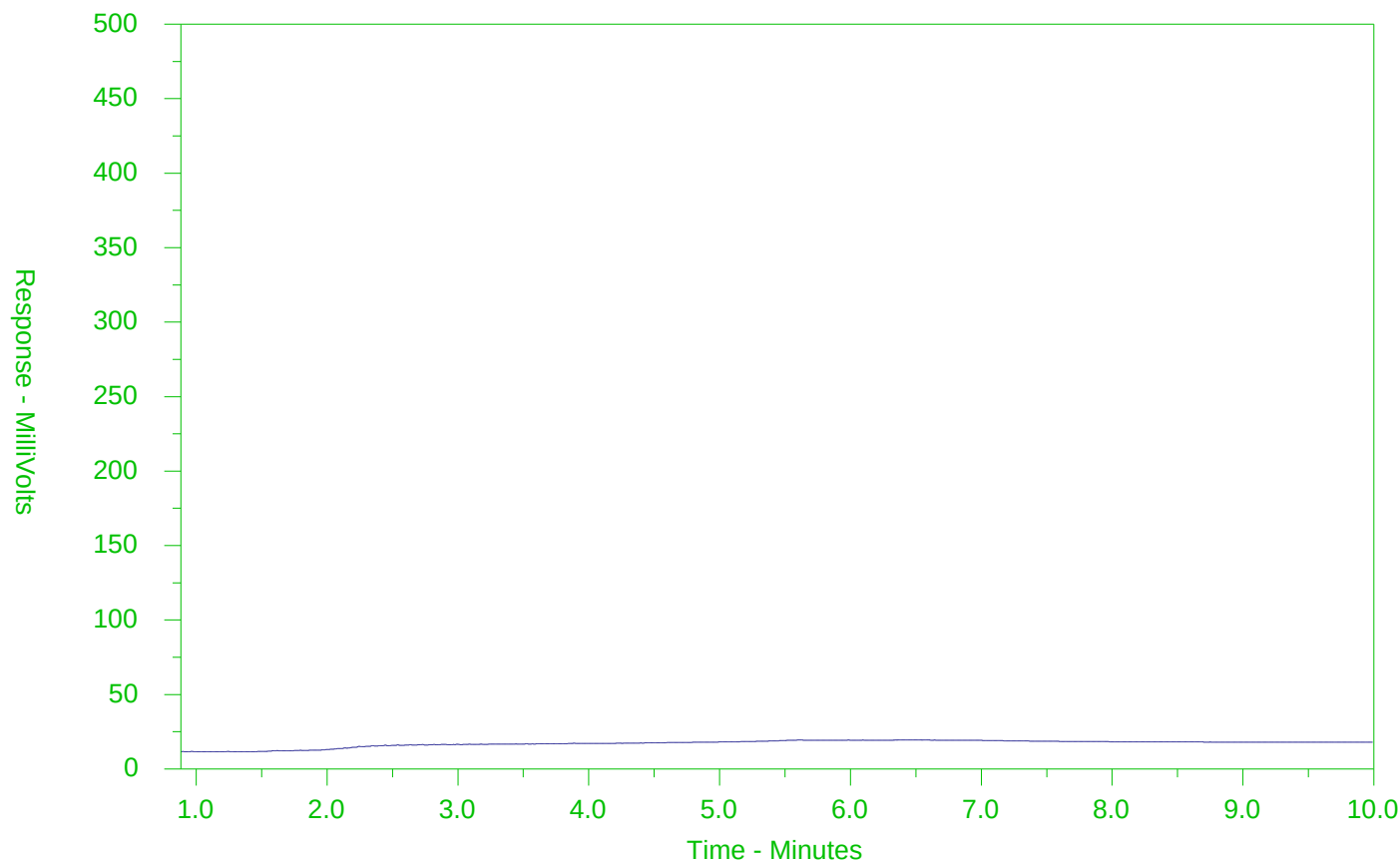
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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: L1942778-7
Client Sample ID: 1-7



← 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.



L1942778-COFC

COC Number: 15 - 555983

Page of

Report To Contact and company name below will appear on the final report			Report Format / Distribution			Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply											
Company: <u>CVD</u>			Select Report Format: ☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)			Regular [R] ☒ Standard TAT received by 3 pm Business days - no surcharges apply											
Contact: <u>Patricia Doe</u>			Quality Control (QC) Report with Report ☒ YES ☐ NO			4 day [P4] ☐ 1 Business day [E1] ☐											
Phone:			☒ Compare Results to Criteria on Report - provide details below if box checked			3 day [P3] ☐ Same Day, Weekend or Statutory holiday [E0] ☐											
Company address below will appear on the final report			Select Distribution: ☒ EMAIL ☐ MAIL ☐ FAX			2 day [P2] ☐											
Street: <u>311 Victoria St. N</u>			Email 1 or Fax:			Date and Time Required for all E&P TATs: dd-mm-yy hh:mm											
City/Province: <u>Kitchener, ON</u>			Email 2:			For tests that can not be performed according to the service level selected, you will be contacted.											
Postal Code: <u>N2H 5E1</u>			Email 3:			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														
Company:			Email 1 or Fax:														
Contact:			Email 2:														
Project Information			Oil and Gas Required Fields (client use)														
ALS Account # / Quote #:			AFE/Cost Center:			PO#											
Job #: <u>Witmer Tank Pull - Soil</u>			Major/Minor Code:			Routing Code:											
PO / AFE: <u>E17413</u>			Requisitioner:														
LSD:			Location:														
ALS Lab Work Order # (lab use only) <u>L1942778</u>			ALS Contact: <u>ML</u>			Sampler: <u>PD</u>											
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)		Date (dd-mm-yy)	Time (hh:mm)	Sample Type												
1	1-1		15-06-17		Soil												
2	1-2																
3	1-3																
4	1-4																
5	1-5																
6	1-6																
7	1-7																
Drinking Water (DW) Samples¹ (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			<u>O. Reg 153/04 Table 2 R/P/I</u>			Frozen ☐ SIF Observations Yes ☐ No ☐											
Are samples for human drinking water use? ☐ YES ☒ NO						Ice Packs ☐ Ice Cubes ☒ Custody seal intact Yes ☐ No ☐											
						Cooling Initiated ☐											
						INITIAL COOLER TEMPERATURES °C						FINAL COOLER TEMPERATURES °C					
												31					
SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)											
Released by: <u>PD</u> Date: <u>June 15/17</u> Time:			Received by: Date: Time:			Received by: <u>R</u> Date: <u>15-06-17</u> Time: <u>14:39</u>											

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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

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

OCTOBER 2015 FRONT

DA



CHUNG AND VANDER DOELEN
ATTN: PETER DAO
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Date Received: 19-JUN-17
Report Date: 12-JUL-17 11:07 (MT)
Version: FINAL REV. 2

Client Phone: 519-742-8979

Certificate of Analysis

Lab Work Order #: L1944192
Project P.O. #: E17413
Job Reference: WITMEIR EXCAVATION - SOIL
C of C Numbers: 15-555984
Legal Site Desc:

Mary-Lynn Pike
Client Services Supervisor

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

ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047
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ANALYTICAL GUIDELINE REPORT

WITMEIR EXCAVATION - SOIL

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte						#1	#2	#3	
L1944192-1	2-1									
Sampled By:	P D on 16-JUN-17									
Matrix:	SOIL									
Physical Tests										
% Moisture		12.4		0.10	%	20-JUN-17				
Volatile Organic Compounds										
Benzene		<0.0068		0.0068	ug/g	21-JUN-17	0.02	0.02		
Ethylbenzene		<0.018		0.018	ug/g	21-JUN-17	0.05	0.05		
Toluene		<0.080		0.080	ug/g	21-JUN-17	0.2	0.2		
o-Xylene		<0.020		0.020	ug/g	21-JUN-17				
m+p-Xylenes		<0.030		0.030	ug/g	21-JUN-17				
Xylenes (Total)		<0.050		0.050	ug/g	21-JUN-17	0.05	0.05		
Surrogate: 4-Bromofluorobenzene		85.4		50-140	%	21-JUN-17				
Surrogate: 1,4-Difluorobenzene		90.0		50-140	%	21-JUN-17				
Hydrocarbons										
F1 (C6-C10)		<5.0		5.0	ug/g	21-JUN-17	17	25		
F1-BTEX		<5.0		5.0	ug/g	21-JUN-17	17	25		
F2 (C10-C16)		<10		10	ug/g	20-JUN-17	10	10		
F3 (C16-C34)		2390		50	ug/g	20-JUN-17	*240	*240		
F4 (C34-C50)		698		50	ug/g	20-JUN-17	*120	*120		
Total Hydrocarbons (C6-C50)		3090		72	ug/g	21-JUN-17				
Chrom. to baseline at nC50		YES			No Unit	20-JUN-17				
Surrogate: 2-Bromobenzotrifluoride		93.4		60-140	%	20-JUN-17				
Surrogate: 3,4-Dichlorotoluene		86.2		60-140	%	21-JUN-17				
L1944192-2	2-2									
Sampled By:	P D on 16-JUN-17									
Matrix:	SOIL									
Physical Tests										
% Moisture		7.42		0.10	%	20-JUN-17				
Volatile Organic Compounds										
Benzene		<0.0068		0.0068	ug/g	21-JUN-17	0.02	0.02		
Ethylbenzene		<0.018		0.018	ug/g	21-JUN-17	0.05	0.05		
Toluene		<0.080		0.080	ug/g	21-JUN-17	0.2	0.2		
o-Xylene		<0.020		0.020	ug/g	21-JUN-17				
m+p-Xylenes		<0.030		0.030	ug/g	21-JUN-17				
Xylenes (Total)		<0.050		0.050	ug/g	21-JUN-17	0.05	0.05		
Surrogate: 4-Bromofluorobenzene		86.0		50-140	%	21-JUN-17				
Surrogate: 1,4-Difluorobenzene		90.8		50-140	%	21-JUN-17				
Hydrocarbons										
F1 (C6-C10)		<5.0		5.0	ug/g	21-JUN-17	17	25		
F1-BTEX		<5.0		5.0	ug/g	21-JUN-17	17	25		
F2 (C10-C16)		<10		10	ug/g	20-JUN-17	10	10		
F3 (C16-C34)		153		50	ug/g	20-JUN-17	240	240		
F4 (C34-C50)		<50		50	ug/g	20-JUN-17	120	120		
Total Hydrocarbons (C6-C50)		153		72	ug/g	21-JUN-17				
Chrom. to baseline at nC50		YES			No Unit	20-JUN-17				
Surrogate: 2-Bromobenzotrifluoride		92.5		60-140	%	20-JUN-17				
Surrogate: 3,4-Dichlorotoluene		91.9		60-140	%	21-JUN-17				

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

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T8-ALL-SOIL-CATEGORIES

#1: T8-Soil-Agricultural or Other Property Use

#2: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#3: T8-Sediment-All Types of Property Uses



ANALYTICAL GUIDELINE REPORT

WITMEIR EXCAVATION - SOIL

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte						#1	#2	#3	
L1944192-3	2-3									
Sampled By:	P D on 16-JUN-17									
Matrix:	SOIL									
Physical Tests										
% Moisture		5.60		0.10	%	20-JUN-17				
Volatile Organic Compounds										
Benzene		<0.0068		0.0068	ug/g	21-JUN-17	0.02	0.02		
Ethylbenzene		<0.018		0.018	ug/g	21-JUN-17	0.05	0.05		
Toluene		<0.080		0.080	ug/g	21-JUN-17	0.2	0.2		
o-Xylene		<0.020		0.020	ug/g	21-JUN-17				
m+p-Xylenes		<0.030		0.030	ug/g	21-JUN-17				
Xylenes (Total)		<0.050		0.050	ug/g	21-JUN-17	0.05	0.05		
Surrogate: 4-Bromofluorobenzene		91.2		50-140	%	21-JUN-17				
Surrogate: 1,4-Difluorobenzene		97.4		50-140	%	21-JUN-17				
Hydrocarbons										
F1 (C6-C10)		<5.0		5.0	ug/g	21-JUN-17	17	25		
F1-BTEX		<5.0		5.0	ug/g	21-JUN-17	17	25		
F2 (C10-C16)		<10		10	ug/g	20-JUN-17	10	10		
F3 (C16-C34)		148		50	ug/g	20-JUN-17	240	240		
F4 (C34-C50)		54		50	ug/g	20-JUN-17	120	120		
Total Hydrocarbons (C6-C50)		201		72	ug/g	21-JUN-17				
Chrom. to baseline at nC50		YES			No Unit	20-JUN-17				
Surrogate: 2-Bromobenzotrifluoride		91.9		60-140	%	20-JUN-17				
Surrogate: 3,4-Dichlorotoluene		90.1		60-140	%	21-JUN-17				
L1944192-4	2-4									
Sampled By:	P D on 16-JUN-17									
Matrix:	SOIL									
Physical Tests										
% Moisture		11.7		0.10	%	20-JUN-17				
Volatile Organic Compounds										
Benzene		<0.0068		0.0068	ug/g	21-JUN-17	0.02	0.02		
Ethylbenzene		<0.018		0.018	ug/g	21-JUN-17	0.05	0.05		
Toluene		<0.080		0.080	ug/g	21-JUN-17	0.2	0.2		
o-Xylene		<0.020		0.020	ug/g	21-JUN-17				
m+p-Xylenes		<0.030		0.030	ug/g	21-JUN-17				
Xylenes (Total)		<0.050		0.050	ug/g	21-JUN-17	0.05	0.05		
Surrogate: 4-Bromofluorobenzene		85.1		50-140	%	21-JUN-17				
Surrogate: 1,4-Difluorobenzene		90.0		50-140	%	21-JUN-17				
Hydrocarbons										
F1 (C6-C10)		<5.0		5.0	ug/g	21-JUN-17	17	25		
F1-BTEX		<5.0		5.0	ug/g	21-JUN-17	17	25		
F2 (C10-C16)		<10		10	ug/g	20-JUN-17	10	10		
F3 (C16-C34)		<50		50	ug/g	20-JUN-17	240	240		
F4 (C34-C50)		<50		50	ug/g	20-JUN-17	120	120		
Total Hydrocarbons (C6-C50)		<72		72	ug/g	21-JUN-17				
Chrom. to baseline at nC50		YES			No Unit	20-JUN-17				
Surrogate: 2-Bromobenzotrifluoride		92.9		60-140	%	20-JUN-17				
Surrogate: 3,4-Dichlorotoluene		93.0		60-140	%	21-JUN-17				

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

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T8-ALL-SOIL-CATEGORIES

#1: T8-Soil-Agricultural or Other Property Use

#2: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#3: T8-Sediment-All Types of Property Uses

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference***
BTX-511-HS-WT	Soil	BTEX-O.Reg 153/04 (July 2011)	SW846 8260

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

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

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)	MOE DECPH-E3398/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).

MOISTURE-WT	Soil	% Moisture	Gravimetric: Oven Dried
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:

Reference Information

15-555984

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	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 wwt - milligrams per kilogram based on wet weight of sample

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

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

< - Less than.

D.L. - The reporting limit.

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

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

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

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

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information.



Quality Control Report

Workorder: L1944192

Report Date: 12-JUL-17

Page 1 of 3

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTX-511-HS-WT		Soil						
Batch	R3752227							
WG2551811-4	DUP	WG2551811-3						
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	21-JUN-17
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	21-JUN-17
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	21-JUN-17
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-JUN-17
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	21-JUN-17
WG2551811-2	LCS							
Benzene			106.8		%		70-130	21-JUN-17
Ethylbenzene			106.1		%		70-130	21-JUN-17
m+p-Xylenes			104.8		%		70-130	21-JUN-17
o-Xylene			108.2		%		70-130	21-JUN-17
Toluene			105.4		%		70-130	21-JUN-17
WG2551811-1	MB							
Benzene			<0.0068		ug/g		0.0068	21-JUN-17
Ethylbenzene			<0.018		ug/g		0.018	21-JUN-17
m+p-Xylenes			<0.030		ug/g		0.03	21-JUN-17
o-Xylene			<0.020		ug/g		0.02	21-JUN-17
Toluene			<0.080		ug/g		0.08	21-JUN-17
Surrogate: 1,4-Difluorobenzene			94.1		%		50-140	21-JUN-17
Surrogate: 4-Bromofluorobenzene			89.0		%		50-140	21-JUN-17
WG2551811-5	MS	WG2551811-3						
Benzene			102.7		%		60-140	21-JUN-17
Ethylbenzene			102.5		%		60-140	21-JUN-17
m+p-Xylenes			101.0		%		60-140	21-JUN-17
o-Xylene			104.2		%		60-140	21-JUN-17
Toluene			101.9		%		60-140	21-JUN-17
F1-HS-511-WT		Soil						
Batch	R3752227							
WG2551811-4	DUP	WG2551811-3						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	21-JUN-17
WG2551811-2	LCS							
F1 (C6-C10)			104.6		%		80-120	21-JUN-17
WG2551811-1	MB							
F1 (C6-C10)			<5.0		ug/g		5	21-JUN-17
Surrogate: 3,4-Dichlorotoluene			101.3		%		60-140	21-JUN-17
WG2551811-7	MS	WG2551811-6						



Quality Control Report

Workorder: L1944192

Report Date: 12-JUL-17

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Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT	Soil							
Batch	R3752227							
WG2551811-7	MS	WG2551811-6						
F1 (C6-C10)			90.6		%		60-140	21-JUN-17
F2-F4-511-WT	Soil							
Batch	R3752134							
WG2551486-3	CRM	ALS PHC2 IRM						
F2 (C10-C16)			87.4		%		70-130	20-JUN-17
F3 (C16-C34)			90.2		%		70-130	20-JUN-17
F4 (C34-C50)			84.7		%		70-130	20-JUN-17
WG2551486-5	DUP	WG2551486-4						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	30	20-JUN-17
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	30	20-JUN-17
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	30	20-JUN-17
WG2551486-2	LCS							
F2 (C10-C16)			106.0		%		80-120	20-JUN-17
F3 (C16-C34)			105.5		%		80-120	20-JUN-17
F4 (C34-C50)			98.1		%		80-120	20-JUN-17
WG2551486-1	MB							
F2 (C10-C16)			<10		ug/g		10	20-JUN-17
F3 (C16-C34)			<50		ug/g		50	20-JUN-17
F4 (C34-C50)			<50		ug/g		50	20-JUN-17
Surrogate: 2-Bromobenzotrifluoride			88.7		%		60-140	20-JUN-17
MOISTURE-WT	Soil							
Batch	R3751103							
WG2552075-3	DUP	L1944235-1						
% Moisture		7.67	7.85		%	2.3	20	20-JUN-17
WG2552075-2	LCS							
% Moisture			100.1		%		90-110	20-JUN-17
WG2552075-1	MB							
% Moisture			<0.10		%		0.1	20-JUN-17

Quality Control Report

Workorder: L1944192

Report Date: 12-JUL-17

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

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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
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.

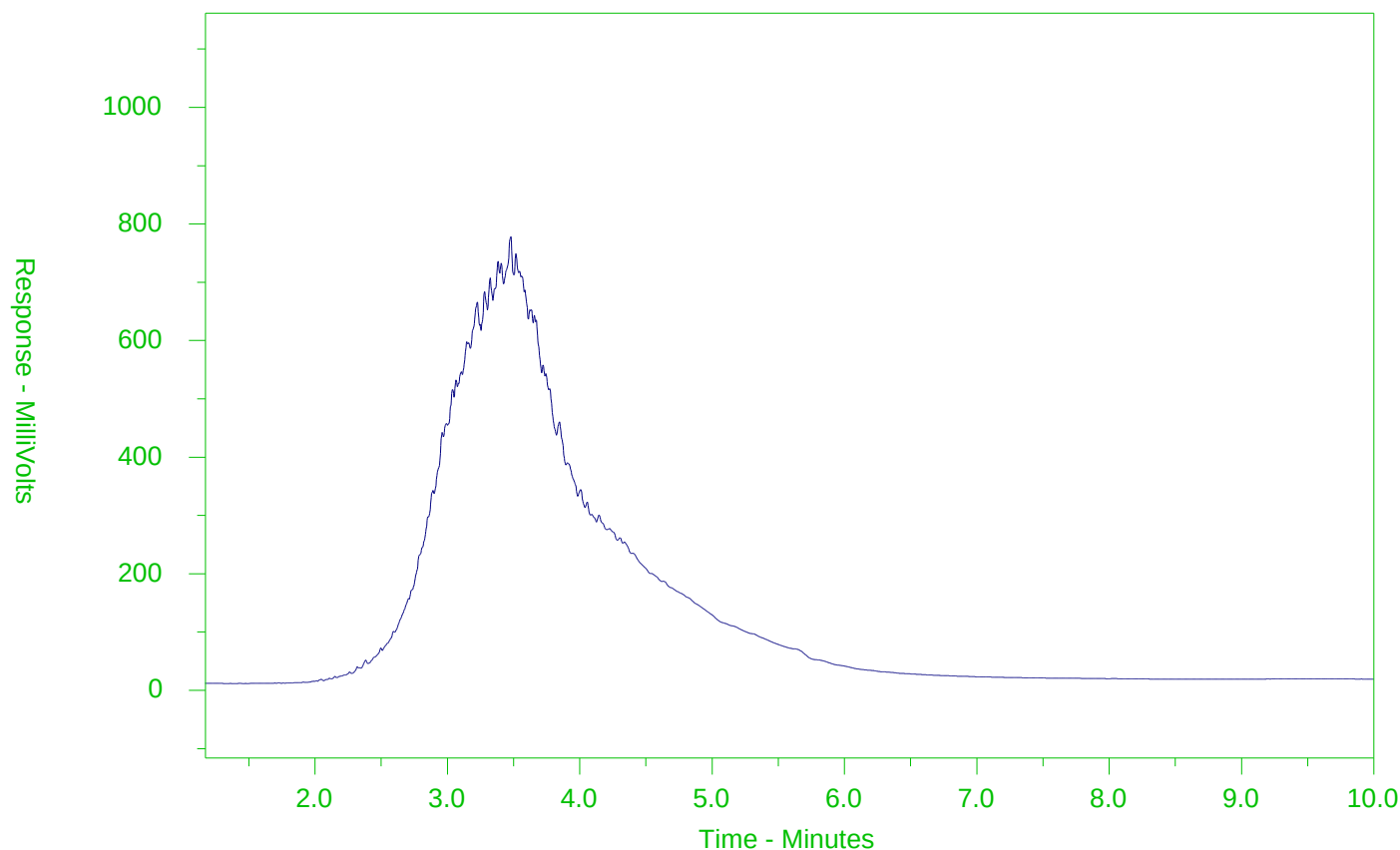
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide 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: L1944192-1
Client Sample ID: 2-1



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.

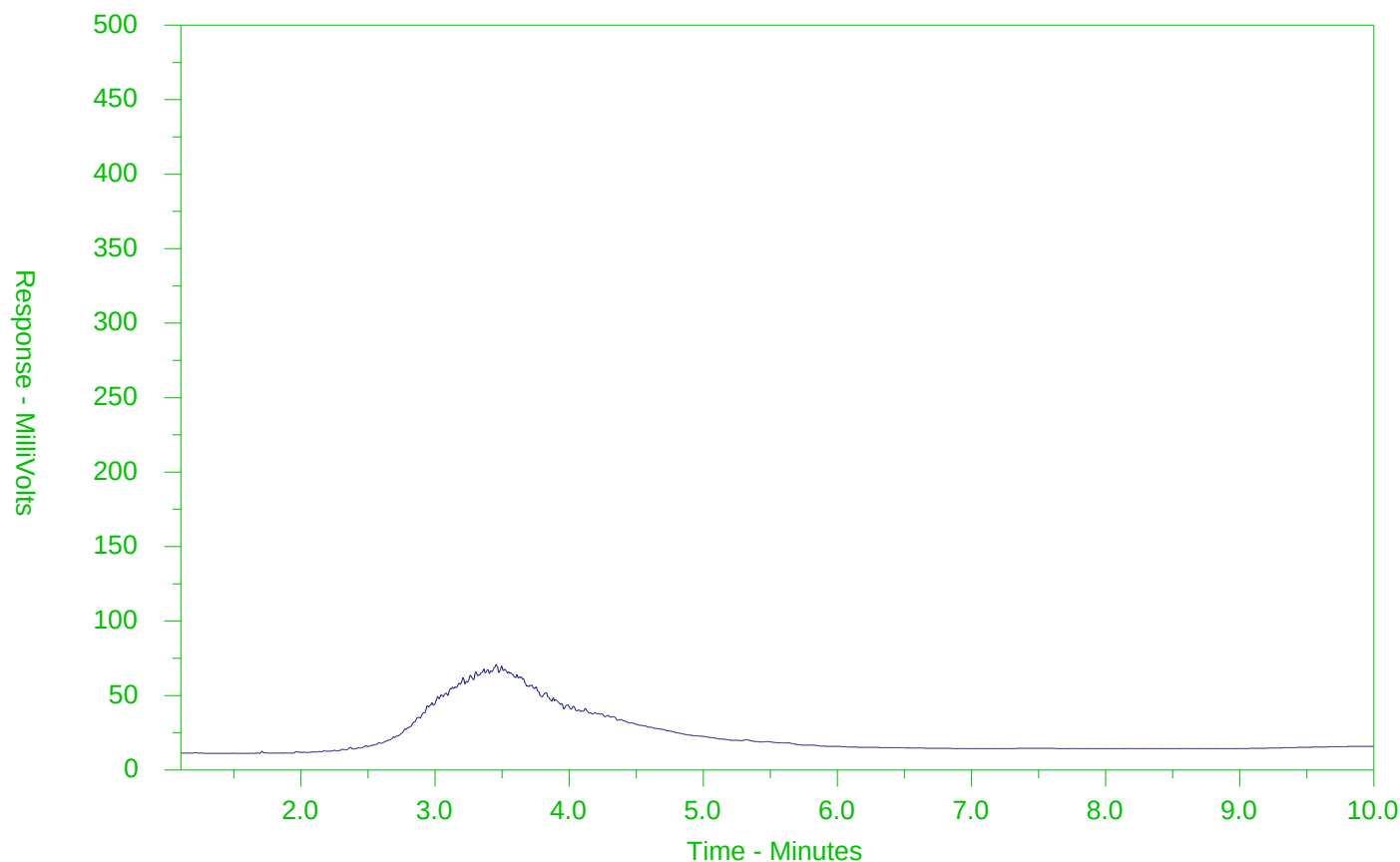
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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: L1944192-2
Client Sample ID: 2-2



← 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.

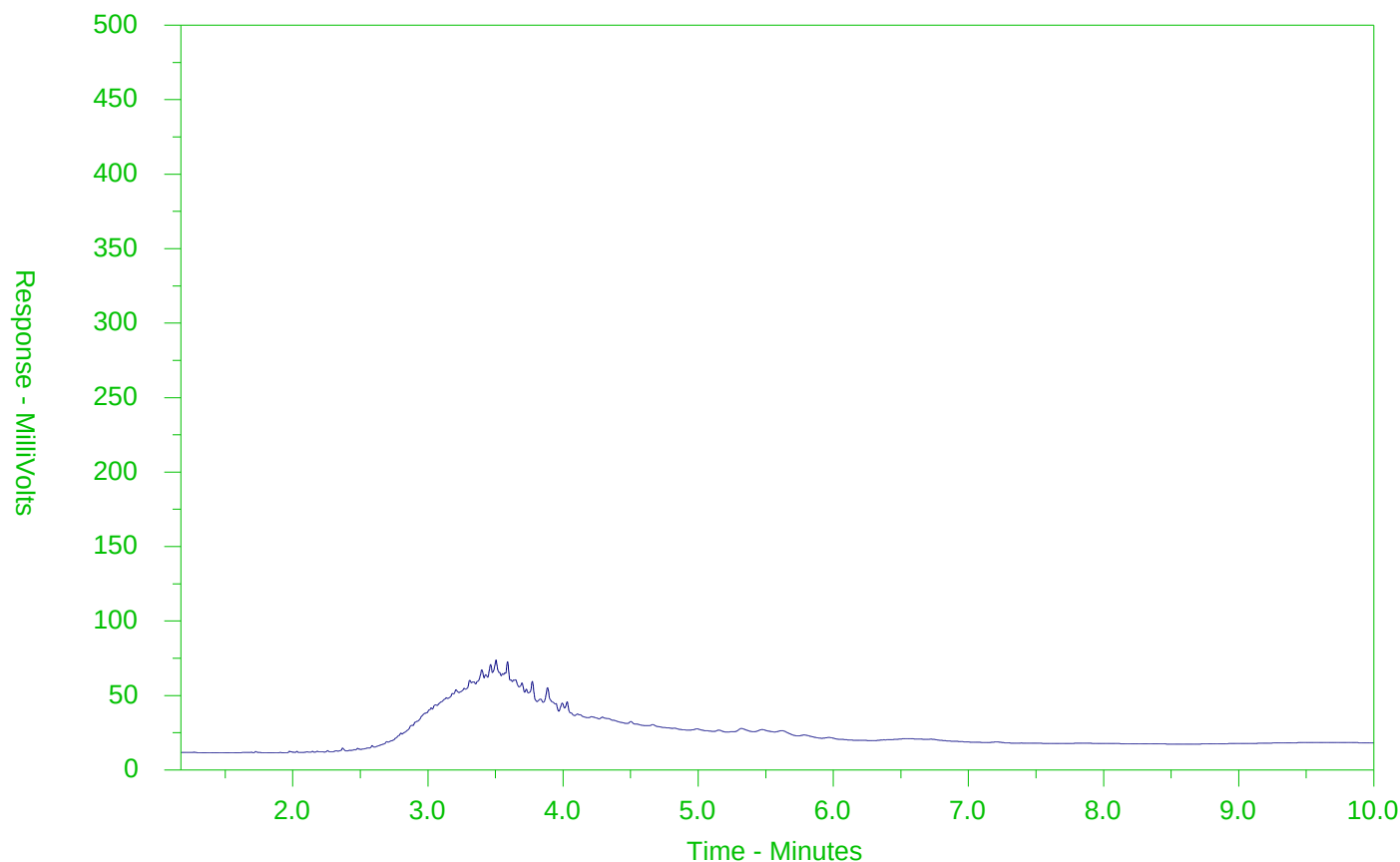
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L1944192-3
Client Sample ID: 2-3



← 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.

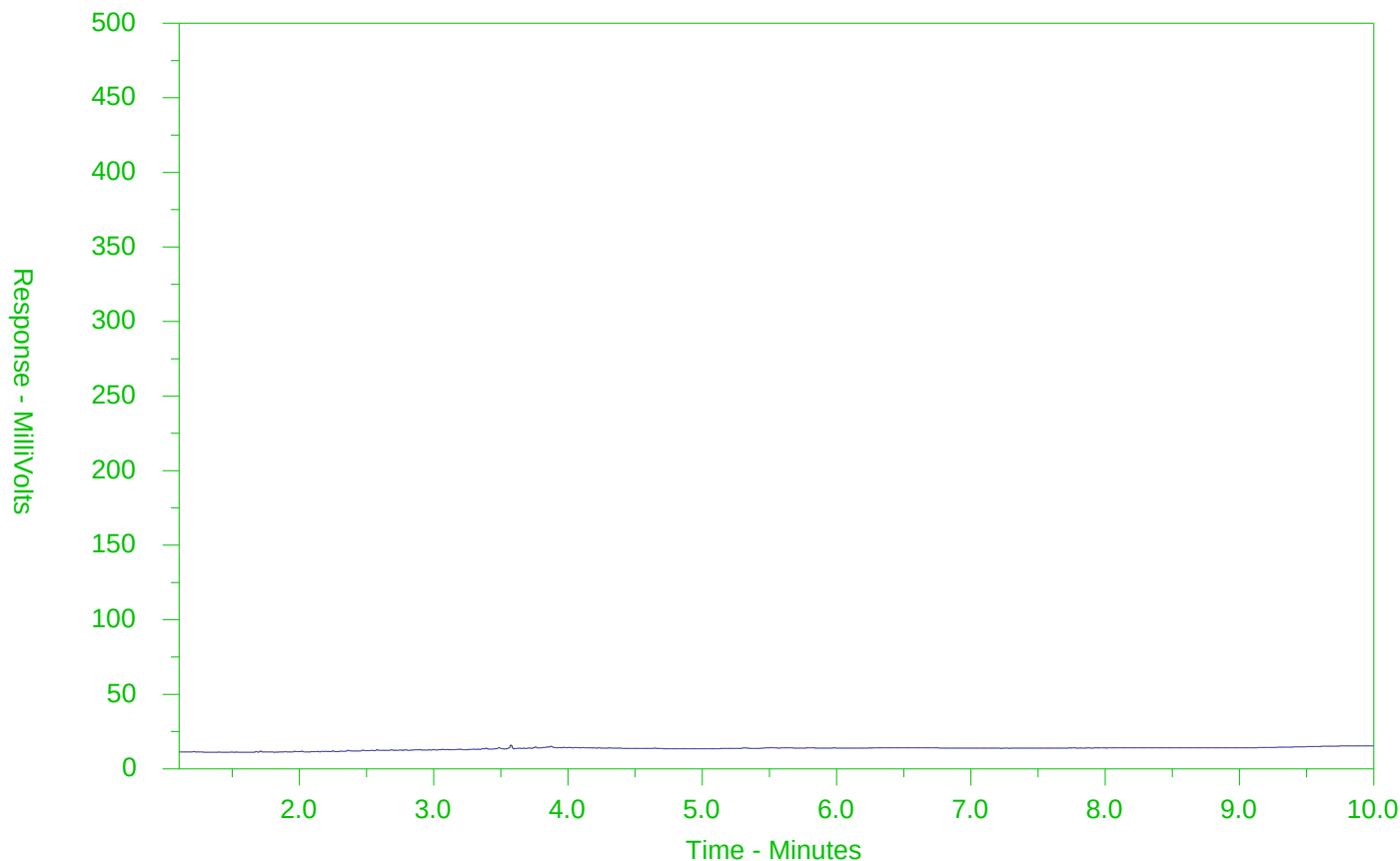
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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: L1944192-4
Client Sample ID: 2-4



← 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.

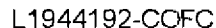
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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



Page 1 of 1

[illegible]

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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

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

OCTOBER 2016 EDITION

AC



CHUNG AND VANDER DOELEN
ATTN: PETER DAO
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Date Received: 23-JUN-17
Report Date: 12-JUL-17 11:07 (MT)
Version: FINAL REV. 2

Client Phone: 519-742-8979

Certificate of Analysis

Lab Work Order #: L1947399
Project P.O. #: E17413
Job Reference: WITMER EXCAVATION - SOIL 2
C of C Numbers: 15-555985
Legal Site Desc:

Mary-Lynn Pike
Client Services Supervisor

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ANALYTICAL GUIDELINE REPORT

WITMER EXCAVATION - SOIL 2

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte						#1	#2	#3	
L1947399-1	2-5									
Sampled By:	P D on 23-JUN-17									
Matrix:	SOIL									
Physical Tests										
% Moisture		10.2		0.10	%	26-JUN-17				
Volatile Organic Compounds										
Benzene		<0.0068		0.0068	ug/g	27-JUN-17	0.02	0.02		
Ethylbenzene		<0.018		0.018	ug/g	27-JUN-17	0.05	0.05		
Toluene		<0.080		0.080	ug/g	27-JUN-17	0.2	0.2		
o-Xylene		<0.020		0.020	ug/g	27-JUN-17				
m+p-Xylenes		<0.030		0.030	ug/g	27-JUN-17				
Xylenes (Total)		<0.050		0.050	ug/g	27-JUN-17	0.05	0.05		
Surrogate: 4-Bromofluorobenzene		89.7		50-140	%	27-JUN-17				
Surrogate: 1,4-Difluorobenzene		89.5		50-140	%	27-JUN-17				
Hydrocarbons										
F1 (C6-C10)		<5.0		5.0	ug/g	27-JUN-17	17	25		
F1-BTEX		<5.0		5.0	ug/g	28-JUN-17	17	25		
F2 (C10-C16)		<10		10	ug/g	27-JUN-17	10	10		
F3 (C16-C34)		<50		50	ug/g	27-JUN-17	240	240		
F4 (C34-C50)		<50		50	ug/g	27-JUN-17	120	120		
Total Hydrocarbons (C6-C50)		<72		72	ug/g	28-JUN-17				
Chrom. to baseline at nC50		YES			No Unit	27-JUN-17				
Surrogate: 2-Bromobenzotrifluoride		96.8		60-140	%	27-JUN-17				
Surrogate: 3,4-Dichlorotoluene		100.6		60-140	%	27-JUN-17				

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

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T8-ALL-SOIL-CATEGORIES

#1: T8-Soil-Agricultural or Other Property Use

#2: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#3: T8-Sediment-All Types of Property Uses

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference***
BTX-511-HS-WT	Soil	BTEX-O.Reg 153/04 (July 2011)	SW846 8260

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

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

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)	MOE DECPH-E3398/CCME TIER 1
--------------	------	--------------------------------	-----------------------------

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

Notes:

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

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

MOISTURE-WT	Soil	% Moisture	Gravimetric: Oven Dried
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:

Reference Information

15-555985

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	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 wwt - milligrams per kilogram based on wet weight of sample

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

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

< - Less than.

D.L. - The reporting limit.

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

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

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

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

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information.



Quality Control Report

Workorder: L1947399

Report Date: 12-JUL-17

Page 1 of 3

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTX-511-HS-WT		Soil						
Batch	R3756594							
WG2556582-4	DUP	WG2556582-3						
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	27-JUN-17
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	27-JUN-17
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	27-JUN-17
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	27-JUN-17
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	27-JUN-17
WG2556582-2	LCS							
Benzene			108.4		%		70-130	27-JUN-17
Ethylbenzene			107.5		%		70-130	27-JUN-17
m+p-Xylenes			106.9		%		70-130	27-JUN-17
o-Xylene			111.0		%		70-130	27-JUN-17
Toluene			107.9		%		70-130	27-JUN-17
WG2556582-1	MB							
Benzene			<0.0068		ug/g		0.0068	27-JUN-17
Ethylbenzene			<0.018		ug/g		0.018	27-JUN-17
m+p-Xylenes			<0.030		ug/g		0.03	27-JUN-17
o-Xylene			<0.020		ug/g		0.02	27-JUN-17
Toluene			<0.080		ug/g		0.08	27-JUN-17
Surrogate: 1,4-Difluorobenzene			103.4		%		50-140	27-JUN-17
Surrogate: 4-Bromofluorobenzene			103.4		%		50-140	27-JUN-17
WG2556582-5	MS	WG2556582-3						
Benzene			103.5		%		60-140	27-JUN-17
Ethylbenzene			103.2		%		60-140	27-JUN-17
m+p-Xylenes			102.8		%		60-140	27-JUN-17
o-Xylene			107.6		%		60-140	27-JUN-17
Toluene			104.3		%		60-140	27-JUN-17
F1-HS-511-WT		Soil						
Batch	R3756594							
WG2556582-4	DUP	WG2556582-3						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	27-JUN-17
WG2556582-2	LCS							
F1 (C6-C10)			102.0		%		80-120	27-JUN-17
WG2556582-1	MB							
F1 (C6-C10)			<5.0		ug/g		5	27-JUN-17
Surrogate: 3,4-Dichlorotoluene			120.0		%		60-140	27-JUN-17
WG2556582-7	MS	WG2556582-6						



Quality Control Report

Workorder: L1947399

Report Date: 12-JUL-17

Page 2 of 3

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT	Soil							
Batch	R3756594							
WG2556582-7	MS	WG2556582-6						
F1 (C6-C10)			102.5		%		60-140	27-JUN-17
F2-F4-511-WT	Soil							
Batch	R3757740							
WG2556862-3	CRM	ALS PHC2 IRM						
F2 (C10-C16)			96.1		%		70-130	27-JUN-17
F3 (C16-C34)			102.6		%		70-130	27-JUN-17
F4 (C34-C50)			94.2		%		70-130	27-JUN-17
WG2556862-5	DUP	WG2556862-4						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	30	27-JUN-17
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	30	27-JUN-17
F4 (C34-C50)		72	54		ug/g	30	30	27-JUN-17
WG2556862-2	LCS							
F2 (C10-C16)			117.8		%		80-120	27-JUN-17
F3 (C16-C34)			112.8		%		80-120	27-JUN-17
F4 (C34-C50)			106.9		%		80-120	27-JUN-17
WG2556862-1	MB							
F2 (C10-C16)			<10		ug/g		10	27-JUN-17
F3 (C16-C34)			<50		ug/g		50	27-JUN-17
F4 (C34-C50)			<50		ug/g		50	27-JUN-17
Surrogate: 2-Bromobenzotrifluoride			94.5		%		60-140	27-JUN-17
MOISTURE-WT	Soil							
Batch	R3756609							
WG2556590-3	DUP	L1947768-15						
% Moisture		14.2	14.6		%	3.3	20	26-JUN-17
WG2556590-2	LCS							
% Moisture			99.3		%		90-110	26-JUN-17
WG2556590-1	MB							
% Moisture			<0.10		%		0.1	26-JUN-17

Quality Control Report

Workorder: L1947399

Report Date: 12-JUL-17

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Page 3 of 3

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
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.

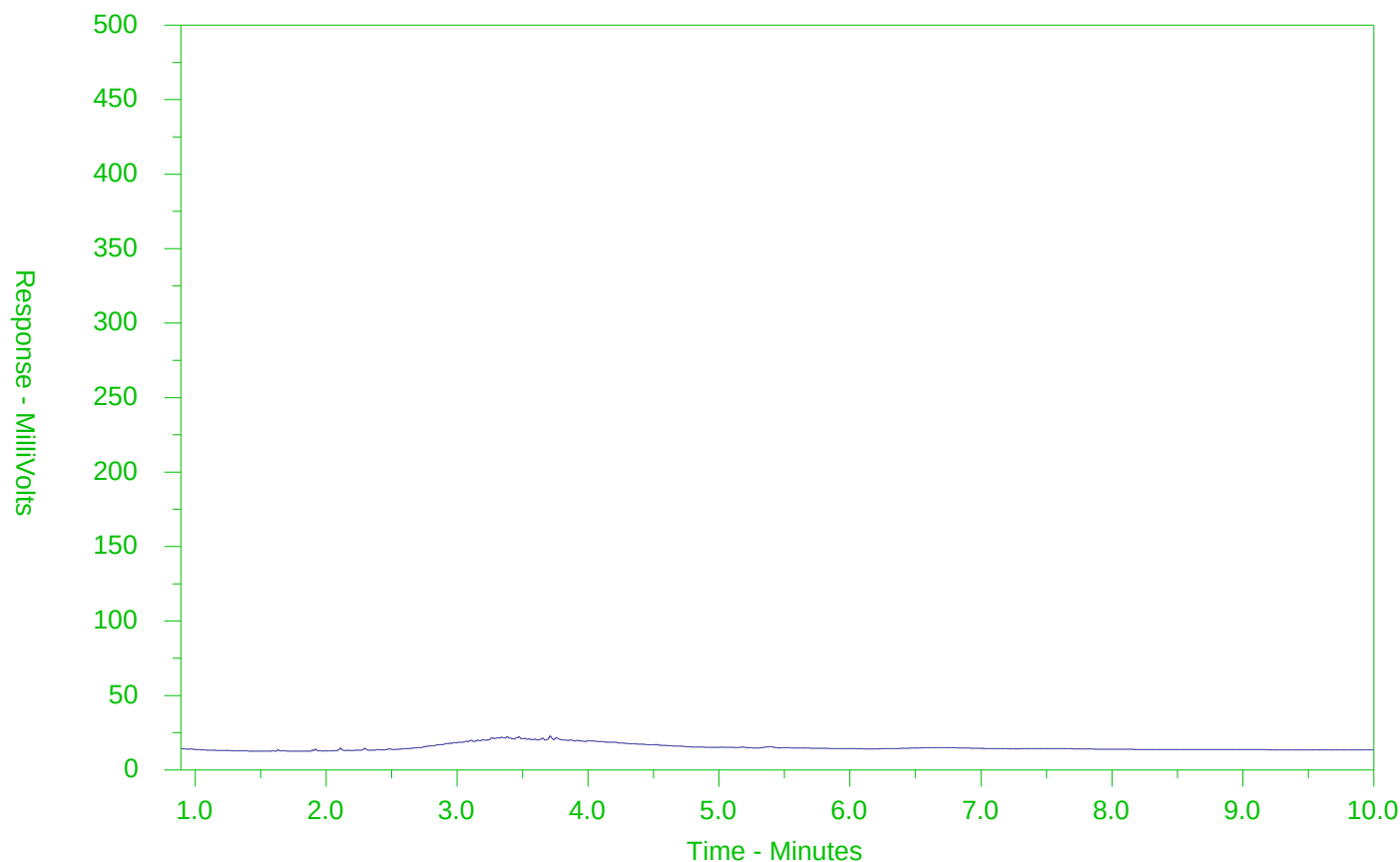
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide 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: L1947399-1
Client Sample ID: 2-5



← 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.



Page 1 of 1

OCTOBER 2015 FROM



CHUNG AND VANDER DOELEN
ATTN: PETER DAO
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Date Received: 05-JUL-17
Report Date: 12-JUL-17 11:19 (MT)
Version: FINAL REV. 3

Client Phone: 519-742-8979

Certificate of Analysis

Lab Work Order #: L1953407
Project P.O. #: E17413
Job Reference: WITMEIR PHASE II - SOIL
C of C Numbers: 15-555991
Legal Site Desc:

Comments:

12-JUL-2017 Sample type corrected to soil

Mary-Lynn Pike
Client Services Supervisor

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ALS CANADA LTD Part of the ALS Group An ALS Limited Company



ANALYTICAL GUIDELINE REPORT

L1953407 CONTD....

Page 2 of 5

12-JUL-17 11:19 (MT)

WITMEIR PHASE II - SOIL

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte						#1	#2	#3	
L1953407-1	MW1-2									
Sampled By:	P D on 04-JUL-17									
Matrix:	SOIL									
Physical Tests										
pH		7.60		0.10	pH units	06-JUL-17				
L1953407-2	MW1-3									
Sampled By:	P D on 04-JUL-17									
Matrix:	SOIL									
Physical Tests										
% Moisture		14.2		0.10	%	06-JUL-17				
Metals										
Antimony (Sb)		<1.0		1.0	ug/g	07-JUL-17	1	1.3		
Arsenic (As)		2.1		1.0	ug/g	07-JUL-17	11	18	6	
Barium (Ba)		15.4		1.0	ug/g	07-JUL-17	210	220		
Beryllium (Be)		<0.50		0.50	ug/g	07-JUL-17	2.5	2.5		
Boron (B)		6.6		5.0	ug/g	07-JUL-17	36	36		
Cadmium (Cd)		<0.50		0.50	ug/g	07-JUL-17	1	1.2	0.6	
Chromium (Cr)		7.3		1.0	ug/g	07-JUL-17	67	70	26	
Cobalt (Co)		3.1		1.0	ug/g	07-JUL-17	22	22	50	
Copper (Cu)		14.8		1.0	ug/g	07-JUL-17	62	92	16	
Lead (Pb)		6.8		1.0	ug/g	07-JUL-17	45	120	31	
Molybdenum (Mo)		<1.0		1.0	ug/g	07-JUL-17	2	2		
Nickel (Ni)		6.3		1.0	ug/g	07-JUL-17	37	82	16	
Selenium (Se)		<1.0		1.0	ug/g	07-JUL-17	1.2	1.5		
Silver (Ag)		<0.20		0.20	ug/g	07-JUL-17	0.5	0.5	0.5	
Thallium (Tl)		<0.50		0.50	ug/g	07-JUL-17	1	1		
Uranium (U)		<1.0		1.0	ug/g	07-JUL-17	1.9	2.5		
Vanadium (V)		14.8		1.0	ug/g	07-JUL-17	86	86		
Zinc (Zn)		32.8		5.0	ug/g	07-JUL-17	290	290	120	
Volatile Organic Compounds										
Benzene		<0.0068		0.0068	ug/g	06-JUL-17	0.02	0.02		
Ethylbenzene		<0.018		0.018	ug/g	06-JUL-17	0.05	0.05		
Toluene		<0.080		0.080	ug/g	06-JUL-17	0.2	0.2		
o-Xylene		<0.020		0.020	ug/g	06-JUL-17				
m+p-Xylenes		<0.030		0.030	ug/g	06-JUL-17				
Xylenes (Total)		<0.050		0.050	ug/g	07-JUL-17	0.05	0.05		
Surrogate: 4-Bromofluorobenzene		81.2		50-140	%	06-JUL-17				
Surrogate: 1,4-Difluorobenzene		85.4		50-140	%	06-JUL-17				
Hydrocarbons										
F1 (C6-C10)		<5.0		5.0	ug/g	06-JUL-17	17	25		
F1-BTEX		<5.0		5.0	ug/g	07-JUL-17	17	25		
F2 (C10-C16)		<10		10	ug/g	06-JUL-17	10	10		
F3 (C16-C34)		<50		50	ug/g	06-JUL-17	240	240		
F4 (C34-C50)		<50		50	ug/g	06-JUL-17	120	120		
Total Hydrocarbons (C6-C50)		<72		72	ug/g	07-JUL-17				
Chrom. to baseline at nC50		YES			No Unit	06-JUL-17				
Surrogate: 2-Bromobenzotrifluoride		97.4		60-140	%	06-JUL-17				
Surrogate: 3,4-Dichlorotoluene		96.6		60-140	%	06-JUL-17				

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

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T8-ALL-SOIL-CATEGORIES

#1: T8-Soil-Agricultural or Other Property Use

#2: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#3: T8-Sediment-All Types of Property Uses



ANALYTICAL GUIDELINE REPORT

WITMEIR PHASE II - SOIL

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte						#1	#2	#3	
L1953407-3	MW1-7									
Sampled By:	P D on 04-JUL-17									
Matrix:	SOIL									
Physical Tests										
% Moisture		3.48		0.10	%	06-JUL-17				
pH		8.02		0.10	pH units	06-JUL-17				
Metals										
Antimony (Sb)		<1.0		1.0	ug/g	07-JUL-17	1	1.3		
Arsenic (As)		1.7		1.0	ug/g	07-JUL-17	11	18	6	
Barium (Ba)		6.9		1.0	ug/g	07-JUL-17	210	220		
Beryllium (Be)		<0.50		0.50	ug/g	07-JUL-17	2.5	2.5		
Boron (B)		<5.0		5.0	ug/g	07-JUL-17	36	36		
Cadmium (Cd)		<0.50		0.50	ug/g	07-JUL-17	1	1.2	0.6	
Chromium (Cr)		4.0		1.0	ug/g	07-JUL-17	67	70	26	
Cobalt (Co)		1.6		1.0	ug/g	07-JUL-17	22	22	50	
Copper (Cu)		6.6		1.0	ug/g	07-JUL-17	62	92	16	
Lead (Pb)		5.6		1.0	ug/g	07-JUL-17	45	120	31	
Molybdenum (Mo)		<1.0		1.0	ug/g	07-JUL-17	2	2		
Nickel (Ni)		3.4		1.0	ug/g	07-JUL-17	37	82	16	
Selenium (Se)		<1.0		1.0	ug/g	07-JUL-17	1.2	1.5		
Silver (Ag)		<0.20		0.20	ug/g	07-JUL-17	0.5	0.5	0.5	
Thallium (Tl)		<0.50		0.50	ug/g	07-JUL-17	1	1		
Uranium (U)		<1.0		1.0	ug/g	07-JUL-17	1.9	2.5		
Vanadium (V)		9.4		1.0	ug/g	07-JUL-17	86	86		
Zinc (Zn)		38.1		5.0	ug/g	07-JUL-17	290	290	120	
Volatile Organic Compounds										
Benzene		<0.0068		0.0068	ug/g	06-JUL-17	0.02	0.02		
Ethylbenzene		<0.018		0.018	ug/g	06-JUL-17	0.05	0.05		
Toluene		<0.080		0.080	ug/g	06-JUL-17	0.2	0.2		
o-Xylene		<0.020		0.020	ug/g	06-JUL-17				
m+p-Xylenes		<0.030		0.030	ug/g	06-JUL-17				
Xylenes (Total)		<0.050		0.050	ug/g	07-JUL-17	0.05	0.05		
Surrogate: 4-Bromofluorobenzene		90.7		50-140	%	06-JUL-17				
Surrogate: 1,4-Difluorobenzene		97.7		50-140	%	06-JUL-17				
Hydrocarbons										
F1 (C6-C10)		<5.0		5.0	ug/g	06-JUL-17	17	25		
F1-BTEX		<5.0		5.0	ug/g	07-JUL-17	17	25		
F2 (C10-C16)		<10		10	ug/g	06-JUL-17	10	10		
F3 (C16-C34)		<50		50	ug/g	06-JUL-17	240	240		
F4 (C34-C50)		<50		50	ug/g	06-JUL-17	120	120		
Total Hydrocarbons (C6-C50)		<72		72	ug/g	07-JUL-17				
Chrom. to baseline at nC50		YES			No Unit	06-JUL-17				
Surrogate: 2-Bromobenzotrifluoride		77.5		60-140	%	06-JUL-17				
Surrogate: 3,4-Dichlorotoluene		113.9		60-140	%	06-JUL-17				

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

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T8-ALL-SOIL-CATEGORIES

#1: T8-Soil-Agricultural or Other Property Use

#2: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#3: T8-Sediment-All Types of Property Uses

Reference Information

Qualifiers for Sample Submission Listed:

Qualifier	Description
CINT	Cooling initiated. Samples were received packed with ice or ice packs and were sampled the same day as received.

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference***
BTX-511-HS-WT	Soil	BTEX-O.Reg 153/04 (July 2011)	SW846 8260
BTX is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/MS.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
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
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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)	MOE DECPH-E3398/CCME TIER 1
--------------	------	--------------------------------	-----------------------------

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

Notes:

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

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

Reference Information

MET-200.2-CCMS-WT

Soil

Metals in Soil by CRC ICPMS

EPA 200.2/6020A (mod)

This method uses a heated strong acid digestion with HNO3 and HCl and is intended to liberate metals that may be environmentally available. Silicate minerals are not solubilized. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. Analysis is by Collision/Reaction Cell ICPMS.

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	Gravimetric: Oven Dried
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).

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

15-555991

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	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 wwwt - 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.



Quality Control Report

Workorder: L1953407

Report Date: 12-JUL-17

Page 1 of 6

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTX-511-HS-WT		Soil						
Batch	R3766096							
WG2562941-4	DUP	WG2562941-3						
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	05-JUL-17
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	05-JUL-17
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	05-JUL-17
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	05-JUL-17
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	05-JUL-17
WG2562941-2	LCS							
Benzene			109.3		%		70-130	05-JUL-17
Ethylbenzene			104.7		%		70-130	05-JUL-17
m+p-Xylenes			104.3		%		70-130	05-JUL-17
o-Xylene			108.1		%		70-130	05-JUL-17
Toluene			105.8		%		70-130	05-JUL-17
WG2562941-1	MB							
Benzene			<0.0068		ug/g		0.0068	05-JUL-17
Ethylbenzene			<0.018		ug/g		0.018	05-JUL-17
m+p-Xylenes			<0.030		ug/g		0.03	05-JUL-17
o-Xylene			<0.020		ug/g		0.02	05-JUL-17
Toluene			<0.080		ug/g		0.08	05-JUL-17
Surrogate: 1,4-Difluorobenzene			92.8		%		50-140	05-JUL-17
Surrogate: 4-Bromofluorobenzene			87.7		%		50-140	05-JUL-17
WG2562941-5	MS	WG2562941-3						
Benzene			114.4		%		60-140	05-JUL-17
Ethylbenzene			108.8		%		60-140	05-JUL-17
m+p-Xylenes			108.4		%		60-140	05-JUL-17
o-Xylene			112.3		%		60-140	05-JUL-17
Toluene			110.8		%		60-140	05-JUL-17
F1-HS-511-WT		Soil						
Batch	R3766096							
WG2562941-4	DUP	WG2562941-3						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	05-JUL-17
WG2562941-2	LCS							
F1 (C6-C10)			96.4		%		80-120	05-JUL-17
WG2562941-1	MB							
F1 (C6-C10)			<5.0		ug/g		5	05-JUL-17
Surrogate: 3,4-Dichlorotoluene			100.7		%		60-140	05-JUL-17
WG2562941-7	MS	WG2562941-6						



Quality Control Report

Workorder: L1953407

Report Date: 12-JUL-17

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Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT								
Soil								
Batch	R3766096							
WG2562941-7	MS	WG2562941-6						
F1 (C6-C10)			98.8		%		60-140	05-JUL-17
F2-F4-511-WT								
Soil								
Batch	R3766733							
WG2563317-3	CRM	ALS PHC2 IRM						
F2 (C10-C16)			86.5		%		70-130	06-JUL-17
F3 (C16-C34)			87.2		%		70-130	06-JUL-17
F4 (C34-C50)			84.1		%		70-130	06-JUL-17
WG2563317-5	DUP	WG2563317-4						
F2 (C10-C16)		11	14		ug/g	18	30	06-JUL-17
F3 (C16-C34)		83	85		ug/g	1.7	30	06-JUL-17
F4 (C34-C50)		54	52		ug/g	2.9	30	06-JUL-17
WG2563317-2	LCS							
F2 (C10-C16)			112.8		%		80-120	06-JUL-17
F3 (C16-C34)			114.0		%		80-120	06-JUL-17
F4 (C34-C50)			107.6		%		80-120	06-JUL-17
WG2563317-1	MB							
F2 (C10-C16)			<10		ug/g		10	06-JUL-17
F3 (C16-C34)			<50		ug/g		50	06-JUL-17
F4 (C34-C50)			<50		ug/g		50	06-JUL-17
Surrogate: 2-Bromobenzotrifluoride			88.4		%		60-140	06-JUL-17
MET-200.2-CCMS-WT								
Soil								
Batch	R3767638							
WG2564874-2	CRM	WT-CANMET-TILL1						
Antimony (Sb)			94.3		%		70-130	07-JUL-17
Arsenic (As)			108.2		%		70-130	07-JUL-17
Barium (Ba)			103.6		%		70-130	07-JUL-17
Beryllium (Be)			94.0		%		70-130	07-JUL-17
Cadmium (Cd)			93.0		%		70-130	07-JUL-17
Chromium (Cr)			106.4		%		70-130	07-JUL-17
Cobalt (Co)			97.6		%		70-130	07-JUL-17
Copper (Cu)			95.7		%		70-130	07-JUL-17
Lead (Pb)			95.7		%		70-130	07-JUL-17
Molybdenum (Mo)			92.9		%		70-130	07-JUL-17
Nickel (Ni)			98.3				70-130	



Quality Control Report

Workorder: L1953407

Report Date: 12-JUL-17

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Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT		Soil						
Batch	R3767638							
WG2564874-2	CRM	WT-CANMET-TILL1						
Nickel (Ni)			98.3		%		70-130	07-JUL-17
Selenium (Se)			92.9		%		70-130	07-JUL-17
Silver (Ag)			105.3		%		70-130	07-JUL-17
Thallium (Tl)			98.5		%		70-130	07-JUL-17
Uranium (U)			108.2		%		70-130	07-JUL-17
Vanadium (V)			105.8		%		70-130	07-JUL-17
Zinc (Zn)			99.4		%		70-130	07-JUL-17
WG2564874-6	DUP	WG2564874-5						
Antimony (Sb)		0.15	0.16		ug/g	0.9	30	07-JUL-17
Arsenic (As)		5.44	5.08		ug/g	6.9	30	07-JUL-17
Barium (Ba)		41.3	38.4		ug/g	7.0	40	07-JUL-17
Beryllium (Be)		0.38	0.34		ug/g	10	30	07-JUL-17
Boron (B)		6.1	5.7		ug/g	5.2	30	07-JUL-17
Cadmium (Cd)		0.571	0.567		ug/g	0.7	30	07-JUL-17
Chromium (Cr)		14.6	13.9		ug/g	5.5	30	07-JUL-17
Cobalt (Co)		4.20	4.06		ug/g	3.4	30	07-JUL-17
Copper (Cu)		12.7	12.2		ug/g	4.1	30	07-JUL-17
Lead (Pb)		44.9	41.3		ug/g	8.3	40	07-JUL-17
Molybdenum (Mo)		0.61	0.56		ug/g	9.7	40	07-JUL-17
Nickel (Ni)		9.28	8.94		ug/g	3.7	30	07-JUL-17
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	07-JUL-17
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	07-JUL-17
Thallium (Tl)		0.095	0.091		ug/g	4.8	30	07-JUL-17
Uranium (U)		0.520	0.505		ug/g	2.9	30	07-JUL-17
Vanadium (V)		23.1	23.1		ug/g	0.1	30	07-JUL-17
Zinc (Zn)		196	187		ug/g	4.5	30	07-JUL-17
WG2564874-4	LCS							
Antimony (Sb)			102.7		%		80-120	07-JUL-17
Arsenic (As)			95.9		%		80-120	07-JUL-17
Barium (Ba)			97.8		%		80-120	07-JUL-17
Beryllium (Be)			92.8		%		80-120	07-JUL-17
Boron (B)			91.9		%		80-120	07-JUL-17
Cadmium (Cd)			93.0		%		80-120	07-JUL-17



Environmental

Quality Control Report

Workorder: L1953407 Report Date: 12-JUL-17 Page 5 of 6

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT		Soil						
Batch	R3766143							
WG2563726-3	DUP	L1953452-1						
% Moisture		15.6	15.9		%	1.5	20	06-JUL-17
WG2563726-2	LCS							
% Moisture			99.9		%		90-110	06-JUL-17
WG2563726-1	MB							
% Moisture			<0.10		%		0.1	06-JUL-17
PH-WT		Soil						
Batch	R3766365							
WG2563734-1	DUP	L1953407-3						
pH		8.02	8.05	J	pH units	0.03	0.3	06-JUL-17
WG2564160-1	LCS							
pH			6.96		pH units		6.7-7.3	06-JUL-17

Quality Control Report

Workorder: L1953407

Report Date: 12-JUL-17

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

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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.

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.

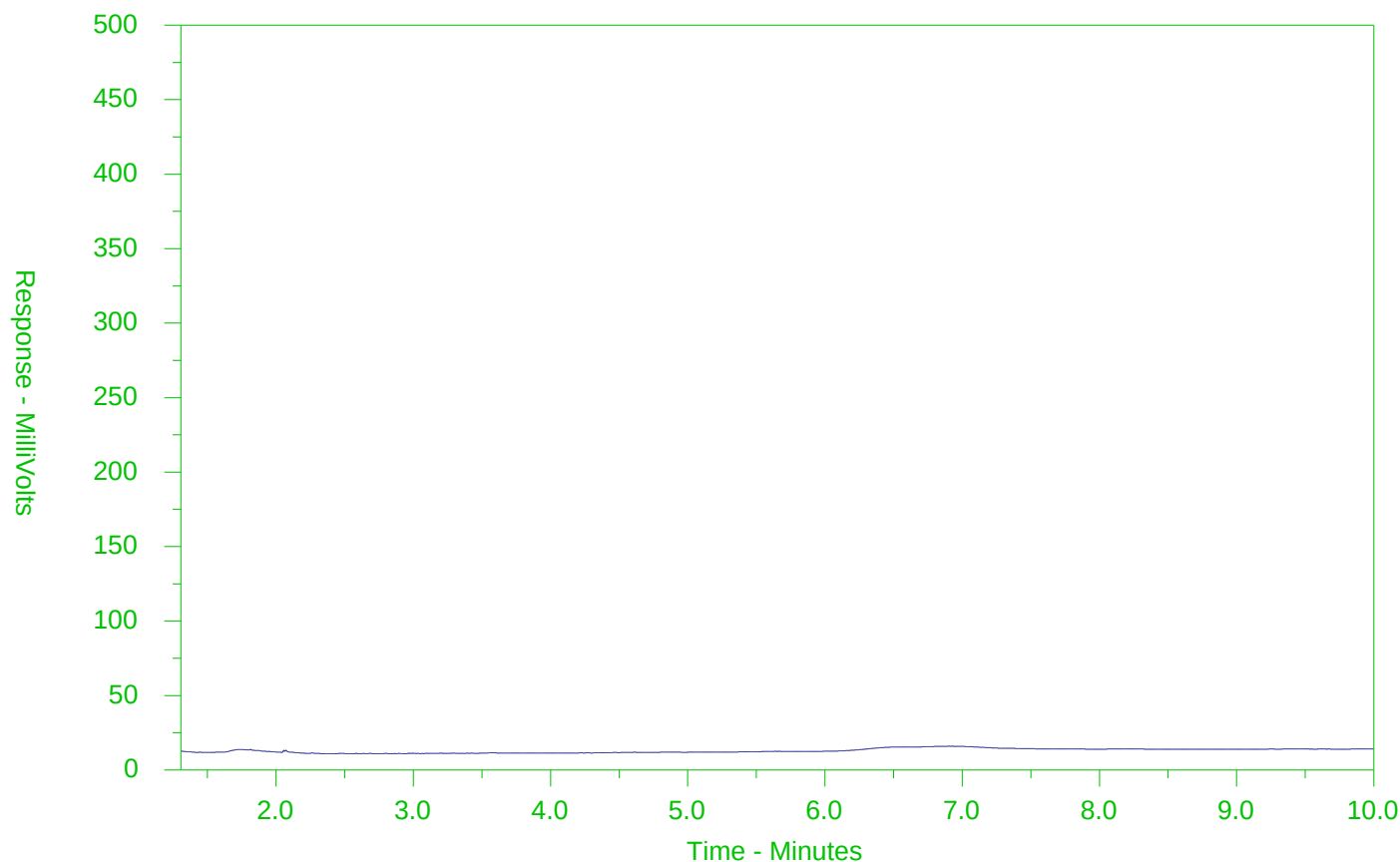
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide 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: L1953407-2
Client Sample ID: MW1-3



← 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.

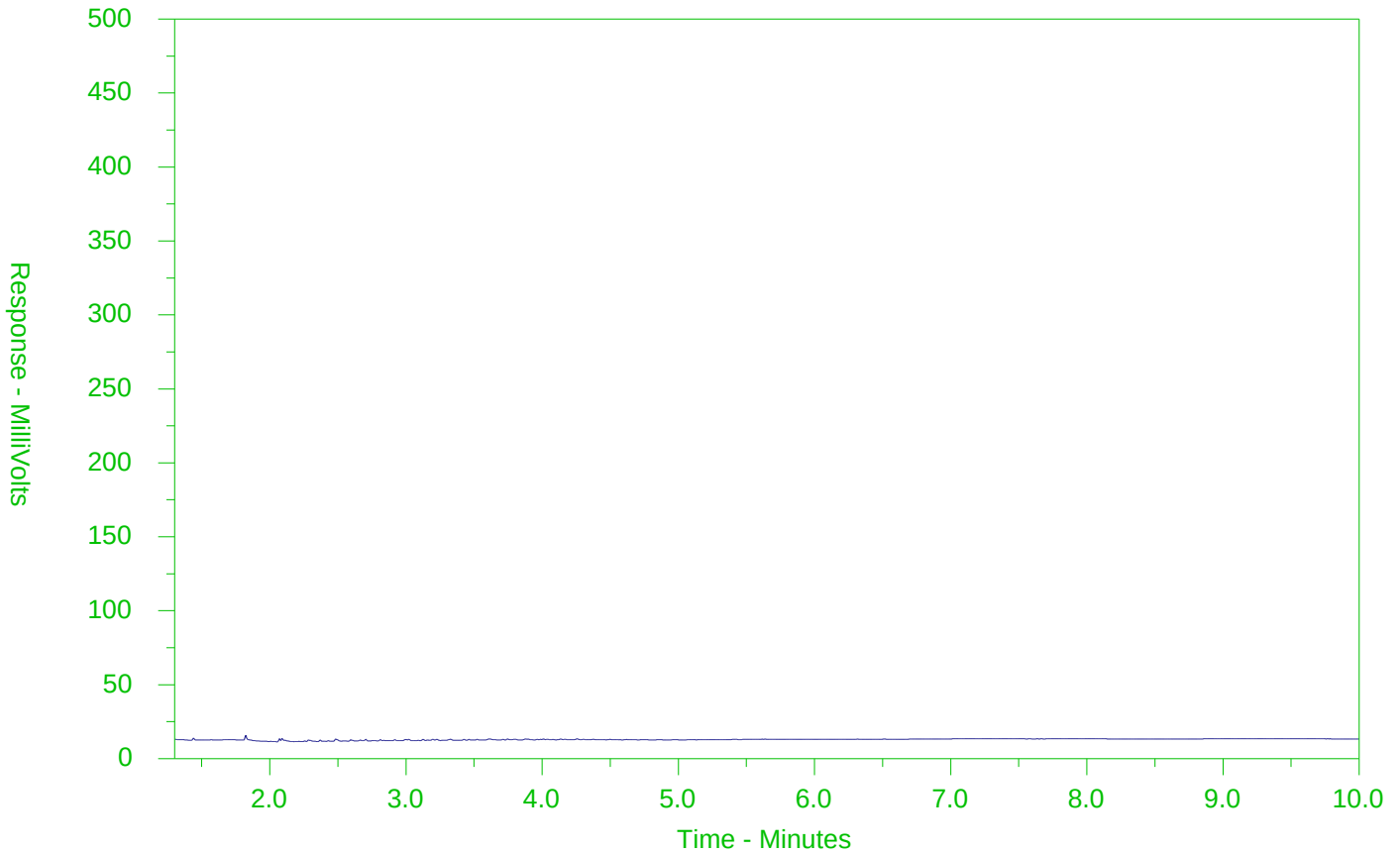
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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: L1953407-3
Client Sample ID: MW1-7



← 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.

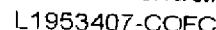
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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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REFER TO BACK PAGE FOR ALS 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

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OCTOBER 2016 ENG





CHUNG AND VANDER DOELEN
ATTN: PETER DAO
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Date Received: 05-JUL-17
Report Date: 12-JUL-17 11:06 (MT)
Version: FINAL REV. 2

Client Phone: 519-742-8979

Certificate of Analysis

Lab Work Order #: L1953421
Project P.O. #: E17413
Job Reference: WITMER PHASE II - WATER
C of C Numbers: 15-555992
Legal Site Desc:

Mary-Lynn Pike
Client Services Supervisor

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

ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047
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ANALYTICAL GUIDELINE REPORT

L1953421 CONTD....

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12-JUL-17 11:06 (MT)

WITMER PHASE II - WATER

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1953421-1	MW1									
Sampled By: P D on 05-JUL-17										
Matrix: WATER										
Dissolved Metals										
Dissolved Metals Filtration Location		FIELD			No Unit	06-JUL-17				
Antimony (Sb)-Dissolved		<0.10		0.10	ug/L	07-JUL-17	6			
Arsenic (As)-Dissolved		0.21		0.10	ug/L	07-JUL-17	25			
Barium (Ba)-Dissolved		81.8		0.10	ug/L	07-JUL-17	1000			
Beryllium (Be)-Dissolved		<0.10		0.10	ug/L	07-JUL-17	4			
Boron (B)-Dissolved		30		10	ug/L	07-JUL-17	5000			
Cadmium (Cd)-Dissolved		0.017		0.010	ug/L	07-JUL-17	2.1			
Chromium (Cr)-Dissolved		<0.50		0.50	ug/L	07-JUL-17	50			
Cobalt (Co)-Dissolved		1.59		0.10	ug/L	07-JUL-17	3.8			
Copper (Cu)-Dissolved		12.4		0.20	ug/L	07-JUL-17	69			
Lead (Pb)-Dissolved		<0.050		0.050	ug/L	07-JUL-17	10			
Molybdenum (Mo)-Dissolved		0.615		0.050	ug/L	07-JUL-17	70			
Nickel (Ni)-Dissolved		2.21		0.50	ug/L	07-JUL-17	100			
Selenium (Se)-Dissolved		0.223		0.050	ug/L	07-JUL-17	10			
Silver (Ag)-Dissolved		<0.050		0.050	ug/L	07-JUL-17	1.2			
Thallium (Tl)-Dissolved		0.056		0.010	ug/L	07-JUL-17	2			
Uranium (U)-Dissolved		0.833		0.010	ug/L	07-JUL-17	20			
Vanadium (V)-Dissolved		<0.50		0.50	ug/L	07-JUL-17	6.2			
Zinc (Zn)-Dissolved		6.3		1.0	ug/L	07-JUL-17	890			
Volatile Organic Compounds										
Acetone		<30		30	ug/L	06-JUL-17	2700			
Benzene		<0.50		0.50	ug/L	06-JUL-17	5			
Bromodichloromethane		<2.0		2.0	ug/L	06-JUL-17	16			
Bromoform		<5.0		5.0	ug/L	06-JUL-17	25			
Bromomethane		<0.50		0.50	ug/L	06-JUL-17	0.89			
Carbon tetrachloride		<0.20		0.20	ug/L	06-JUL-17	0.79			
Chlorobenzene		<0.50		0.50	ug/L	06-JUL-17	30			
Dibromochloromethane		<2.0		2.0	ug/L	06-JUL-17	25			
Chloroform		<1.0		1.0	ug/L	06-JUL-17	2.4			
1,2-Dibromoethane		<0.20		0.20	ug/L	06-JUL-17	0.2			
1,2-Dichlorobenzene		<0.50		0.50	ug/L	06-JUL-17	3			
1,3-Dichlorobenzene		<0.50		0.50	ug/L	06-JUL-17	59			
1,4-Dichlorobenzene		<0.50		0.50	ug/L	06-JUL-17	1			
Dichlorodifluoromethane		<2.0		2.0	ug/L	06-JUL-17	590			
1,1-Dichloroethane		<0.50		0.50	ug/L	06-JUL-17	5			
1,2-Dichloroethane		<0.50		0.50	ug/L	06-JUL-17	1.6			
1,1-Dichloroethylene		<0.50		0.50	ug/L	06-JUL-17	1.6			
cis-1,2-Dichloroethylene		<0.50		0.50	ug/L	06-JUL-17	1.6			
trans-1,2-Dichloroethylene		<0.50		0.50	ug/L	06-JUL-17	1.6			
Methylene Chloride		<5.0		5.0	ug/L	06-JUL-17	50			
1,2-Dichloropropane		<0.50		0.50	ug/L	06-JUL-17	5			
cis-1,3-Dichloropropene		<0.30		0.30	ug/L	06-JUL-17				
trans-1,3-Dichloropropene		<0.30		0.30	ug/L	06-JUL-17				
1,3-Dichloropropene (cis & trans)		<0.50		0.50	ug/L	06-JUL-17	0.5			
Ethylbenzene		<0.50		0.50	ug/L	06-JUL-17	2.4			
n-Hexane		<0.50		0.50	ug/L	06-JUL-17	51			

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

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T8-Ground Water - All Types of Property Use

#1: T8-Ground Water - All Types of Property Use



ANALYTICAL GUIDELINE REPORT

L1953421 CONTD....

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12-JUL-17 11:06 (MT)

WITMER PHASE II - WATER

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1953421-1	MW1									
Sampled By:	P D on 05-JUL-17									
Matrix:	WATER									
Volatile Organic Compounds							#1			
	Methyl Ethyl Ketone	<20		20	ug/L	06-JUL-17	1800			
	Methyl Isobutyl Ketone	<20		20	ug/L	06-JUL-17	640			
	MTBE	<2.0		2.0	ug/L	06-JUL-17	15			
	Styrene	<0.50		0.50	ug/L	06-JUL-17	5.4			
	1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L	06-JUL-17	1.1			
	1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L	06-JUL-17	1			
	Tetrachloroethylene	<0.50		0.50	ug/L	06-JUL-17	1.6			
	Toluene	<0.50		0.50	ug/L	06-JUL-17	22			
	1,1,1-Trichloroethane	<0.50		0.50	ug/L	06-JUL-17	200			
	1,1,2-Trichloroethane	<0.50		0.50	ug/L	06-JUL-17	4.7			
	Trichloroethylene	<0.50		0.50	ug/L	06-JUL-17	1.6			
	Trichlorofluoromethane	<5.0		5.0	ug/L	06-JUL-17	150			
	Vinyl chloride	<0.50		0.50	ug/L	06-JUL-17	0.5			
	o-Xylene	<0.30		0.30	ug/L	06-JUL-17				
	m+p-Xylenes	<0.40		0.40	ug/L	06-JUL-17				
	Xylenes (Total)	<0.50		0.50	ug/L	06-JUL-17	300			
	Surrogate: 4-Bromofluorobenzene	95.1		70-130	%	06-JUL-17				
	Surrogate: 1,4-Difluorobenzene	99.8		70-130	%	06-JUL-17				
Hydrocarbons										
	F1 (C6-C10)	<25		25	ug/L	06-JUL-17	420			
	F1-BTEX	<25		25	ug/L	11-JUL-17	420			
	F2 (C10-C16)	<100		100	ug/L	10-JUL-17	150			
	F3 (C16-C34)	<250		250	ug/L	10-JUL-17	500			
	F4 (C34-C50)	<250		250	ug/L	10-JUL-17	500			
	Total Hydrocarbons (C6-C50)	<370		370	ug/L	11-JUL-17				
	Chrom. to baseline at nC50	YES			No Unit	10-JUL-17				
	Surrogate: 2-Bromobenzotrifluoride	114.0		60-140	%	10-JUL-17				
	Surrogate: 3,4-Dichlorotoluene	84.0		60-140	%	06-JUL-17				

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

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T8-Ground Water - All Types of Property Use

#1: T8-Ground Water - All Types of Property Use

Reference Information

Qualifiers for Sample Submission Listed:

Qualifier	Description
CINT	Cooling initiated. Samples were received packed with ice or ice packs and were sampled the same day as received.

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)	MOE DECPH-E3398/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
---------------------	-------	-------------------------------------	-------------

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:

15-555992

Reference Information

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	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 wwt - milligrams per kilogram based on wet weight of sample

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

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

< - Less than.

D.L. - The reporting limit.

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

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

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

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

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information.



Quality Control Report

Workorder: L1953421

Report Date: 12-JUL-17

Page 1 of 9

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT		Water						
Batch	R3766094							
WG2556606-4	DUP	WG2556606-3						
F1 (C6-C10)		<25	<25	RPD-NA	ug/L	N/A	30	06-JUL-17
WG2556606-1	LCS							
F1 (C6-C10)			95.5		%		80-120	06-JUL-17
WG2556606-2	MB							
F1 (C6-C10)			<25		ug/L		25	06-JUL-17
Surrogate: 3,4-Dichlorotoluene			110.5		%		60-140	06-JUL-17
WG2556606-5	MS	WG2556606-3						
F1 (C6-C10)			88.2		%		60-140	06-JUL-17
F2-F4-511-WT		Water						
Batch	R3769112							
WG2564950-2	LCS							
F2 (C10-C16)			112.8		%		70-130	10-JUL-17
F3 (C16-C34)			114.5		%		70-130	10-JUL-17
F4 (C34-C50)			126.7		%		70-130	10-JUL-17
WG2564950-3	LCSD	WG2564950-2						
F2 (C10-C16)		112.8	118.0		%	4.5	50	10-JUL-17
F3 (C16-C34)		114.5	115.4		%	0.7	50	10-JUL-17
F4 (C34-C50)		126.7	129.5		%	2.2	50	10-JUL-17
WG2564950-1	MB							
F2 (C10-C16)			<100		ug/L		100	10-JUL-17
F3 (C16-C34)			<250		ug/L		250	10-JUL-17
F4 (C34-C50)			<250		ug/L		250	10-JUL-17
Surrogate: 2-Bromobenzotrifluoride			99.7		%		60-140	10-JUL-17
MET-D-UG/L-MS-WT		Water						
Batch	R3766937							
WG2563893-4	DUP	WG2563893-3						
Antimony (Sb)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	06-JUL-17
Arsenic (As)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	06-JUL-17
Barium (Ba)-Dissolved		306	304		ug/L	0.4	20	06-JUL-17
Beryllium (Be)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	06-JUL-17
Boron (B)-Dissolved		110	110		ug/L	1.1	20	06-JUL-17
Cadmium (Cd)-Dissolved		0.20	0.19		ug/L	2.6	20	06-JUL-17
Chromium (Cr)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	06-JUL-17
Cobalt (Co)-Dissolved		4.5	4.6		ug/L	0.2	20	06-JUL-17



Quality Control Report

Workorder: L1953421

Report Date: 12-JUL-17

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Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT		Water						
Batch	R3766937							
WG2563893-4	DUP	WG2563893-3						
Copper (Cu)-Dissolved		<2.0	<2.0	RPD-NA	ug/L	N/A	20	06-JUL-17
Lead (Pb)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	06-JUL-17
Molybdenum (Mo)-Dissolved		6.94	7.19		ug/L	3.5	20	06-JUL-17
Nickel (Ni)-Dissolved		6.9	7.5		ug/L	8.2	20	06-JUL-17
Selenium (Se)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	06-JUL-17
Silver (Ag)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	06-JUL-17
Thallium (Tl)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	06-JUL-17
Uranium (U)-Dissolved		3.39	3.44		ug/L	1.6	20	06-JUL-17
Vanadium (V)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	06-JUL-17
Zinc (Zn)-Dissolved		<10	<10	RPD-NA	ug/L	N/A	20	06-JUL-17
WG2563893-2	LCS							
Antimony (Sb)-Dissolved			99.1		%		80-120	06-JUL-17
Arsenic (As)-Dissolved			98.8		%		80-120	06-JUL-17
Barium (Ba)-Dissolved			101.8		%		80-120	06-JUL-17
Beryllium (Be)-Dissolved			86.3		%		80-120	06-JUL-17
Boron (B)-Dissolved			93.1		%		80-120	06-JUL-17
Cadmium (Cd)-Dissolved			98.6		%		80-120	06-JUL-17
Chromium (Cr)-Dissolved			95.8		%		80-120	06-JUL-17
Cobalt (Co)-Dissolved			95.9		%		80-120	06-JUL-17
Copper (Cu)-Dissolved			94.8		%		80-120	06-JUL-17
Lead (Pb)-Dissolved			102.1		%		80-120	06-JUL-17
Molybdenum (Mo)-Dissolved			92.7		%		80-120	06-JUL-17
Nickel (Ni)-Dissolved			98.3		%		80-120	06-JUL-17
Selenium (Se)-Dissolved			96.5		%		80-120	06-JUL-17
Silver (Ag)-Dissolved			97.3		%		80-120	06-JUL-17
Thallium (Tl)-Dissolved			95.9		%		80-120	06-JUL-17
Uranium (U)-Dissolved			102.2		%		80-120	06-JUL-17
Vanadium (V)-Dissolved			98.7		%		80-120	06-JUL-17
Zinc (Zn)-Dissolved			94.1		%		80-120	06-JUL-17
WG2563893-1	MB							
Antimony (Sb)-Dissolved			<0.10		ug/L		0.1	06-JUL-17
Arsenic (As)-Dissolved			<0.10		ug/L		0.1	06-JUL-17
Barium (Ba)-Dissolved			<0.10		ug/L		0.1	06-JUL-17
Beryllium (Be)-Dissolved			<0.10		ug/L		0.1	06-JUL-17



Quality Control Report

Workorder: L1953421

Report Date: 12-JUL-17

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Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Water						
Batch	R3766094							
WG2556606-4	DUP	WG2556606-3						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-17
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-17
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-17
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-17
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-17
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-17
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	06-JUL-17
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-17
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-17
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-17
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-17
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-17
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-17
Bromodichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	06-JUL-17
Bromoform		<5.0	<5.0	RPD-NA	ug/L	N/A	30	06-JUL-17
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-17
Carbon tetrachloride		<0.20	<0.20	RPD-NA	ug/L	N/A	30	06-JUL-17
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-17
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	06-JUL-17
cis-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-17
cis-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	06-JUL-17
Dibromochloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	06-JUL-17
Dichlorodifluoromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	06-JUL-17
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-17
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-17
m+p-Xylenes		<0.40	<0.40	RPD-NA	ug/L	N/A	30	06-JUL-17
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	06-JUL-17
Methylene Chloride		<5.0	<5.0	RPD-NA	ug/L	N/A	30	06-JUL-17
MTBE		<2.0	<2.0	RPD-NA	ug/L	N/A	30	06-JUL-17
o-Xylene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	06-JUL-17
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-17
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-17
Toluene		1.84	1.84		ug/L			06-JUL-17



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Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Water						
Batch	R3766094							
WG2556606-4 DUP		WG2556606-3						
Toluene		1.84	1.84		ug/L	0.0	30	06-JUL-17
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-17
trans-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	06-JUL-17
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-17
Trichlorofluoromethane		<5.0	<5.0	RPD-NA	ug/L	N/A	30	06-JUL-17
Vinyl chloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-17
WG2556606-1 LCS								
1,1,1,2-Tetrachloroethane			99.4		%		70-130	06-JUL-17
1,1,2,2-Tetrachloroethane			101.8		%		70-130	06-JUL-17
1,1,1-Trichloroethane			104.1		%		70-130	06-JUL-17
1,1,2-Trichloroethane			99.7		%		70-130	06-JUL-17
1,1-Dichloroethane			105.5		%		70-130	06-JUL-17
1,1-Dichloroethylene			100.7		%		70-130	06-JUL-17
1,2-Dibromoethane			98.1		%		70-130	06-JUL-17
1,2-Dichlorobenzene			97.6		%		70-130	06-JUL-17
1,2-Dichloroethane			107.6		%		70-130	06-JUL-17
1,2-Dichloropropane			106.4		%		70-130	06-JUL-17
1,3-Dichlorobenzene			96.8		%		70-130	06-JUL-17
1,4-Dichlorobenzene			98.3		%		70-130	06-JUL-17
Acetone			126.8		%		60-140	06-JUL-17
Benzene			107.2		%		70-130	06-JUL-17
Bromodichloromethane			102.9		%		70-130	06-JUL-17
Bromoform			98.6		%		70-130	06-JUL-17
Bromomethane			105.9		%		60-140	06-JUL-17
Carbon tetrachloride			103.2		%		70-130	06-JUL-17
Chlorobenzene			101.4		%		70-130	06-JUL-17
Chloroform			107.3		%		70-130	06-JUL-17
cis-1,2-Dichloroethylene			103.6		%		70-130	06-JUL-17
cis-1,3-Dichloropropene			103.6		%		70-130	06-JUL-17
Dibromochloromethane			104.4		%		70-130	06-JUL-17
Dichlorodifluoromethane			71.0		%		50-140	06-JUL-17
Ethylbenzene			95.6		%		70-130	06-JUL-17
n-Hexane			119.9		%		70-130	06-JUL-17



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Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Water						
Batch	R3766094							
WG2556606-1	LCS							
m+p-Xylenes			100.4		%		70-130	06-JUL-17
Methyl Ethyl Ketone			102.8		%		60-140	06-JUL-17
Methyl Isobutyl Ketone			93.0		%		60-140	06-JUL-17
Methylene Chloride			114.9		%		70-130	06-JUL-17
MTBE			98.4		%		70-130	06-JUL-17
o-Xylene			98.3		%		70-130	06-JUL-17
Styrene			98.7		%		70-130	06-JUL-17
Tetrachloroethylene			98.1		%		70-130	06-JUL-17
Toluene			96.2		%		70-130	06-JUL-17
trans-1,2-Dichloroethylene			111.1		%		70-130	06-JUL-17
trans-1,3-Dichloropropene			99.3		%		70-130	06-JUL-17
Trichloroethylene			103.8		%		70-130	06-JUL-17
Trichlorofluoromethane			130.3		%		60-140	06-JUL-17
Vinyl chloride			94.7		%		60-140	06-JUL-17
WG2556606-2	MB							
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	06-JUL-17
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	06-JUL-17
1,1,1-Trichloroethane			<0.50		ug/L		0.5	06-JUL-17
1,1,2-Trichloroethane			<0.50		ug/L		0.5	06-JUL-17
1,1-Dichloroethane			<0.50		ug/L		0.5	06-JUL-17
1,1-Dichloroethylene			<0.50		ug/L		0.5	06-JUL-17
1,2-Dibromoethane			<0.20		ug/L		0.2	06-JUL-17
1,2-Dichlorobenzene			<0.50		ug/L		0.5	06-JUL-17
1,2-Dichloroethane			<0.50		ug/L		0.5	06-JUL-17
1,2-Dichloropropane			<0.50		ug/L		0.5	06-JUL-17
1,3-Dichlorobenzene			<0.50		ug/L		0.5	06-JUL-17
1,4-Dichlorobenzene			<0.50		ug/L		0.5	06-JUL-17
Acetone			<30		ug/L		30	06-JUL-17
Benzene			<0.50		ug/L		0.5	06-JUL-17
Bromodichloromethane			<2.0		ug/L		2	06-JUL-17
Bromoform			<5.0		ug/L		5	06-JUL-17
Bromomethane			<0.50		ug/L		0.5	06-JUL-17
Carbon tetrachloride			<0.20		ug/L		0.2	06-JUL-17
Chlorobenzene			<0.50		ug/L		0.5	06-JUL-17



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Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Water						
Batch	R3766094							
WG2556606-2 MB								
Chloroform			<1.0		ug/L		1	06-JUL-17
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	06-JUL-17
cis-1,3-Dichloropropene			<0.30		ug/L		0.3	06-JUL-17
Dibromochloromethane			<2.0		ug/L		2	06-JUL-17
Dichlorodifluoromethane			<2.0		ug/L		2	06-JUL-17
Ethylbenzene			<0.50		ug/L		0.5	06-JUL-17
n-Hexane			<0.50		ug/L		0.5	06-JUL-17
m+p-Xylenes			<0.40		ug/L		0.4	06-JUL-17
Methyl Ethyl Ketone			<20		ug/L		20	06-JUL-17
Methyl Isobutyl Ketone			<20		ug/L		20	06-JUL-17
Methylene Chloride			<5.0		ug/L		5	06-JUL-17
MTBE			<2.0		ug/L		2	06-JUL-17
o-Xylene			<0.30		ug/L		0.3	06-JUL-17
Styrene			<0.50		ug/L		0.5	06-JUL-17
Tetrachloroethylene			<0.50		ug/L		0.5	06-JUL-17
Toluene			<0.50		ug/L		0.5	06-JUL-17
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	06-JUL-17
trans-1,3-Dichloropropene			<0.30		ug/L		0.3	06-JUL-17
Trichloroethylene			<0.50		ug/L		0.5	06-JUL-17
Trichlorofluoromethane			<5.0		ug/L		5	06-JUL-17
Vinyl chloride			<0.50		ug/L		0.5	06-JUL-17
Surrogate: 1,4-Difluorobenzene			100.5		%		70-130	06-JUL-17
Surrogate: 4-Bromofluorobenzene			94.6		%		70-130	06-JUL-17
WG2556606-5 MS		WG2556606-3						
1,1,1,2-Tetrachloroethane			102.1		%		50-140	06-JUL-17
1,1,2,2-Tetrachloroethane			106.7		%		50-140	06-JUL-17
1,1,1-Trichloroethane			102.8		%		50-140	06-JUL-17
1,1,2-Trichloroethane			104.4		%		50-140	06-JUL-17
1,1-Dichloroethane			106.2		%		50-140	06-JUL-17
1,1-Dichloroethylene			93.6		%		50-140	06-JUL-17
1,2-Dibromoethane			101.2		%		50-140	06-JUL-17
1,2-Dichlorobenzene			96.7		%		50-140	06-JUL-17
1,2-Dichloroethane			111.9		%		50-140	06-JUL-17
1,2-Dichloropropane			107.9		%		50-140	06-JUL-17

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Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Water						
Batch	R3766094							
WG2556606-5 MS		WG2556606-3						
1,3-Dichlorobenzene			95.5		%		50-140	06-JUL-17
1,4-Dichlorobenzene			96.3		%		50-140	06-JUL-17
Acetone			121.0		%		50-140	06-JUL-17
Benzene			107.0		%		50-140	06-JUL-17
Bromodichloromethane			106.5		%		50-140	06-JUL-17
Bromoform			103.6		%		50-140	06-JUL-17
Bromomethane			92.8		%		50-140	06-JUL-17
Carbon tetrachloride			101.1		%		50-140	06-JUL-17
Chlorobenzene			102.3		%		50-140	06-JUL-17
Chloroform			109.3		%		50-140	06-JUL-17
cis-1,2-Dichloroethylene			102.7		%		50-140	06-JUL-17
cis-1,3-Dichloropropene			98.7		%		50-140	06-JUL-17
Dibromochloromethane			107.6		%		50-140	06-JUL-17
Dichlorodifluoromethane			52.8		%		50-140	06-JUL-17
Ethylbenzene			92.5		%		50-140	06-JUL-17
n-Hexane			107.9		%		50-140	06-JUL-17
m+p-Xylenes			99.4		%		50-140	06-JUL-17
Methyl Ethyl Ketone			106.3		%		50-140	06-JUL-17
Methyl Isobutyl Ketone			95.8		%		50-140	06-JUL-17
Methylene Chloride			114.0		%		50-140	06-JUL-17
MTBE			98.7		%		50-140	06-JUL-17
o-Xylene			96.5		%		50-140	06-JUL-17
Styrene			97.1		%		50-140	06-JUL-17
Tetrachloroethylene			96.8		%		50-140	06-JUL-17
Toluene			97.1		%		50-140	06-JUL-17
trans-1,2-Dichloroethylene			105.9		%		50-140	06-JUL-17
trans-1,3-Dichloropropene			95.0		%		50-140	06-JUL-17
Trichloroethylene			101.2		%		50-140	06-JUL-17
Trichlorofluoromethane			119.4		%		50-140	06-JUL-17
Vinyl chloride			79.4		%		50-140	06-JUL-17

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311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

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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
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.

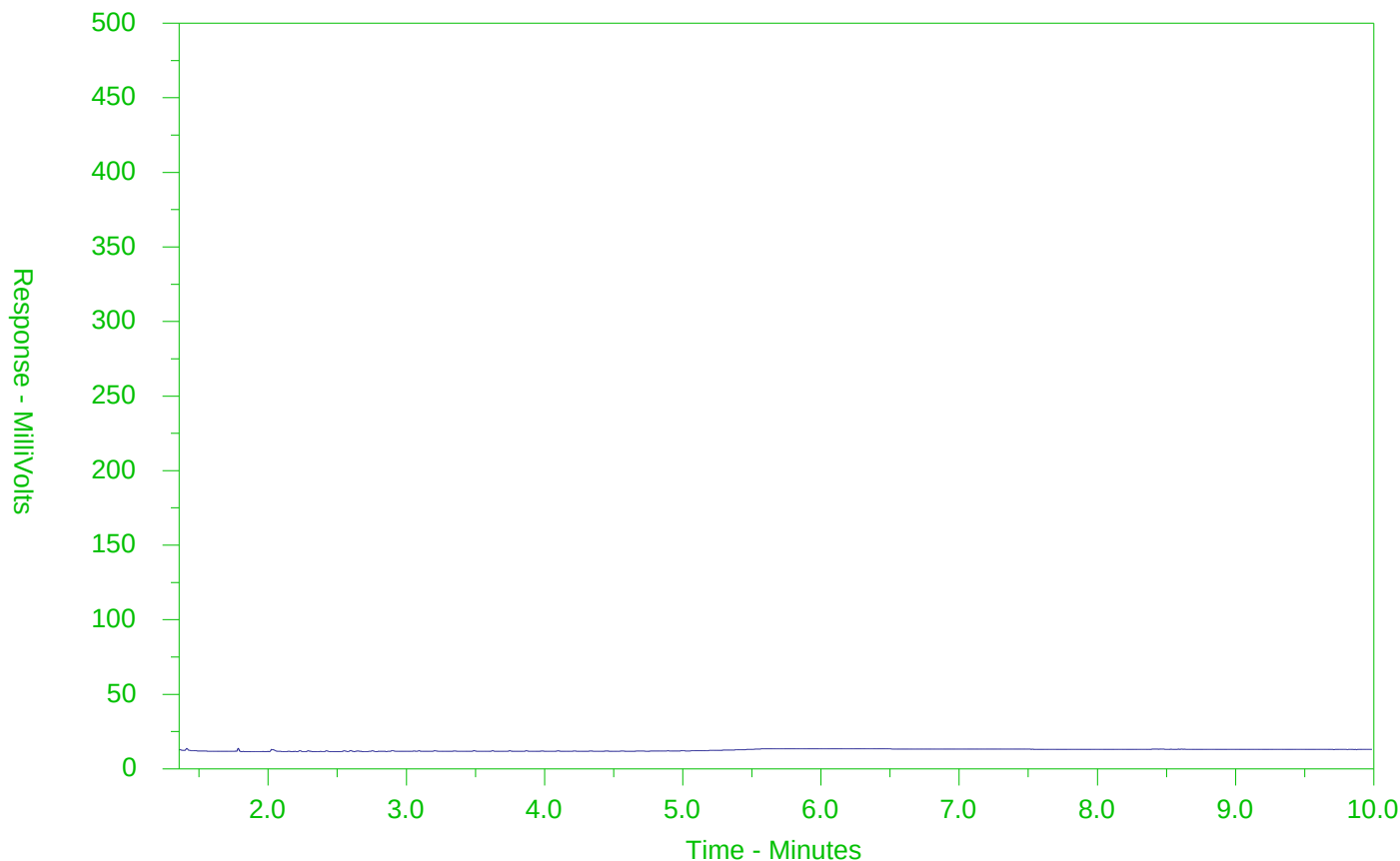
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide 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: L1953421-1
Client Sample ID: MW1



← 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.



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

OCTOBER 2015 Edition

APPENDIX E

SITE PHOTOGRAPHS





Photograph 1: Advancement of borehole MW1, adjacent to the maintenance shop and former USTs.



Photograph 2: Excavation of USTs and hydrocarbon impacted soils.



Photograph 3: Excavation of waste oil impacted concrete pad and soils.

APPENDIX F

TEST PITS AND SOIL SAMPLING PROGRAM





May 23, 2017

File No.: E17413

Mr. Rick Esbaugh
Tri City Lands
2879 Herrgott Road
St. Clements, Ontario
N0B 2M0

Re: TEST PIT AND SOIL SAMPLING PROGRAM
1894 & 1922 WITMER ROAD
PETERSBURG, ONTARIO

Dear Mr. Esbaugh:

CHUNG & VANDER DOELEN ENGINEERING LTD. (CVD) was retained to complete a test pit and soil sampling program of the fill material identified on the east-central area of 1894 & 1922 Witmer Road in Petersburg, Ontario (hereinafter referred to as the "Site").

The purpose of the soil sampling program is to investigate the quality of the fill material and to identify associated potential environmental liabilities.

Fieldwork

The soil sampling program was conducted on May 3, 2017 using standard engineering and scientific judgement, principles and practices, and was conducted in general accordance with the Guidance for Environmental Site Assessment under Ontario Regulation 153/04 (as amended) by the Association of Professional Geoscientists dated April 2011.

The fill material containing construction debris appear to have been dumped and spread across the east-central area of the Site. The soil generally consisted of dark brown sand with some gravel and silt mixed with construction debris (i.e. concrete, rebar, plastics). Three (3) soil samples of the fill material were taken from excavated test pits. A Site plan is included in Attachment A.

The soil samples were logged for physical characteristics, as well as olfactory and visual evidence of contamination. In addition to visual and olfactory observations, soil samples were field screened for head space VOC concentrations using the MiniRAE 3000 PID. Soil vapour readings were not registered above 0.0 ppm in any of the soil samples.

The soil samples were placed directly into a laboratory supplied glass jar and were kept on ice until they were delivered to ALS Laboratory Group (a CAEAL accredited laboratory) in Waterloo, Ontario, for chemical analyses which included metals.

Applicable Site Condition Standards

The Soil, Ground Water and Sediment Standard for Use Under Part XV.1 of the Environmental Protection Act dated April 15, 2011 established in accordance with the amended Ontario Regulation 153/04 was consulted in the assessment of the soil samples.

The Township of Wilmot relies on groundwater as a source of potable water and the Site is also within 30 metres of a waterbody. The analytical results were therefore compared to the Ministry of the Environment and Climate Change (MOECC) Table 8, Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Ground Water Condition.

Based on the land use of the Site, the soil results were compared to the Table 8 soil standards for residential / parkland / institutional / industrial / commercial / community / property use (herein referred to as the “applicable Table 8 standards”).

Analytical Results

The analytical results of the soil samples of the fill material collected for analysis from test pits did not identify any metal parameters that exceeded the applicable Table 8 standards.

A comparison of the soil chemistry results to the applicable Table 8 regulatory standards is included in Attachment B. The certificates of chemical analysis showing all of the reported analytical results for the Site are enclosed in Attachment C.

Estimated Fill Area

A series of test pits were excavated to investigate the depth and extent of the fill material identified on the east-central area of the Site. A total of seven (7) test pits were completed. Three (3) of the test pits contained fill material of construction debris mixed with sand, silts and gravel to a depth of up to ± 1 meter.

Based on the test pits and ground surface observations, the fill area is estimated to cover a plan area of $\pm 1100 \text{ m}^2$ with a volume of $\pm 1100 \text{ m}^3$ (estimated thickness of 1 meter).

Based on the soil chemistry results, the soil matrix is not expected to be contaminated and that excavation for off-Site disposal is unwarranted at this time. It is recommended that any remedial activities involve the screening out of the construction debris material for disposal.

A Site plan with test pit locations and the estimated fill area is included in Attachment A.



Closing

The American Society of Testing and Materials Standard of Practice notes that no environmental site assessment can wholly eliminate uncertainty regarding the potential for recognized environmental conditions in connection with a property. Performance of a standardized environmental site assessment protocol is intended to reduce, but not eliminate, uncertainty regarding the potential for recognized environmental conditions in connection with the property, given reasonable limits of time and cost.

This report has been prepared for the exclusive use of Tri City Lands for specific application to this project property. The environmental investigation was conducted in accordance with the verbal and written requests from the Client, and generally accepted assessment practices. No other warranty, expressed or implied, is made.

We trust this summary meets your needs at this time. Please do not hesitate to contact the undersigned if you have any questions or concerns.

Respectfully,

CHUNG & VANDER DOELEN ENGINEERING LTD.



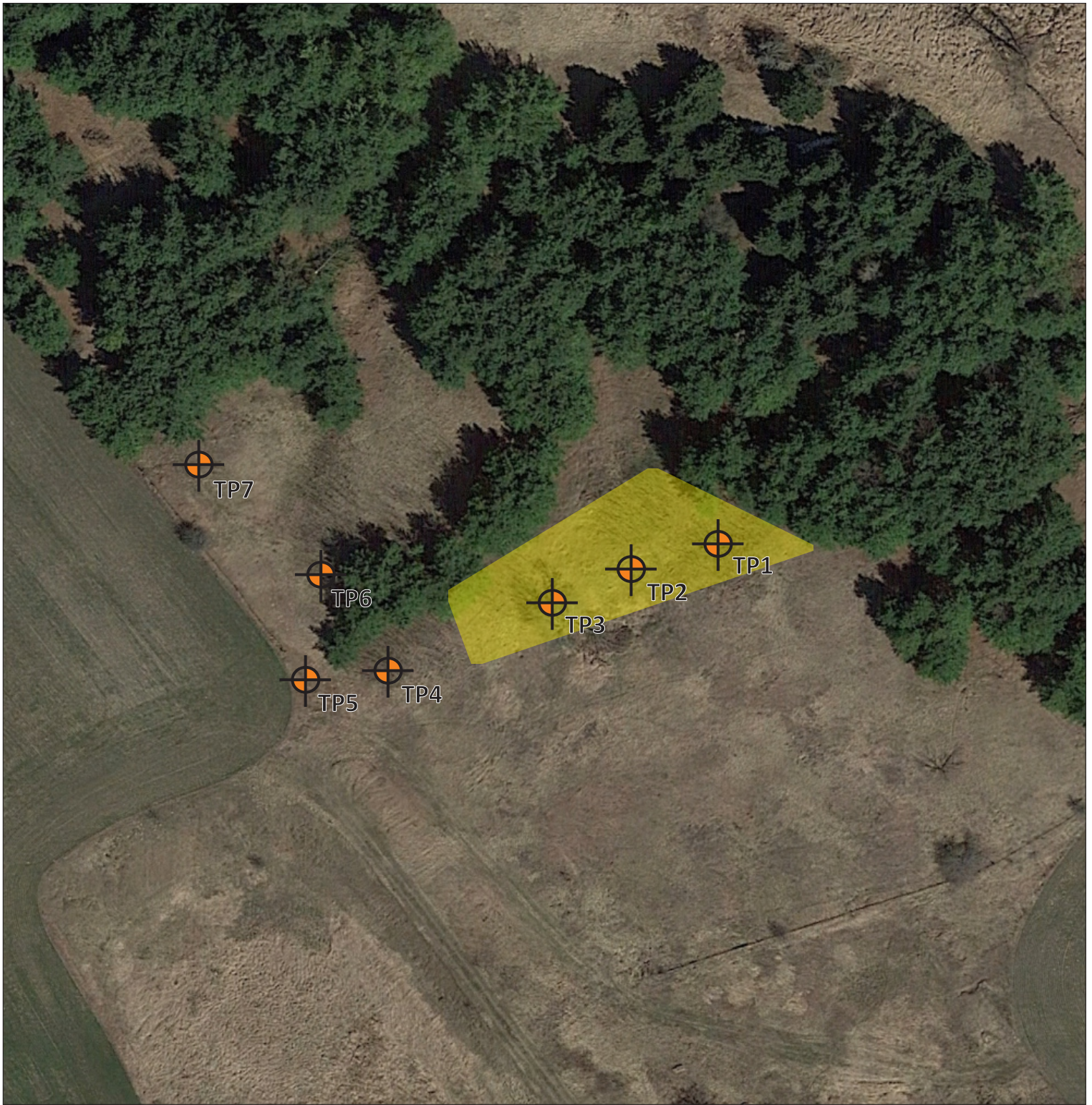
Peter Dao, M.Sc., P.Geo
Environmental Scientist



ATTACHMENT A

SITE PLAN





LEGEND

Test Pit Locations



Approximate Fill Area



CHUNG & VANDER DOELEN
ENGINEERING LTD.

311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979



SITE PLAN 1894 & 1922 WITMER ROAD PETERSBURG, ONTARIO	Date:	MAY 2017
	Scale:	NTS
	File No.:	E17413
	Appendix:	A

ATTACHMENT B

COMPARISON OF CHEMISTRY RESULTS TO THE MOECC TABLE 8 STANDARDS



ANALYTICAL RESULTS FOR SOIL

MOECC Soil, Ground Water and Sediment Standards

for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011

**Table 8: Generic Site Condition Standards for Use withn 30 m of a Water Body in a Potable Ground Water
Condition for Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use
(Coarse Textured Soil)**

		Table 8 standard	TP1-1 (0.00 - 0.91 m)	TP2-1 (0.00 - 0.91 m)	TP3-1 (0.00 - 0.91 m)
Metals	Antimony (Sb)	1.3	<1.0	<1.0	<1.0
	Arsenic (As)	18	5.2	1.9	2.7
	Barium (Ba)	220	50.4	31.6	33.4
	Beryllium (Be)	2.5	<0.50	<0.50	<0.50
	Boron (B)	36	5.4	5.7	<5.0
	Cadmium (Cd)	1.2	0.79	<0.50	0.79
	Chromium (Cr)	70	14.4	8.8	10.4
	Cobalt (Co)	22	5.6	2.8	3.6
	Copper (Cu)	92	14.9	17.3	24.4
	Lead (Pb)	120	26	18.3	24.1
	Molybdenum (Mo)	2	<1.0	<1.0	<1.0
	Nickel (Ni)	82	10.2	6.2	7
	Selenium (Se)	1.5	<1.0	<1.0	<1.0
	Silver (Ag)	0.5	<0.20	<0.20	<0.20
	Thallium (Tl)	1	<0.50	<0.50	<0.50
	Uranium (U)	2.5	<1.0	<1.0	1.2
	Vanadium (V)	86	29.8	14.3	17.8
	Zinc (Zn)	290	118	93.8	226

NOTES:

1. Units = ug/g

ATTACHMENT C

CERTIFICATE OF ANALYSIS





CHUNG AND VANDER DOELEN
ATTN: PETER DAO
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Date Received: 03-MAY-17
Report Date: 09-MAY-17 12:04 (MT)
Version: FINAL

Client Phone: 519-742-8979

Certificate of Analysis

Lab Work Order #: L1920512
Project P.O. #: E17413
Job Reference: 1894 WITMER RD - SOIL
C of C Numbers: 15-555841
Legal Site Desc:

Mary-Lynn Pike
Client Services Supervisor

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

ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047
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ANALYTICAL GUIDELINE REPORT

L1920512 CONTD....

Page 2 of 4

09-MAY-17 12:04 (MT)

1894 WITMER RD - SOIL

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1920512-1	TP1-1									
Sampled By: P. DAO on 03-MAY-17										
Matrix: SOIL										
Metals										
	Antimony (Sb)	<1.0		1.0	ug/g	08-MAY-17	1.3			
	Arsenic (As)	5.2		1.0	ug/g	08-MAY-17	18			
	Barium (Ba)	50.4		1.0	ug/g	08-MAY-17	220			
	Beryllium (Be)	<0.50		0.50	ug/g	08-MAY-17	2.5			
	Boron (B)	5.4		5.0	ug/g	08-MAY-17	36			
	Cadmium (Cd)	0.79		0.50	ug/g	08-MAY-17	1.2			
	Chromium (Cr)	14.4		1.0	ug/g	08-MAY-17	70			
	Cobalt (Co)	5.6		1.0	ug/g	08-MAY-17	22			
	Copper (Cu)	14.9		1.0	ug/g	08-MAY-17	92			
	Lead (Pb)	26.0		1.0	ug/g	08-MAY-17	120			
	Molybdenum (Mo)	<1.0		1.0	ug/g	08-MAY-17	2			
	Nickel (Ni)	10.2		1.0	ug/g	08-MAY-17	82			
	Selenium (Se)	<1.0		1.0	ug/g	08-MAY-17	1.5			
	Silver (Ag)	<0.20		0.20	ug/g	08-MAY-17	0.5			
	Thallium (Tl)	<0.50		0.50	ug/g	08-MAY-17	1			
	Uranium (U)	<1.0		1.0	ug/g	08-MAY-17	2.5			
	Vanadium (V)	29.8		1.0	ug/g	08-MAY-17	86			
	Zinc (Zn)	118		5.0	ug/g	08-MAY-17	290			
L1920512-2	TP2-1									
Sampled By: P. DAO on 03-MAY-17										
Matrix: SOIL										
Metals										
	Antimony (Sb)	<1.0		1.0	ug/g	08-MAY-17	1.3			
	Arsenic (As)	1.9		1.0	ug/g	08-MAY-17	18			
	Barium (Ba)	31.6		1.0	ug/g	08-MAY-17	220			
	Beryllium (Be)	<0.50		0.50	ug/g	08-MAY-17	2.5			
	Boron (B)	5.7		5.0	ug/g	08-MAY-17	36			
	Cadmium (Cd)	<0.50		0.50	ug/g	08-MAY-17	1.2			
	Chromium (Cr)	8.8		1.0	ug/g	08-MAY-17	70			
	Cobalt (Co)	2.8		1.0	ug/g	08-MAY-17	22			
	Copper (Cu)	17.3		1.0	ug/g	08-MAY-17	92			
	Lead (Pb)	18.3		1.0	ug/g	08-MAY-17	120			
	Molybdenum (Mo)	<1.0		1.0	ug/g	08-MAY-17	2			
	Nickel (Ni)	6.2		1.0	ug/g	08-MAY-17	82			
	Selenium (Se)	<1.0		1.0	ug/g	08-MAY-17	1.5			
	Silver (Ag)	<0.20		0.20	ug/g	08-MAY-17	0.5			
	Thallium (Tl)	<0.50		0.50	ug/g	08-MAY-17	1			
	Uranium (U)	<1.0		1.0	ug/g	08-MAY-17	2.5			
	Vanadium (V)	14.3		1.0	ug/g	08-MAY-17	86			
	Zinc (Zn)	93.8		5.0	ug/g	08-MAY-17	290			
L1920512-3	TP3-1									
Sampled By: P. DAO on 03-MAY-17										
Matrix: SOIL										

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

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



L1920512 CONTD....

Page 3 of 4

1894 WITMER RD - SOIL

Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference***
MET-200.2-CCMS-WT	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

This method uses a heated strong acid digestion with HNO3 and HCl and is intended to liberate metals that may be environmentally available. Silicate minerals are not solubilized. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. Analysis is by Collision/Reaction Cell ICPMS.

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).

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

Chain of Custody numbers:

15-555841

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	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 wwt - milligrams per kilogram based on wet weight of sample

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

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

< - Less than.

D.L. - The reporting limit.

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

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

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

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

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information.



Quality Control Report

Workorder: L1920512

Report Date: 09-MAY-17

Page 1 of 4

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT		Soil						
Batch	R3717133							
WG2523815-2	CRM	WT-CANMET-TILL1						
Antimony (Sb)			94.6		%		70-130	08-MAY-17
Arsenic (As)			98.9		%		70-130	08-MAY-17
Barium (Ba)			95.7		%		70-130	08-MAY-17
Beryllium (Be)			81.3		%		70-130	08-MAY-17
Cadmium (Cd)			91.8		%		70-130	08-MAY-17
Chromium (Cr)			92.2		%		70-130	08-MAY-17
Cobalt (Co)			92.3		%		70-130	08-MAY-17
Copper (Cu)			90.3		%		70-130	08-MAY-17
Lead (Pb)			85.6		%		70-130	08-MAY-17
Molybdenum (Mo)			80.9		%		70-130	08-MAY-17
Nickel (Ni)			90.9		%		70-130	08-MAY-17
Selenium (Se)			85.8		%		70-130	08-MAY-17
Silver (Ag)			93.2		%		70-130	08-MAY-17
Thallium (Tl)			87.5		%		70-130	08-MAY-17
Uranium (U)			87.5		%		70-130	08-MAY-17
Vanadium (V)			94.4		%		70-130	08-MAY-17
Zinc (Zn)			84.5		%		70-130	08-MAY-17
WG2523815-6	DUP	WG2523815-5						
Antimony (Sb)		0.18	0.18		ug/g	1.4	30	08-MAY-17
Arsenic (As)		4.62	4.45		ug/g	3.6	30	08-MAY-17
Barium (Ba)		30.4	31.3		ug/g	3.1	40	08-MAY-17
Beryllium (Be)		0.34	0.31		ug/g	8.3	30	08-MAY-17
Boron (B)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	08-MAY-17
Cadmium (Cd)		0.129	0.135		ug/g	4.0	30	08-MAY-17
Chromium (Cr)		11.3	11.1		ug/g	1.1	30	08-MAY-17
Cobalt (Co)		6.05	6.18		ug/g	2.1	30	08-MAY-17
Copper (Cu)		25.2	25.0		ug/g	0.9	30	08-MAY-17
Lead (Pb)		24.8	24.9		ug/g	0.3	40	08-MAY-17
Molybdenum (Mo)		0.39	0.40		ug/g	3.2	40	08-MAY-17
Nickel (Ni)		11.1	11.2		ug/g	0.7	30	08-MAY-17
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	08-MAY-17
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	08-MAY-17
Thallium (Tl)		0.056	0.052		ug/g	7.5	30	08-MAY-17



Quality Control Report

Workorder: L1920512

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Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT		Soil						
Batch	R3717133							
WG2523815-6	DUP	WG2523815-5						
Uranium (U)		0.338	0.338		ug/g	0.1	30	08-MAY-17
Vanadium (V)		22.6	23.4		ug/g	3.4	30	08-MAY-17
Zinc (Zn)		50.7	51.1		ug/g	0.8	30	08-MAY-17
WG2523815-4	LCS							
Antimony (Sb)			95.0		%		80-120	08-MAY-17
Arsenic (As)			92.1		%		80-120	08-MAY-17
Barium (Ba)			88.9		%		80-120	08-MAY-17
Beryllium (Be)			83.7		%		80-120	08-MAY-17
Boron (B)			81.3		%		80-120	08-MAY-17
Cadmium (Cd)			88.7		%		80-120	08-MAY-17
Chromium (Cr)			90.6		%		80-120	08-MAY-17
Cobalt (Co)			90.4		%		80-120	08-MAY-17
Copper (Cu)			88.2		%		80-120	08-MAY-17
Lead (Pb)			92.3		%		80-120	08-MAY-17
Molybdenum (Mo)			85.2		%		80-120	08-MAY-17
Nickel (Ni)			89.1		%		80-120	08-MAY-17
Selenium (Se)			90.6		%		80-120	08-MAY-17
Silver (Ag)			92.0		%		80-120	08-MAY-17
Thallium (Tl)			89.8		%		80-120	08-MAY-17
Uranium (U)			89.2		%		80-120	08-MAY-17
Vanadium (V)			93.2		%		80-120	08-MAY-17
Zinc (Zn)			82.2		%		80-120	08-MAY-17
WG2523815-1	MB							
Antimony (Sb)			<0.10		mg/kg		0.1	08-MAY-17
Arsenic (As)			<0.10		mg/kg		0.1	08-MAY-17
Barium (Ba)			<0.50		mg/kg		0.5	08-MAY-17
Beryllium (Be)			<0.10		mg/kg		0.1	08-MAY-17
Boron (B)			<5.0		mg/kg		5	08-MAY-17
Cadmium (Cd)			<0.020		mg/kg		0.02	08-MAY-17
Chromium (Cr)			<0.50		mg/kg		0.5	08-MAY-17
Cobalt (Co)			<0.10		mg/kg		0.1	08-MAY-17
Copper (Cu)			<0.50		mg/kg		0.5	08-MAY-17
Lead (Pb)			<0.50		mg/kg		0.5	08-MAY-17
Molybdenum (Mo)			<0.10		mg/kg		0.1	08-MAY-17



Quality Control Report

Workorder: L1920512

Report Date: 09-MAY-17

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Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	Soil							
Batch	R3717133							
WG2523815-1	MB							
Nickel (Ni)			<0.50		mg/kg		0.5	08-MAY-17
Selenium (Se)			<0.20		mg/kg		0.2	08-MAY-17
Silver (Ag)			<0.10		mg/kg		0.1	08-MAY-17
Thallium (Tl)			<0.050		mg/kg		0.05	08-MAY-17
Uranium (U)			<0.050		mg/kg		0.05	08-MAY-17
Vanadium (V)			<0.20		mg/kg		0.2	08-MAY-17
Zinc (Zn)			<2.0		mg/kg		2	08-MAY-17

Quality Control Report

Workorder: L1920512

Report Date: 09-MAY-17

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

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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
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.



TOBER 2015 FROM

ATTACHMENT D

PHOTOGRAPHS





Photograph 1: View of test pit TP1



Photograph 2: View of construction debris in excavated material of TP1



Photograph 3: View of test pit TP2



Photograph 4: View of construction debris in excavated fill material of TP2



Photograph 5: View of test pit TP3



Photograph 6: View of construction debris in excavated fill material of TP3

ATTACHMENT E

LIMITATIONS



STATEMENT OF LIMITATIONS

1. The work performed in this report was carried out in accordance with the Standard Terms of Conditions made part of our contract. The conclusions presented herein are based solely upon the scope of services and time and budgetary limitations described in our contract.
2. The report has been prepared in accordance with generally accepted environmental study and/or engineering practices. No other warranties, either expressed or implied, are made as to the professional services provided under the terms of our contract and included in this report.
3. The services performed and outlined in this report were based, in part, upon visual observations of the site and attendant structures. Our opinion cannot be extended to portions of the site which were unavailable for direct observation, reasonably beyond the control of CHUNG & VANDER DOELEN ENGINEERING LTD.
4. The objective of this report was to assess environmental conditions at the site, within the context of our contract and existing environmental regulations within the applicable jurisdiction. Evaluating compliance of past or future owners with applicable local, provincial and federal government laws and regulations was not included in our contract for services.
5. CHUNG & VANDER DOELEN ENGINEERING LTD. has relied in good faith on information and services provided by others while conducting the record search. We accept no responsibility for any deficiency, misstatements or inaccuracies contained in this report as a result of omission, misinterpretation or fraudulent acts of the services used.
6. It should be noted that the observations and recommendations presented in this report are limited to the actual locations explored. The information presented in terms of the thickness and types of the subsoils encountered, groundwater levels, and chemical testing results, etc., are only applicable to the actual locations explored. Variations may be present between these locations. Should significant variation become apparent during later investigations, it may be necessary to reevaluate the findings of this report.
7. The conclusions of this report are based in part, on the information provided by others. The possibility remains that unexpected environmental conditions may be encountered at the site in locations not specifically investigated. Should such an event occur, CHUNG & VANDER DOELEN ENGINEERING LTD. must be notified in order that we may determine if modifications to our conclusions are necessary.



APPENDIX G

QUALIFICATIONS OF ASSESSOR



**Environmental
Site
Assessor**

Mr. Dao has over 5 years of experience in geological, geotechnical and environmental investigations in the mining and municipal sectors.

Mr. Dao has specialized in the environmental inspection and assessment of residential, commercial, and industrial properties for a broad range of clients in the property management, insurance, automotive, and manufacturing sectors.

Education

Masters of Science, Earth and Environmental Science, McMaster University, 2011.
Honours Bachelor of Science, Earth and Environmental Science, McMaster University, 2009.

**Professional
Affiliations**

Association of Professional Geoscientists of Ontario, 2015 – Present

**Project
Experience**

Mr. Dao has conducted over 20 Phase I and Phase II Environmental Site Assessments (ESA's) for various commercial and industrial properties including service stations, shopping plazas, apartment buildings and industrial manufacturing facilities.