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Supplemental Phase II Environmental Site Assessment **File CG2430.1 E37**
North Hill Mall – 1616 14th Avenue NW
Calgary, Alberta

Sears Canada Inc. (Sears) was issued Environmental Protection Order (EPO) No. EPO-2018/01-SSR in March 2018 pertaining to the Hounsfield Heights and North Hill Mall, Calgary, Alberta historic gasoline plume. As part of the EPO, one of the requirements set forth by Alberta Environment and Parks (AEP) was preparing a Remediation Plan that would address all media, across all areas of the site. Following submission of the Remediation Plan in December 2018, Sears received feedback from AEP requesting, among other items, additional characterization of the North Hill Mall property (Site), particularly the former excavation area.

This report documents the supplemental drilling completed within and adjacent to the former 2006/2007 remedial excavation footprint located in the parking lot to the west of the Kal-Tire Automotive Centre (Kal Tire). A Site and Surrounding Land Use map is provided as Figure 1, a map of the Site and Surrounding Properties is provided as Figure 2 and a Borehole and Monitoring Well Location Plan is provided as Figure 3.

General Site Description

The Alberta Township System description of the Site is the northeast corner of Section 20, Township 24, Range 1, West of the 5th Meridian (NE ¼ 20-24-1 W5M). The Site occupies approximately 1.5 acres and consists of a paved parking lot, bound to the east by Kal-Tire, to the north by North Hill Mall, to the south by 14th Avenue NW and to the west by the Renaissance Condominium towers.

Site History

The location of the Kal-Tire was originally developed as a service station and automotive centre in 1958. The service station was located at the North Hill Shopping Centre on a property owned by Sears and operated as a Sears Service Centre from 1958 to 1984. From 1984 to 1995, the location was operated under license as a Sunoco Service Station. An addition to the automotive centre building was constructed in 1982, and a separate gas bar kiosk was added in 1989. The original underground storage tanks (USTs) were replaced in 1984. In October 1995, fuel storage and dispensing facilities at the gas bar were

decommissioned. The former Sears Service Centre continues to operate under license to Kal-Tire. A release of petroleum hydrocarbons (PHCs) associated with the former infrastructure as part of the service station has been documented since the late 1990's.

In 2006 and 2007, a remedial excavation was completed within the parking lot of North Hill Mall to remove, treat and backfill PHC contaminated soil. Following completion of the excavation, the regulatory guidelines had changed from the then current 2001 Petroleum Storage Tank Guidelines to the now current, AEP Tier 1 and 2 Soil and Groundwater Remediation Guidelines.

Following completion of the remedial excavation, a confirmatory drilling program which included the installation of 10 permanent monitoring wells (BH1801 to BH1810) was completed within the Site in 2009. These wells were decommissioned in 2014 and replaced with 1900 series monitoring wells. The decommissioning was completed as part of the preparation of an Updated Site Management Plan which involved a reassessment of the geology and hydrogeology across the entire site, including the Hounsfield Heights and Mall Areas. The 1800 series monitoring wells were screened across multiple geological units and it was decided that they should be replaced by wells screened across single geological units. Only one well was placed within the former excavation footprint as part of the 1900 series drilling program. The remainder of the 1900 series wells were located beyond the excavation footprint. The 1900 series monitoring wells have been routinely monitoring and samples since their installation. The 1900 series monitoring wells are shown on Figure 3.

Upon their review of the 2018 Remediation Plan, AEP requested additional characterization of this area be completed due to the lack of current data from the large area within the excavation footprint. This Supplemental Phase II ESA documents the additional characterization within the excavation footprint and surrounding areas.

Previous Environmental Investigations

The Remedial Excavation program is documented in the report titled *Remediation of Petroleum Hydrocarbon Impacts, North Hill Shopping Centre, 1616-14th Avenue NW, Calgary, Alberta* (17 December 2008)

The confirmatory sampling program conducted following the remedial excavation is documented in the report titled *Confirmatory Drilling Program, North Hill Shopping Centre, 1616-14th Avenue NW, Calgary, Alberta* (27 April 2010).

Following decommissioning of the confirmatory drilling program wells, the 1900 series well data associated with the Site can be found in the reports titled *Subsurface Investigation, Mall and Hounsfield Heights Areas, Calgary, Alberta* (22 January 2016) and *2019 Spring Monitoring and Sampling Event, Hounsfield Heights and Mall Areas, Calgary, Alberta* (19 September 2019).

Objectives and Scope of Work

The objectives of this investigation were set forth based on the AEP Response Letter dated 31 May 2019 which stated additional hydrogeological characterization of the Mall Area was required. This request was based on the fact that at the time of the 2018 Remediation Plan there was only one monitoring well installed within the former excavation footprint. In addition to this, it was noted that the screen intervals within the Mall Area wells were up to 5 m in length, leading to potential dilution of the samples obtained within these wells.

Based on this information the objectives of the Supplemental Phase II ESA were to:

- Confirm the geological units within the Mall Area;
- Characterize and delineate the residual soil PHCs within the Mall Area;
- Obtain hydrostratigraphic characterization within the Mall Area, particularly within the former excavation foot print; and
- Characterize and delineate the residual groundwater PHCs within the Mall Area.

To meet these objectives, the proposed scope of work included:

- Contacting Alberta One Call and a private utility locator to identify the locations of underground utilities/facilities prior to the drilling program;
- Obtain an access agreement with the landowner to perform the intrusive investigation;
- Advance nine boreholes (BH4001 to BH4009) to a proposed maximum depth of 18 metres below ground surface (m bgs);
- Submit up to three soil samples from each borehole for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX), PHC fractions F1 to F4 and volatile organic compounds (VOCs);
- Submit up to 3 soil samples from boreholes BH4001 to BH4007 for analysis of polyaromatic hydrocarbons (PAHs);
- Install monitoring wells at eight of the borehole locations (BH4002 to BH4009), including nested wells at select locations (BH4003 and BH4004), each completed with a flush-mounted road box;
- Monitor and develop each of the newly-installed monitoring wells;
- Collect one groundwater sample from each of the monitoring wells and submit for laboratory analysis of BTEX, PHC fractions F1 and F2, VOCs and PAHs;
- Survey the horizontal and vertical locations of all groundwater monitoring wells;
- Compare the laboratory analytical results from the soil and groundwater investigations to the applicable AEP, February 2019, *Alberta Tier 1 and 2 Soil and Groundwater Remediation Guidelines* (AEP 2019 Tier 1 and 2 Guidelines); and
- Prepare a report documenting the data collected during the soil and groundwater investigations.

The above scope of work was conducted over two separate drilling programs. The initial program, completed in late June 2019, involved the advancement of seven boreholes (BH4001 to BH4007), six completed as monitoring wells (BH4002 to BH4007). Monitoring wells BH4003 and BH4004 were completed as nested wells identified as BH4003A, BH4003B and BH4004A, BH4004B. Following a review of the soil and groundwater laboratory analysis results from the initial investigation, two additional boreholes (BH4008 and BH4009), completed as nested monitoring wells for the purpose of achieving horizontal delineation of soil and groundwater PHCs, were advanced in October 2019.

The proposed rationale for each of the boreholes and monitoring well locations is provided below:

- **BH4001** – This borehole was advanced to a depth of approximately 13 m bgs to horizontally delineate the benzene exceedance observed in BH1984 at a depth of 6.10 to 6.86 m bgs. This location was not completed as a monitoring well as delineation within the groundwater had already been achieved in monitoring well BH1984.
- **BH4002** – This borehole was advanced to a depth of approximately 18 m bgs with a monitoring well screened at approximately 11.8 to 13.2 m bgs. The intent behind this location was to provide additional soil and groundwater delineation along the western margin of the plume between monitoring wells to the north (BH1985, BH1987 and BH1988) and south (BH2007, BH2008 and BH2009).
- **BH4003 A/B and BH4004 A/B** – These locations were advanced to a depth of approximately 18 m bgs with nested monitoring wells at each location. The A series wells were screened across the margin of the excavation extent into the underlying clay layer, while the B series wells were installed and screened at deeper depth. The intent behind these locations was to characterize residual PHC contamination within the former excavation footprint as well as within the underlying soil and groundwater.
- **BH4005 and BH4006** – These locations were advanced to a depth of approximately 13 m bgs within the former excavation fill material. Monitoring wells were installed at each location and screened at the margin of the excavation extent and into the underlying clay layer. The rationale for these locations was to further characterize residual PHC contamination with the former excavation footprint as well as within the underlying soil and groundwater.
- **BH4007** – This location was advanced to a depth of approximately 13 m bgs. A monitoring well was installed at this location. The rationale for this location was to further characterize the residual PHC impacts within and beneath the former excavation footprint. The current well at this location, BH1983A, is screened at a deeper depth beneath the excavation extent.
- **BH4008 A/B** – This location was advanced to a depth of approximately 17m bgs and had nested wells installed. The purpose for this location was to horizontally delineate soil and groundwater PHCs identified in borehole and monitoring well BH4006.
- **BH4009 A/B** - This location was advanced to a depth of approximately 17 m bgs and had nested wells installed. The purpose for this location was to horizontally delineate soil and groundwater PHCs identified in borehole and monitoring well BH4002.

During the field investigation, it was determined that the base of the excavation is the areas investigated was above, or at the margin, of the water table. As a result, screening wells within the excavation backfill material would have most likely resulted in dry wells, or wells within very little water.

Applicable Guidelines

The guidance document used to assess the soil and groundwater analytical data from the Site was the AEP 2019 Tier 1 and 2 Guidelines. The AEP 2019 Tier 1 and 2 Guidelines specify a land use and a receptor pathway approach that formulates a specific standard for each different chemical parameter. Based on the current land use of the Site, the commercial land use designation has been applied. For soil samples, the applicable soil texture was predominantly fine-grained. The fresh water aquatic life (FAL) pathway was removed since the nearest surface water body and its associated flood risk area is greater than 300 m away from the Site. Removal of the FAL pathway only effects the PAH guidelines and some of the VOC parameters, and as a result, both the Tier 1 and Tier 2 guidelines were used in assessing the soil and groundwater analytical data. In addition to these guidelines, the soil and groundwater data has also been compared against the vapour inhalation pathway guideline for the parameters of concern.

Intrusive Investigation

Borehole Drilling and Monitoring Well Installation

From 24 June 2019 to 05 July 2019, Clifton personnel supervised the drilling of seven boreholes (BH4001 to BH4007) and the installation of eight monitoring wells, four of which were nested (BH4003A/B and BH4004A/B). The boreholes were advanced using a track-mounted, direct-push GeoProbe 8040 DT drill rig provided by All Service Drilling Inc. of Calgary, Alberta. The boreholes were advanced to a depth ranging between 12.0 m bgs and 18.0 m bgs. Clifton returned to the Site between 15 and 16 October 2019 to supervise the drilling of two additional boreholes with the installation of nested wells (BH4008A/B and BH4009A/B) at each location to further delineate soil and groundwater PHCs identified in the initial drilling event.

The horizontal and vertical locations of monitoring well and borehole locations were surveyed by Tronnes Geomatics Inc. on 08 July 2019 and 18 October 2019.

Soil Investigation

During drilling of the boreholes, soil samples were collected by pushing a clear, acetate sampling core tube into the subsurface. The core tube was then extracted from the borehole and opened by the drilling crew. Clifton personnel described the recovered soil interval in the field for total recovery, composition, texture, colour, hardness, moisture content, and any other identifying features observed, including inclusions or alteration of the original material. Samples were measured and identifying breaks in stratigraphy or soil type were noted by depth. The 1.5 m sample cores were split into a top and bottom interval with a composite sample collected from each interval. Soil was removed from the core tube with a stainless-steel putty knife, or by hand. All remaining soil cuttings were placed in a lined soil bag located on-Site. In addition to collecting a composite sample from each interval, a discrete sample was also collected using a Terra Core Sampler. For nested monitoring wells, the deeper borehole was completed first and the soil was logged as described above. The second, shallower borehole was not logged and was simply advanced for the purposes of installing a monitoring well.

The borehole logs are attached in Appendix A along with Clifton's standard Symbols and Terms document.

Soil samples from the boreholes were selected for analysis based on volatile soil vapour field screening results using a RKI Eagle 2 combustible gas monitor (Eagle 2) with a photo ionization detector (PID). In total, nine samples were submitted for grain size analysis, twenty-five samples (maximum of three samples per borehole, excluding duplicates) were submitted for laboratory analysis of BTEX, PHC fractions F1-F4, twenty-six samples were submitted for analysis of VOCs and twenty soil samples submitted for analysis PAHs. Samples were transported in ice-filled coolers, under chain-of-custody, to Bureau Veritas in Calgary, Alberta.

Groundwater Investigation

Groundwater monitoring wells were installed at each borehole location, to varying depths, with the exception of BH4001. No monitoring well was installed at BH4001 as previously installed wells to the south of this location provided delineation of PHCs within the groundwater. Two monitoring wells were installed at borehole BH4003 (BH4003A and BH4003B), BH4004 (BH4004A and BH4004B), BH4008 (BH4008A and BH4008B) and BH4009 (BH4009A and BH4009B). These wells were nested with screened intervals at varying depths in order to help obtain vertical delineation of the groundwater impacts. Monitoring well BH4007 was installed to serve as a shallow well “nested” with the previously installed BH1983A which had been completed to a deeper depth. One monitoring well was installed at the remainder of the boreholes. The monitoring wells were installed to depths ranging between 12.0 m bgs and 16.5 m bgs. For the wells completed within the former excavation footprint, the screened intervals were placed below the maximum extent of the remedial excavation. Due to the depth of water table at the Site, screened intervals within the excavation backfill material would have likely resulted in dry wells.

The monitoring wells were constructed using 50 mm inner diameter (ID), Schedule 40 PVC. Solid PVC pipes of corresponding diameters were attached to screens. The solid pipe was capped with a J-Plug locking well cap. The annulus around the screen of the wells was backfilled with well-sorted, washed 10/20 filter sand placed from the bottom of the well to approximately 0.3 m above the screened interval. Subsequently, the wells were sealed above the sand with a hydrated bentonite clay plug of at least 0.3 m in thickness. The annulus space around the pipe was filled with hydrated bentonite chips to just below the ground surface. Bentonite chips were hydrated with de-ionized water. Filter sand was placed above the hydrated bentonite chips. Flush-mounted, heavy-duty steel road boxes were installed to protect the monitoring wells. The road boxes were sealed into place above the sand with quick setting concrete. During the sealing of monitoring well BH4004A the drillers reported that approximately 0.20 m of a sand and bentonite mixture was accidentally poured within the constructed well due to a damaged J-Plug locking well cap. There was no damage to the monitoring well as a result.

The well installation details are provided within the borehole logs in Appendix A.

Between 02 July and 07 July 2019, Clifton personnel re-visited the Site to conduct groundwater development and monitoring and sampling for monitoring wells BH4002 to BH4007. Following the drilling completed between 15 and 16 October 2019, Clifton returned to the Site on 17 and 18 October 2019 to conduct the well development and monitoring and sampling of monitoring wells BH4008A/B and BH4009A/B. The well development involved using Waterra tubing with a foot valve and surge block to extract up to at least three well volumes of groundwater or until the well went dry and was no longer able to

recover. The monitoring wells were developed by surging the tubing up and down within the well standpipe in front of the well screen to dislodge clay and silt particles that may have collected either within the well itself, or in the sand pack that was placed around the well screen.

Following development and prior to sampling, the wells were monitored for standpipe vapour concentration, water table depth, light non-aqueous phase liquid (if present), and total depth of well. The measurements were recorded in the field logs.

The groundwater monitoring data is summarized in Table 1 of the attachments.

Upon completion of the monitoring, a disposable bailer was used to obtain representative samples from each monitoring well for analysis of BTEX, PHC fractions F1 to F4, PAHs and VOCs. Monitoring wells BH4008A/B and BH4009A/B installed in October 2019 were not sampled for PAHs as no exceedances were observed during the earlier sampling event in July 2019. Samples were transported in ice-filled coolers, under chain-of-custody, to Bureau Veritas in Calgary, Alberta.

Quality Assurance / Quality Control

Various methods of QA/QC were implemented throughout the program including the collection and analysis of trip blank samples and field duplicate samples, as well as laboratory QA/QC procedures. Three soil duplicates and two groundwater duplicates were collected during this investigation. The results of the field duplicate QA/QC program are presented in Table 2 to Table 5 of the attachments.

Comparing the sample results to duplicate results is done by calculating the relative percent difference (RPD) between the two results. RPD is calculated using the following formula:

$$\mathrm{RPD}\ (\%) = \mathrm{ABS}\left(\frac{C_1 - C_2}{\frac{C_1 + C_2}{2}}\right) * 100$$

C_1 – original sample, C_2 – duplicate sample.

The RPD could not be calculated for some constituents as the analytical results were less than five times the reportable detection limit (RDL). The remaining RPDs that could be calculated were within the acceptable range.

Ten trip blank samples were collected throughout the duration of the soil and groundwater program. All trip blank results were below the laboratory detection limits, which are considered acceptable. The soil and groundwater trip blank results are presented in Table 6.

See the laboratory reports in Appendix B for the detection limits, testing protocols, and QA/QC procedures.

Results

Soil Stratigraphy

The lithology encountered during the borehole drilling consisted primarily of Unit 1, 2 and 3 which is consistent with previous drilling within the Site as is documented in the Remediation Plan and Updated Site Management Plan (2015). Unit 1 consists of silty-sand, underlain by Unit 2 a clayey silt, underlain by Unit 3 a sandy-silt. In borehole locations BH4003 to BH4007, the former excavation backfill was encountered which consisted of a mixture of Unit 1, 2 and 3 as a result of the allu-treatment of excavated material during the 2006/2007 remedial excavation. The former excavation backfill has been labeled as Unit 6 and extends to a maximum depth of approximately 10 m bgs where it was encountered during this Supplemental Phase II ESA. Analysis of grain-size determined the Site is predominantly fine-grained, with some areas classified as coarse-grained. Grain size analysis results are presented within Tables 7 to 9.

Clifton returned to the Site between 15 and 16 October 2019 to complete additional drilling on the western portion of the Site in an attempt to obtain delineation of soil and groundwater impacts observed during the first event. The lithology in boreholes BH4008 and BH4009 were consistent with the previous drilling event, encountering Unit 1, 2 and 3.

Where applicable, the stratigraphy of the new boreholes was used to update the original cross-sections provided in the Clifton report *2016 Supplementary Drilling Report Hounsfield Heights – Briar Hill Community, Calgary, AB* (05 July 2016) as well at the *Revised Remediation Plan, Hounsfield Heights and Mall Areas, Calgary, Alberta (*13 August 2019). The new cross-sections applicable to the Site have been included in Appendix C.

Soil Analytical Results

Twenty-five soil samples from nine boreholes were selected for laboratory analysis of BTEX, PHC fractions F1-F4, twenty soil samples from nine boreholes were selected for laboratory analysis of PAHs and twenty-six soil samples from nine boreholes were selected for laboratory analysis of VOCs. Two duplicate samples, one from each drilling event, were submitted for laboratory analysis of VOCs only. For the boreholes completed within the excavation footprint, samples submitted for analysis were obtained within the backfill material as well as from areas underlying the backfill material.

Ten soil samples exceeded the 2019 AEP Tier 1 Guidelines for one or more parameters of BTEX, PHC fractions F1-F4. These included an exceedance within each borehole, with the exception of BH4001 and BH4009. The BTEX, PHC fractions F1 to F4 soil results are presented in Table 7.

None of the soil samples submitted for laboratory analysis of PAHs exceeded the 2019 AEP Tier 1 and 2 Guidelines. The PAH soil results are presented in Table 8.

Seven soil samples exceeded the 2019 AEP Tier 1 and 2 Guidelines for the parameter 1,2 – DCA. No other VOC parameters exceeded the applicable guidelines within the soil. An exceedance of 1,2-DCA was observed in boreholes BH4003 to BH4007. The VOC soil results are presented in Table 9.

None of the soil samples submitted for analysis of BTEX, PHC Fractions F1 – F4, PAHs or VOCs exceeded the corresponding vapour inhalation pathway guidelines. These guidelines are presented within Tables 7,8 and 9.

The collected soil cuttings from each drilling event were analyzed for and met the Class II Waste Characterization requirements. The results are presented in Table 10.

All laboratory Certificates of Analysis can be found in Appendix B.

Figures 4 and 5 depict the borehole locations with exceedances of the 2019 AEP Tier 1 and 2 Guidelines for BTEX F1 to F4 and VOCs, respectively. Since there were no exceedances of the PAH parameters a figure was not prepared. Historical soil data has been used to depict exceedances on the 1900 boreholes. Although vertical delineation is not shown on the figures, the deepest sample submitted within each borehole met the 2019 AEP Tier 1 and 2 Guidelines for all parameters. It should be noted that the deepest samples submitted from the boreholes completed within the excavation footprint were obtained at depths greater than the excavation extent.

Groundwater Well Monitoring

A summary of groundwater field measurements, including depth to groundwater and total well depth, along with measured groundwater elevations, are provided in Table 1.

The groundwater elevation ranged from 1080.637 m (BH4004B) to 1081.430 m (BH4009A). A potentiometric surface diagram has been prepared for monitoring wells BH4002 to BH4007, including both the A series and B series wells as they were installed within the same geological unit. Monitoring wells BH4008 and BH4009 were not used in the development of the potentiometric surface as this data was collected approximately two months later. All wells will be used in the development of a potentiometric surface during the next monitoring and sampling event. The potentiometric surface is presented in Figure 6 and shows the groundwater flow direction is predominantly towards the south. The groundwater gradient across the Site was calculated to be approximately 0.009 m/m.

Groundwater Investigation

Twelve groundwater samples including one duplicate were collected from the newly installed groundwater monitoring wells on-Site. All samples were submitted for laboratory analysis of BTEX, PHC fractions F1 and F2, PAHs, and VOCs, with the exception of BH4008A/B and BH4009A/B. Those four wells were not analyzed for PAHs.

Seven groundwater samples, including one duplicate, exceeded the 2019 AEP Tier 1 Guidelines for one or more parameters of BTEX PHC fractions F1 - F2. The monitoring wells which did not have any exceedances of these parameters include BH4003B, BH4004A/B, BH4008B and BH4009A/B. Where wells were nested, the deeper well (“B” series) met the 2019 AEP Tier 1 Guidelines. The BTEX, PHC fraction F1-F2 groundwater results are presented in Table 11.

None of the groundwater samples submitted for laboratory analysis of PAHs exceeded the 2019 AEP Tier 1 and 2 Guidelines. The PAH groundwater results are presented in Table 12.

Five groundwater samples, including one duplicate, exceeded the 2019 AEP Tier 1 and 2 Guidelines for the parameter 1,2-DCA. No other VOC parameters exceeded the applicable guidelines within the groundwater. An exceedance of 1,2-DCA was observed in monitoring wells BH4003A, BH4006, BH4007 and BH4009A. Where wells were nested, the deeper well ("B" series) met the 2019 AEP Tier 1 and 2 Guidelines. The VOC groundwater results are presented in Table 13.

None of the groundwater samples submitted for analysis of BTEX, PHC Fractions F1-F2, PAHs or VOCs exceeded the corresponding vapour inhalation pathway guidelines. These guidelines are presented within Tables 9,10 and 11.

All laboratory Certificates of Analysis can be found in Appendix B.

Figures 7 and 8 depict the monitoring well locations with exceedances of the 2019 AEP Tier 1 and 2 Guidelines for BTEX F1 to F4 and VOCs, respectively. Since there were no exceedances of the PAH parameters a figure was not prepared. Historical groundwater data has been used to depict exceedances within the 1900 series monitoring wells. This data was retrieved from the most recent monitoring and sampling event, completed in the Spring of 2019. Although vertical delineation is not shown on the figures, the samples submitted from the "B" series wells met the applicable AEP Tier 1 and 2 Guidelines for all parameters.

Discussion

The following Section addresses the objectives as set forth based on the AEP Response Letter dated 31 May 2019 and outlined in the Section, *Objectives and Scope of Work*.

Geologic Units Identified Within the Mall Area

Between 24 June 2019 and 05 July 2019, Clifton advanced boreholes in seven locations to a maximum depth of 18.0 m bgs. The lithology encountered during the borehole drilling consisted primarily of Units 1, 2 and 3. Unit 1 consists of a silty-sand, underlain by Unit 2 a clayey silt, underlain by Unit 3 a sandy-silt. In borehole locations BH4003 to BH4007, the former excavation backfill material was encountered which consisted of a mixture of Units 1, 2 and 3 as a result of the allu-bucket treatment of the excavated soil. The former excavation backfill has been classified as Unit 6 and extends to a maximum depth of approximately 10 m bgs based on the data obtained during this investigation. It should be noted, however, that in the Remedial Excavation Report (2008), it was reported that the excavation reached a maximum depth of 13 m bgs in some locations. Analysis of grain-size determined the Site is predominantly fine-grained, with some areas classified as coarse-grained, particularly in Unit 3, the sandy-silt.

Clifton returned to the Site between 15 and 16 October 2019 to complete additional drilling at the western extent of the parking lot to obtain delineation of soil and groundwater impacts observed during the first round of drilling and groundwater sampling. The lithology encountered in boreholes BH4008A/B and BH4009A/B were consistent with the previous drilling event, encountering Units 1, 2 and 3. Both locations were advanced beyond the extent of the former remedial excavation footprint.

Based on the completed boreholes, updated cross-sections depicting the approximate depth of each unit across the Site have been prepared. Cross-sections L-L' and M-M' depict the lithology at the Site running from north to south and east to west, respectively. The cross-sections are presented in Appendix C. As shown in the cross-sections, Unit 1 ranges in thickness from 4.0 m to 6.5 m bgs, Unit 2 between 3.5 m to 6.5 m and Unit 3, between 7.0 m to 10.0 m at the maximum depth of exploration. Unit 4 is only shown in cross-section L-L' which includes two of the 1900 series boreholes. In general, Units 1 and 2 increase in thickness as you move towards the south while the Unit 3 thickness decreases. Moving east to west, Unit 1 and 2 both increase in thickness while Unit 3 remains relatively consistent.

Characterization and Delineation of Residual Soil PHCs within the Mall Area

For the following discussion of the investigation results, delineation is defined based on the now current 2019 AEP Tier 1 and 2 Guidelines, whereas the original investigation and remediation of the Site was done to the then current 2001 PST Guidelines.

Results from the BTEX, PHC fractions F1 to F4, and VOC analysis in soil indicate that vertical delineation has been achieved at all locations. Results from the PAH analysis indicated there were no exceedances of the 2019 AEP Tier 1 and 2 Guidelines

Horizontal delineation of BTEX, PHC fractions F1 to F4, and VOC has been achieved to the north within the Site boundary, to the extent practicable. To the east, beyond the Site boundary, previous investigations have shown delineation.

Delineation to the south has not been achieved. The area south of the Site is hydraulically down-gradient from the source area and is bound by 14th Avenue NW, limiting further delineation in this area.

To the west, the furthest west borehole, BH4008B, contained concentrations of ethylbenzene and toluene at levels above the 2019 AEP Tier 1 Guidelines. This sample was taken at a depth of 10.51 m bgs and is likely the result of migration through the groundwater pathway. This corresponds with an exceedance in the groundwater observed in this monitoring well that is discussed in the following section. Delineation has however, been achieved for all BTEX, PHC fractions F1 to F4, and VOC parameters in the southwest corner within the Site boundary by the advancement of BH4009A/B.

When comparing the soil results for all parameters to the vapour inhalation pathway guideline, it should be noted that no exceedances were observed. The exceedances observed are only related to the domestic use aquifer pathway, which although considered an active pathway, cannot currently be used for domestic purposes within the City of Calgary limits.

When comparing the soil results from the most recent investigation to the confirmatory drilling program completed in 2008, the concentrations appear, on average, to be lower. The highest BTEX concentrations during that investigation were 5.45 mg/kg, 14.2 mg/kg, 3.64 mg/kg and 7.33 mg/kg, respectively. During the most recent investigation the highest BTEX concentrations were 2.0 mg/kg, 2.2 mg/kg, 0.91 mg/kg and 10 mg/kg. Though these samples were not obtained from the exact same locations, they do potentially suggest that the residual PHCs are naturally attenuating.

Lastly, when looking at the soil data obtained within the excavation footprint it is evident that treated soil that met the 2001 PST Guidelines, applicable at the time of the excavation, but exceed the current 2019 AEP Tier 1 Guidelines, was used as backfill. Characterizing the backfill material, as a result, is extremely challenging. During the excavation, there were samples from the treated soil which met both sets of guidelines and other samples which only met the 2001 PST Guidelines. The exact location of the placement of this material within the excavation is not known. This is further supported by the current investigation, were some soil samples obtained within the backfill material met the 2019 AEP Tier 1 Guidelines, while others did not. In summary, the backfill material would contain areas that both exceed, and meet, the 2019 AEP Tier 1 Guidelines at varying depths.

Hydrostatic Characterization Within the Mall Area

All monitoring wells that were monitored, were screened within Unit 3. The “B” series wells were screened at a lower elevation within Unit 3. The groundwater flow direction within Unit 3 was determined to be predominantly to the south to southeast. As discussed earlier, not all monitoring wells were installed during the same drilling event, as a result, BH4008A/B and BH4009A/B were not included in the potentiometric surface diagram. During the next monitoring and sampling event all monitor wells will be included, although we do not expect the groundwater gradient and flow direction to change.

Characterization and Delineation of Residual Groundwater PHCs within the Mall Area

Groundwater BTEX, PHC fractions F1 to F2, and VOC analytical results indicated that horizontal delineation has been achieved to the north, to the east of the Site boundary and to the southwest and southeast. It should be noted that an exceedance of one VOC parameter, 1,2-DCA, was observed in the southwest corner of the Site, monitoring well BH4009A. The result from this well for 1,2-DCA was 0.0077 mg/L above the Guideline value of 0.005 mg/L.

In all cases where wells were nested, the deeper well did not exceed the 2019 AEP Tier 1 and 2 Guidelines.

Delineation to the south, along 14th Avenue NW was not achieved, as this area is hydraulically down-gradient from the original source area.

Results from the PAH analysis indicated no exceedances of the 2019 AEP Tier 1 and 2 Guidelines.

When comparing the groundwater results for all parameters to the vapour inhalation pathway guideline, it should be noted that no exceedances were observed. The exceedances observed are only related to the domestic use aquifer pathway, which although considered an active pathway, cannot currently be used for domestic purposes within the City of Calgary limits.

Comparing the groundwater results from the most recent investigation to the confirmatory drilling program completed in 2008 the concentrations appear, on average, to be lower. The highest BTEX concentrations during the 2008 investigation were 7.37 mg/L, 12.0 mg/L, 0.74 mg/L and 8.89 mg/L, respectively. During the most recent investigation the highest BTEX concentrations were 0.76 mg/L, 0.23 mg/L, 0.63 mg/L and 4.5 mg/L. Though these wells were not placed in the exact same locations, the data does potentially suggest that the residual PHCs are naturally attenuating.

During the 2006/2007 Remedial Excavation, the maximum depth of excavation was limited by the presence of the water table, resulting in pooling of water at the base of the excavation. As a result, the excavation extent was generally halted at the interface of the vadose zone and saturated zone prior to backfilling. The majority of the backfilling would have been completed within the vadose zone with portions extending into the saturated zone. Therefore, assessing the groundwater within the backfill material would not be possible as installing wells screens within this area would have likely resulted in dry wells or wells with insufficient water for proper development and sampling. Newly installed monitoring wells were screened at the beginning of the saturated zone within Unit 3, with the “B” series wells been screened at a lower elevation within the same geological unit. Results do indicate the groundwater present immediately below the backfill material does show evidence of residual PHCs however, the deeper “B” series wells all met the applicable guidelines and provide vertical delineation within this geological unit. This also extends to areas beyond the excavation footprint as observed in monitoring well BH4008B and BH4009B.

Conclusions

The objectives set forth for the Supplemental Phase II ESA were as follows:

- Confirm the geological units within the Mall Area;
- Characterize and delineate the residual soil PHCs within the Mall Area;
- Obtain hydrostratigraphic characterization within the Mall Area, particularly within the former excavation foot print; and
- Characterize and delineate the residual groundwater PHCs within the Mall Area.

Previously identified geological units within the Site boundary were further characterized and confirmed. Geological Units 1 and 2 reach a maximum depth of 6.5 m bgs with Unit 3 present to maximum depth of exploration at 18 m bgs. These units are consistent with previous drilling data from the Site. The excavation fill material, consisting of a mix of the three Units, was classified as a distinct Unit, Unit 6.

Residual soil PHCs have been adequately characterized across the Site.

Soil results from within the excavation backfill area show that treated soil (Unit 6) returned to the excavation that met the then current 2001 PST Guidelines may not always meet the now current 2019 AEP

Tier 1 Guidelines. Beyond the extents of the excavation, soil PHCs are generally located within the saturated zone and likely resulted from migration through the groundwater.

Residual soil PHCs are largely delineated and remain below the vapor inhalation pathway guidelines for all parameters assessed. When comparing residual soil PHC concentrations from the current investigation to the 2008 investigation, parameters do, on average, appear lower, suggesting natural attenuation may be occurring.

Obtaining hydrostratigraphic characterization within the Site was limited to geological Unit 3. This geological unit extended to the maximum depth of exploration at 18 m bgs. Screened wells at varying elevations throughout this unit suggest that the residual PHCs are limited to the upper portion of the unit. Hydrostraitgraphic information from within the excavation footprint was limited to areas beneath the base of the excavation within the underlying soil. The majority of the excavation was limited in depth by the presence of the water table. As a result, obtaining results related to groundwater within the backfill material itself was not possible.

Residual groundwater PHCs have also been adequately characterized across the Site. Residual PHCs exist within, and beyond, the former excavation footprint. With that being said, the residual PHCs are generally delineated with a few exceptions to the south and southwest. Where wells were nested, the deeper well, in all cases, met the applicable guidelines for all parameters suggesting impacts within geological unit 3 are limited to the upper portion of this unit within the Site. Lastly, when comparing residual groundwater PHCs from the most recent investigation to the 2008 investigation, groundwater PHC concentrations do appear, on average to be lower, suggesting natural attenuation may be occurring. An assessment of monitoring natural attenuation is being initiated as part of the 2019 Fall Groundwater Monitoring and Sampling Event.

A Record of Site Condition Form has been attached in Appendix D.

Closure

This report was prepared by Clifton Associates Ltd. for the account of Sears Canada Inc. The material in it reflects Clifton Associates Ltd. best judgment available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Clifton Associates Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

Our conclusions and recommendations are preliminary and based upon the information obtained from the referenced subsurface exploration. The Site monitoring and associated laboratory testing indicate subsurface, groundwater and chemical conditions only at the specific locations and times investigated, only to the depth penetrated and only for the soil and chemical properties tested. The subsurface conditions may vary between the investigation points and with time. The subsurface interpretation provided is a professional opinion of conditions and not a certification of the site conditions. The nature and extent of subsurface variation may not become evident until construction or further investigation. If variations or

other latent conditions do become evident, Clifton Associates Ltd. should be notified immediately so that we may re-evaluate our conclusions and recommendations.

This report has been prepared in accordance with generally accepted engineering practice common to the local area. No other warranty expressed or implied is made.

No environmental site investigation or remediation can wholly eliminate uncertainty regarding environmental conditions in connection with a property. This investigation is intended to reduce, but not eliminate the uncertainty regarding environmental conditions. Conclusions regarding the condition of the site do not represent a warranty that all areas within the site and beneath structures are of the same quality as those sampled. Further, contamination could also exist in forms not indicated by the investigation. The work was based in part upon the environmental quality guidelines and regulations in effect when the work was begun. Future regulatory changes may require reassessment of the findings of this investigation.

Clifton Associates Ltd.

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12/18/19
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PROFESSIONAL GEOLOGIST ALBERTA
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Senior Environmental Geologist

Association of Professional
Engineers and Geoscientists of Alberta
Permit to Practice P4823

List of Figures

Figure 1 Site Location and Surrounding Land Use
Figure 2 Site and Surrounding Properties
Figure 3 Borehole and Monitoring Well Location Plan
Figure 4 Soil Exceedances – BTEX F1 to F4
Figure 5 Soil Exceedances – VOCs
Figure 6 Potentiometric Surface – July 2019
Figure 7 Groundwater Exceedances – BTEX F1 to F2
Figure 8 Groundwater Exceedances - VOCs

List of Tables

Table 1 Summary of Well Monitoring
Table 2 Table 2 - Summary of Soil Laboratory Analyses - QA / QC - Field Duplicates - VOCs
Table 3 Summary of Soil Laboratory Analyses - QA / QC - Field Duplicates - BTEX, PHC Fraction F1 to F4
Table 4 Summary of Groundwater Laboratory Analyses - QA/QC - Field Duplicates - BTEX, PHC fractions F1 - F2, and PAHs
Table 5 Summary of Groundwater Laboratory Analyses - QA/QC - Field Duplicates - VOCs
Table 6 Summary of Groundwater Laboratory Analyses - QA/QC - Trip Blank – VOCs
Table 7 Summary of Soil Laboratory Analyses - BTEX and PHC fractions F1-F4
Table 8 Summary of Soil Laboratory Analyses - PAHs
Table 9 Summary of Soil Laboratory Analyses - VOCs
Table 10 Summary of Soil Laboratory Analyses - Class II Landfill Analysis
Table 11 Summary of Groundwater Laboratory Analyses - BTEX and PHC fractions F1-F2
Table 12 Summary of Groundwater Laboratory Analyses - PAHs
Table 13 Summary of Groundwater Laboratory Analyses – VOCs

Appendices

Appendix A Borehole Logs
Appendix B Laboratory Certificates of Analysis
Appendix C Lithological Cross - Sections
Appendix D Record of Site Condition Form

Figures

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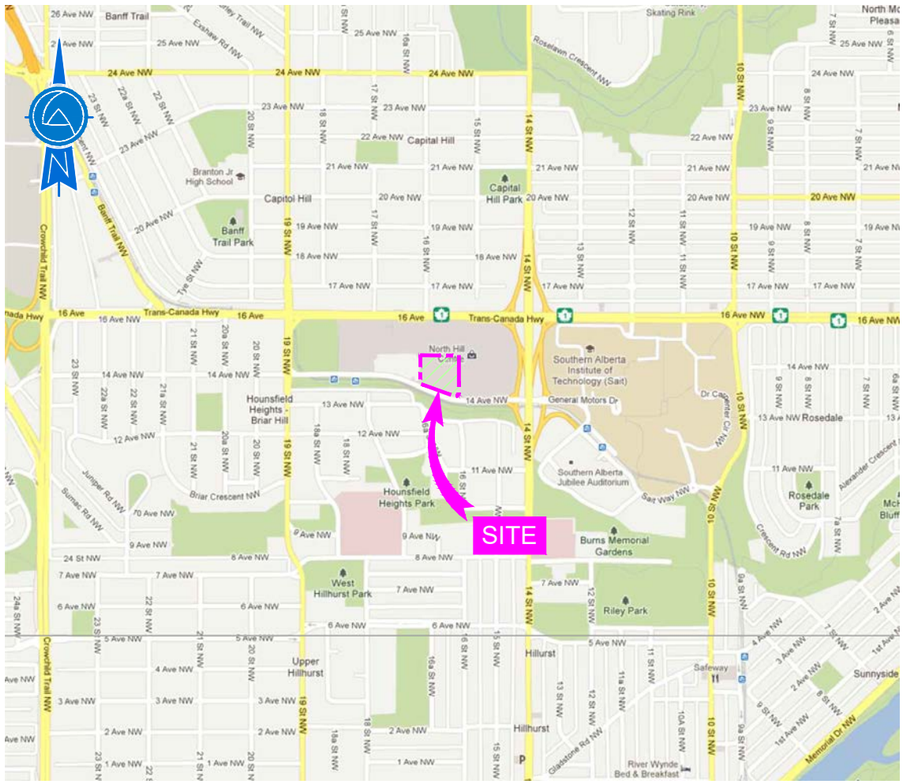

GENERAL SITE LOCATION

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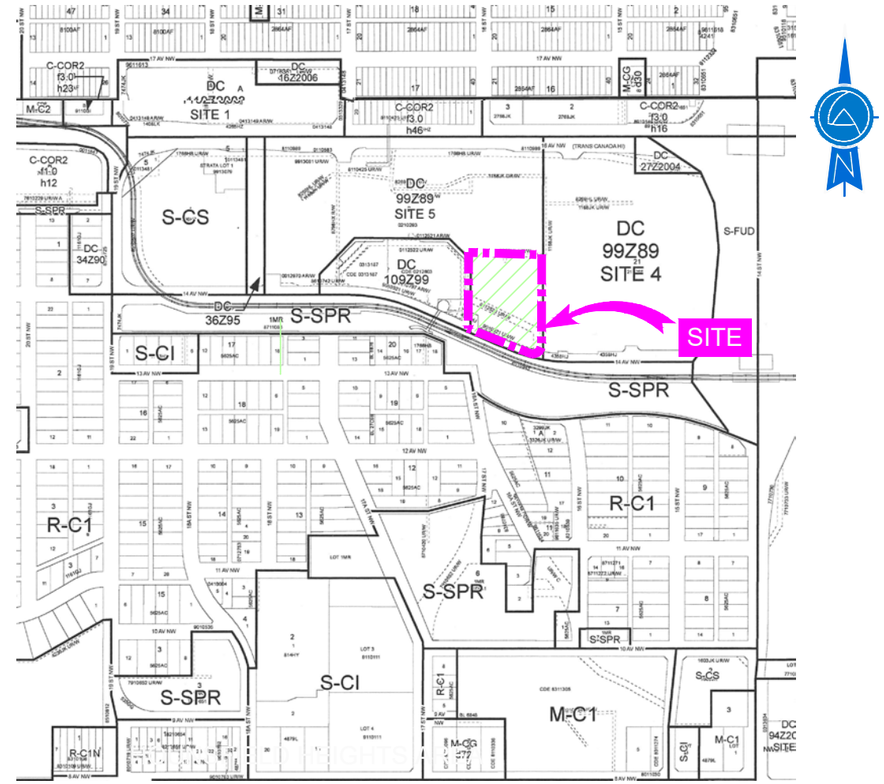

SURROUNDING LAND USE

SCALE 1:7,500

0 100 200 300 m

LEGEND:

SITE BOUNDARY

SITE AREA

CITY OF CALGARY BY-LAW ZONING

LAND USE DISTRICTS:

RESIDENTIAL - CONTEXTUAL ONE DWELLING DISTRICT	R-C1
MULTI-RESIDENTIAL - CONTEXTUAL LOW-PROFILE DISTRICT	MC-1
MULTI-RESIDENTIAL - CONTEXTUAL GRADE-ORIENTED DISTRICT	MC-G
COMMERCIAL - CORRIDOR 2 DISTRICT	C-COR2
SPECIAL PURPOSE - SCHOOL, PARK, AND COMMUNITY RESERVE DISTRICT	S-SPR
SPECIAL PURPOSE - COMMUNITY INSTITUTION DISTRICT	S-CI
SPECIAL PURPOSE - COMMUNITY SERVICE DISTRICT	S-CS
SPECIAL PURPOSE - FUTURE URBAN DEVELOPMENT DISTRICT	S-FUD
DIRECT CONTROL DISTRICT	DC

NOTES:

1. CITY OF CALGARY ROAD MAP PROVIDED BY CANADIAN CARTOGRAPHICS CORPORATION, 2012.
2. LAND USE MAP PROVIDED BY THE CITY OF CALGARY.

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PROJECT

SUPPLEMENTAL PHASE II
ENVIRONMENTAL SITE ASSESSIMENT
NORTH HILL MALL-1616 14TH AVENUE NW, CALGARY, AB

TITLE

SITE LOCATION AND
SURROUNDING LAND USE

DESIGNED	SCALE AS SHOWN	DATE 2019-09-24
DRAWN IW	PROJECT NO. CG2430.1 E37	FIG. 1
CHECKED SD	FILE NO. CG2430.1-E37-01-1	

W:\CG2430.1 SEARS\CURRENT\E37\CG2430.1-E37-01-1.dwg, 10/01/2019 9:06:27 AM

LEGEND:

SITE BOUNDARY

SITE AREA

NOTES:

1. AERIAL PHOTOGRAPH PROVIDED BY GOOGLE EARTH PRO. AIR PHOTO DATE: OCT 23, 2015.

0 50 100 150 200 250m

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SUPPLEMENTAL PHASE II
ENVIRONMENTAL SITE ASSESSIMENT
NORTH HILL MALL-1616 14TH AVENUE NW, CALGARY, AB

TITLE

SITE AND SURROUNDING PROPERTIES

DESIGNED	SCALE	DATE
	1:2000	2019-09-24
DRAWN IW	PROJECT NO. CG2430.1 E37	FIG. 2
CHECKED SD	FILE NO. CG2430.1-E37-02	

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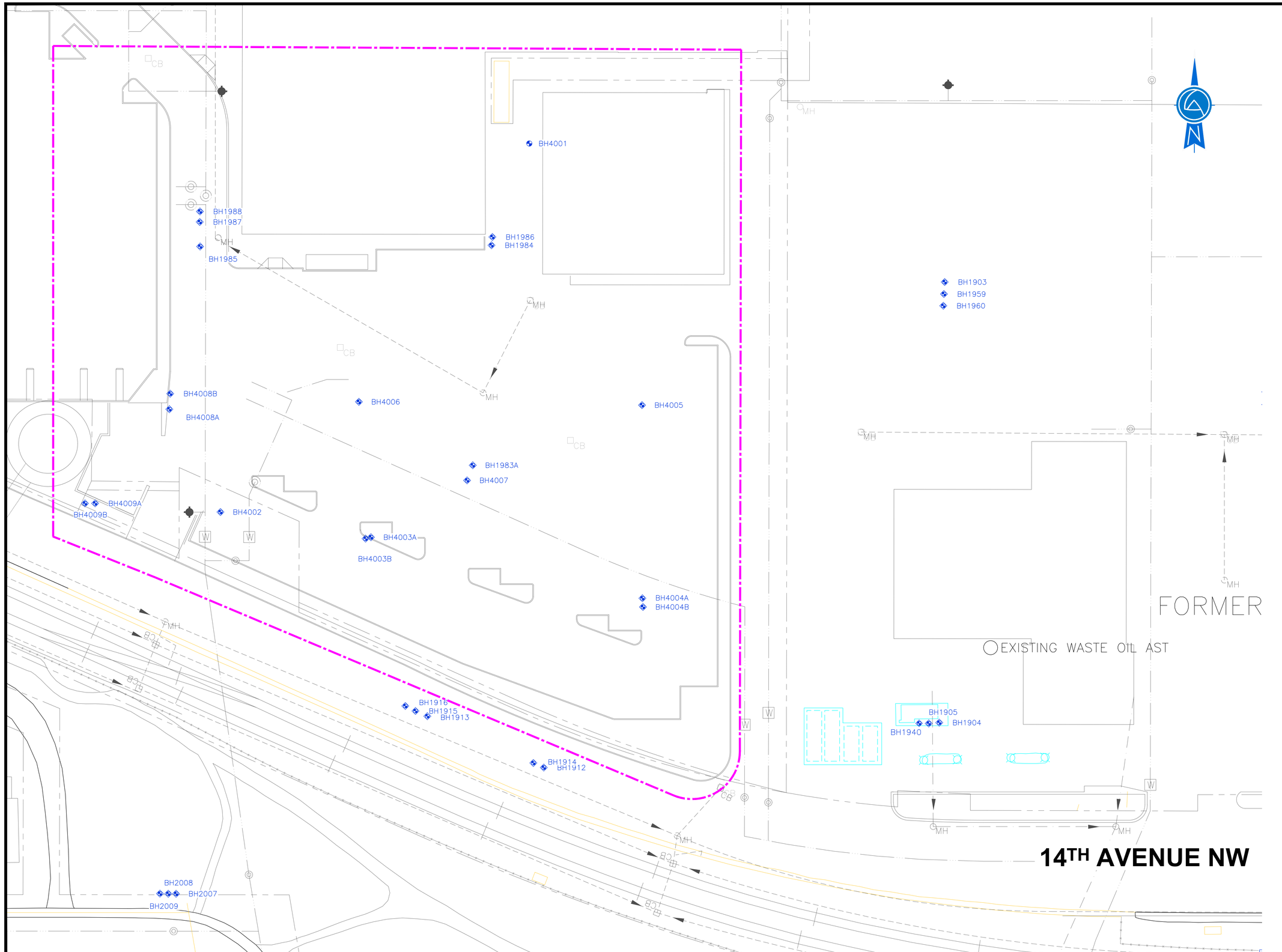

LEGEND

- SITE BOUNDARY
- EXTRACTION WELL
- LRT TRACKS
- FENCE LINE
- LEGAL LINE
- FORMER FACILITY/FEATURE
- BUILDING
- GROUNDWATER MONITORING WELL
- BOREHOLE

UTILITY LINES & SYMBOLS

- NATURAL GAS LINE
- SANITARY SEWER
- STORM SEWER
- WATER
- CATCH BASIN
- FIRE HYDRANT
- LIGHT STANDARD
- MANHOLE
- UTILITY POLE

NOTES:

1 DRAWING COMPILED FROM PLANIMETRIC FILES SUPPLIED BY THE CITY OF CALGARY (INCLUDING U/G UTILITIES) & FROM SITE ASSESSMENT INFORMATION. ADDITIONAL REFERENCES FROM SEACOR ENVIRONMENTAL ENGINEERING INC., DRAWINGS 149-5A11.DWG, 149-5A6.DWG.

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22"x34" (559mm x 864mm) DRAWING METERS 1:300

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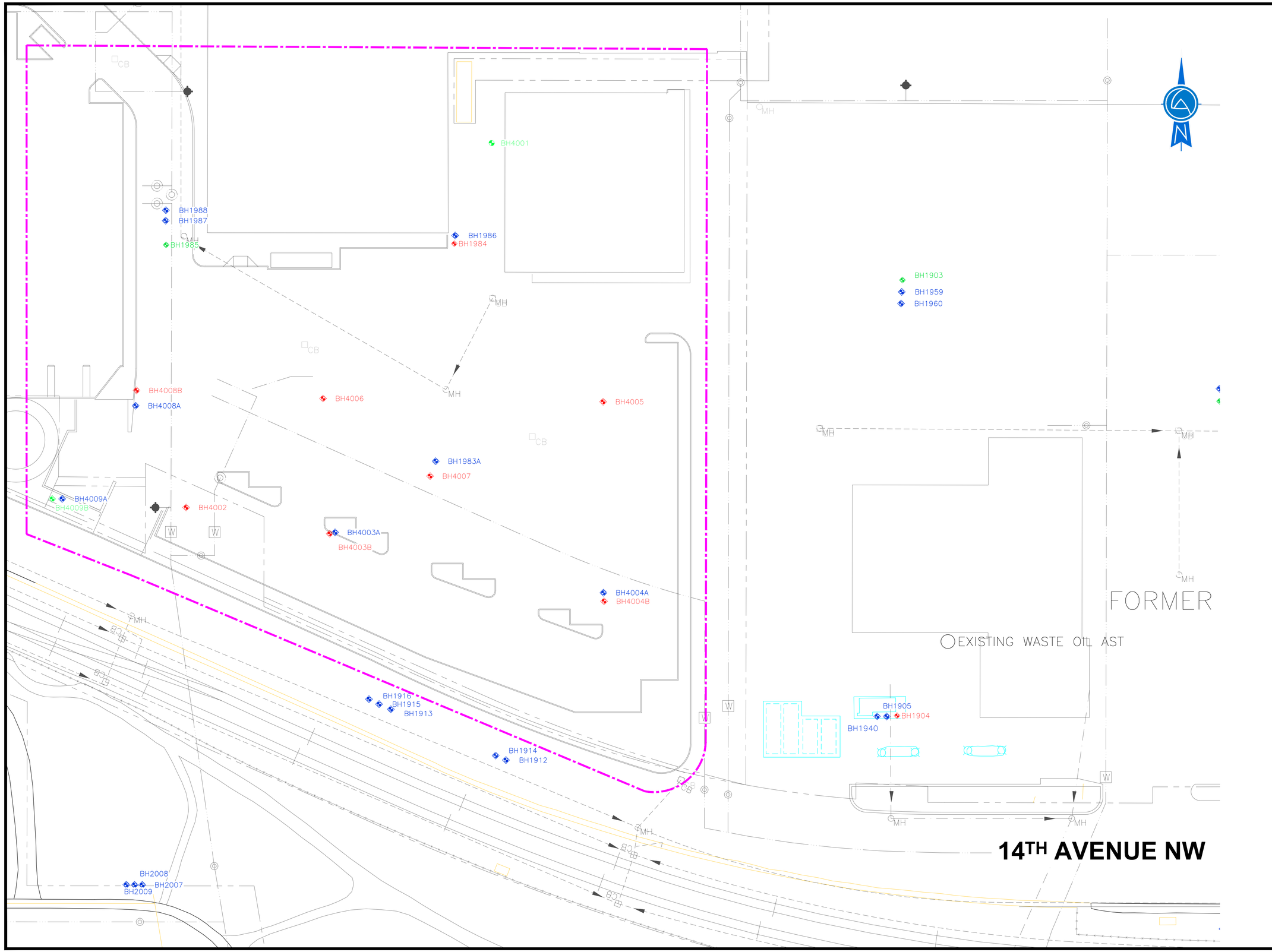
SUPPLEMENTAL PHASE II
ENVIRONMENTAL SITE ASSESSMENT
NORTH HILL MALL-1616 14TH AVENUE NW, CALGARY, AB

TITLE

BOREHOLE AND MONITORING WELL
LOCATION PLAN

DESIGNED	SCALE	DATE
	1:300	2019-11-26
DRAWN IW	PROJECT NO. CG2430.1 E39	FIG. 3
CHECKED SD	FILE NO. CG2430.1-E39-03	

© CLIFTON ASSOCIATES LTD. CG2430.1-E39-03.DWG, 11/26/2019 3:11:01 PM



LEGEND

- SITE BOUNDARY
- LRT TRACKS
- FENCE LINE
- LEGAL LINE
- FORMER FACILITY/FEATURE
- GROUNDWATER MONITORING WELL
- BOREHOLE
- SOIL RESULT EXCEEDS 2019 AEP TIER 1 GUIDELINES
- SOIL RESULT MEETS 2019 AEP TIER 1 GUIDELINES

UTILITY LINES & SYMBOLS

- NATURAL GAS LINE
- SANITARY SEWER
- STORM SEWER
- WATER
- CATCH BASIN
- FIRE HYDRANT
- LIGHT STANDARD
- MANHOLE
- UTILITY POLE

NOTES:

1 DRAWING COMPILED FROM PLANIMETRIC FILES SUPPLIED BY THE CITY OF CALGARY (INCLUDING U/G UTILITIES) & FROM SITE ASSESSMENT INFORMATION. ADDITIONAL REFERENCES FROM SEACOR ENVIRONMENTAL ENGINEERING INC., DRAWINGS 149-5A11.DWG, 149-5A6.DWG.

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PROJECT

SUPPLEMENTAL PHASE II
ENVIRONMENTAL SITE ASSESSMENT
NORTH HILL MALL-1616 14TH AVENUE NW, CALGARY, AB

TITLE

SOIL EXCEEDANCES-
BTEX F1 TO F4

DESIGNED	SCALE	DATE
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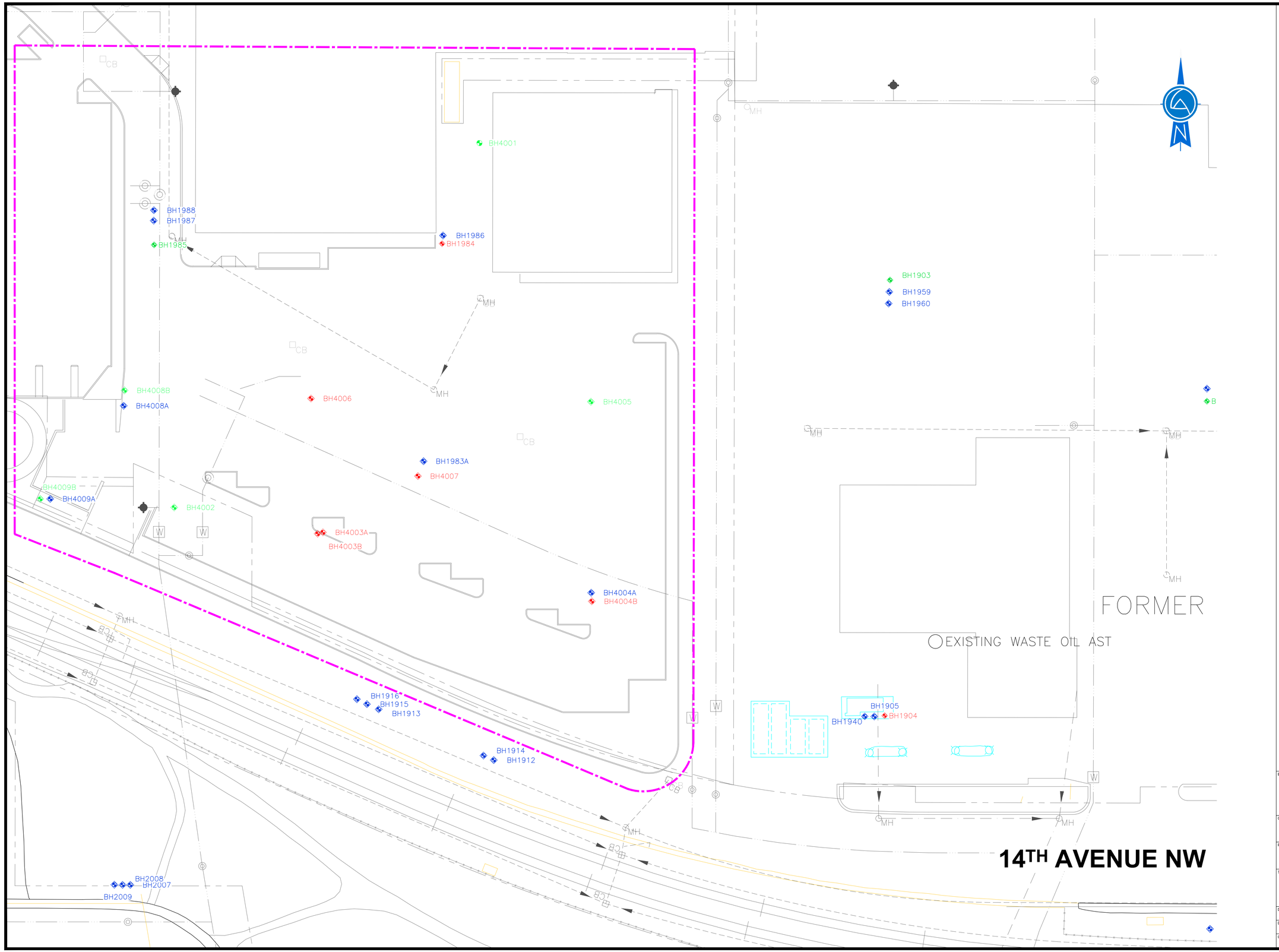
CHECKED SD	FILE NO. CG2430.1-E39-04	



LEGEND

- SITE BOUNDARY
- LRT TRACKS
- FENCE LINE
- LEGAL LINE
- FORMER FACILITY/FEATURE
- GROUNDWATER MONITORING WELL
- BOREHOLE
- SOIL RESULT EXCEEDS 2019 AEP TIER 1 GUIDELINES
- SOIL RESULT MEETS 2019 AEP TIER 1 GUIDELINES

UTILITY LINES & SYMBOLS

- NATURAL GAS LINE
- SANITARY SEWER
- STORM SEWER
- WATER
- CATCH BASIN
- FIRE HYDRANT
- LIGHT STANDARD
- MANHOLE
- UTILITY POLE

NOTES:

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5 0 5 10 15 20 25

22"x34" (559mm x 864mm) DRAWING METERS 1:300

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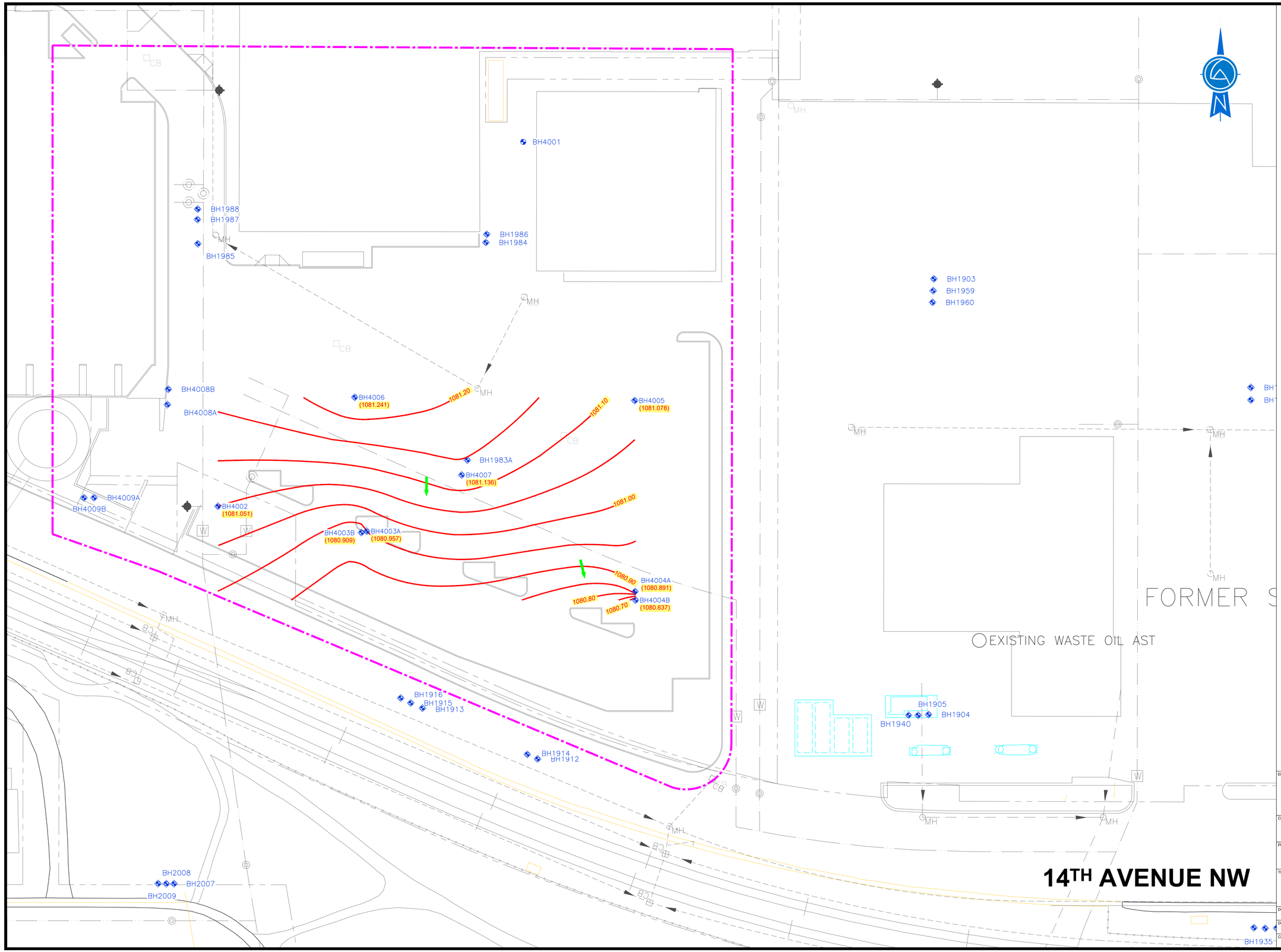
SUPPLEMENTAL PHASE II
ENVIRONMENTAL SITE ASSESSMENT
NORTH HILL MALL-1616 14TH AVENUE NW, CALGARY, AB

TITLE

SOIL EXCEEDANCES-
VOCS

DESIGNED	SCALE 1:300	DATE 2019-11-26
DRAWN IW	PROJECT NO. CG2430.1 E39	FIG. 5
CHECKED SD	FILE NO. CG2430.1-E39-05	

AUTOCAD 2017 - Plot Date: 12/12/2019 - File: CG2430.1-E39-05.DWG



LEGEND

- SITE BOUNDARY
- EXTRACTION WELL
- LRT TRACKS
- FENCE LINE
- LEGAL LINE
- FORMER FACILITY/FEATURE
- BUILDING
- EXISTING GROUNDWATER MONITORING WELL
- POTENTIOMETRIC CONTOUR — 1080.0
- POTENTIOMETRIC ELEVATION — (1080.000)
- INTERPRETED DIRECTION OF GROUNDWATER FLOW

UTILITY LINES & SYMBOLS

- NATURAL GAS LINE
- SANITARY SEWER
- STORM SEWER
- WATER
- CATCH BASIN
- FIRE HYDRANT
- LIGHT STANDARD
- MANHOLE
- UTILITY POLE

NOTES:

1 DRAWING COMPILED FROM PLANIMETRIC FILES SUPPLIED BY THE CITY OF CALGARY (INCLUDING U/G UTILITIES) & FROM SITE ASSESSMENT INFORMATION. ADDITIONAL REFERENCES FROM SEACOR ENVIRONMENTAL ENGINEERING INC., DRAWINGS 149-5A11.DWG, 149-5A8.DWG.

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22"x34" (559mm x 864mm) DRAWING METERS 1:300

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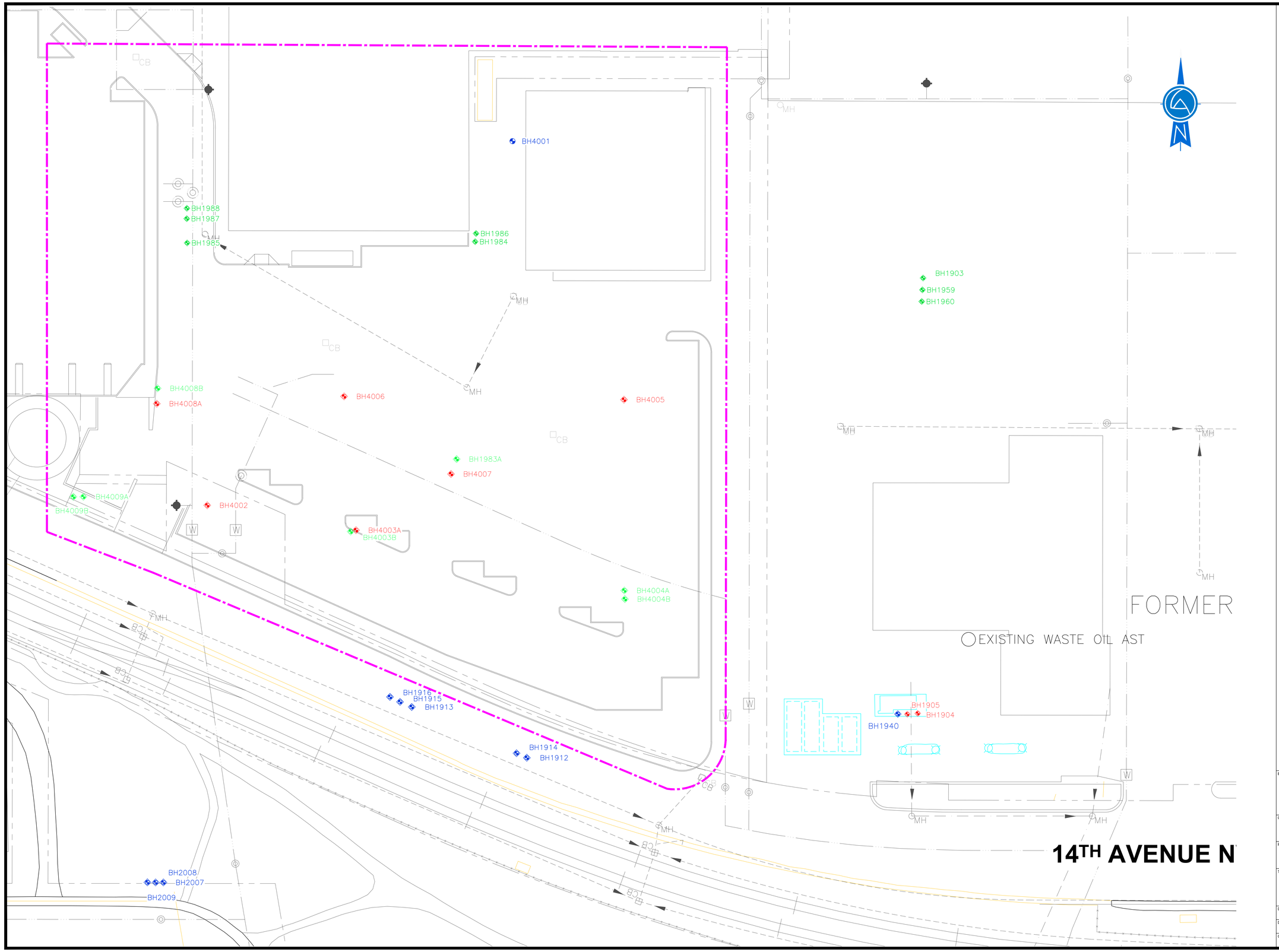
SUPPLEMENTAL PHASE II
ENVIRONMENTAL SITE ASSESSMENT
NORTH HILL MALL-1616 14TH AVENUE NW, CALGARY, AB

TITLE

POTENTIOMETRIC SURFACE - JULY 2019

DESIGNED	SCALE 1:300	DATE 2019-11-26
DRAWN IW	PROJECT NO. CG2430.1 E39	FIG. 6
CHECKED SD	FILE NO. CG2430.1-E39-06	



LEGEND

- SITE BOUNDARY
- LRT TRACKS
- FENCE LINE
- LEGAL LINE
- FORMER FACILITY/FEATURE
- GROUNDWATER MONITORING WELL
- BOREHOLE
- GROUNDWATER RESULT EXCEEDS 2019 AEP TIER 1 GUIDELINES
- GROUNDWATER RESULT MEETS 2019 AEP TIER 1 GUIDELINES

UTILITY LINES & SYMBOLS

- NATURAL GAS LINE
- SANITARY SEWER
- STORM SEWER
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NOTES:

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5 0 5 10 15 20 25

22"x34" (559mm x 864mm) DRAWING METERS 1:300

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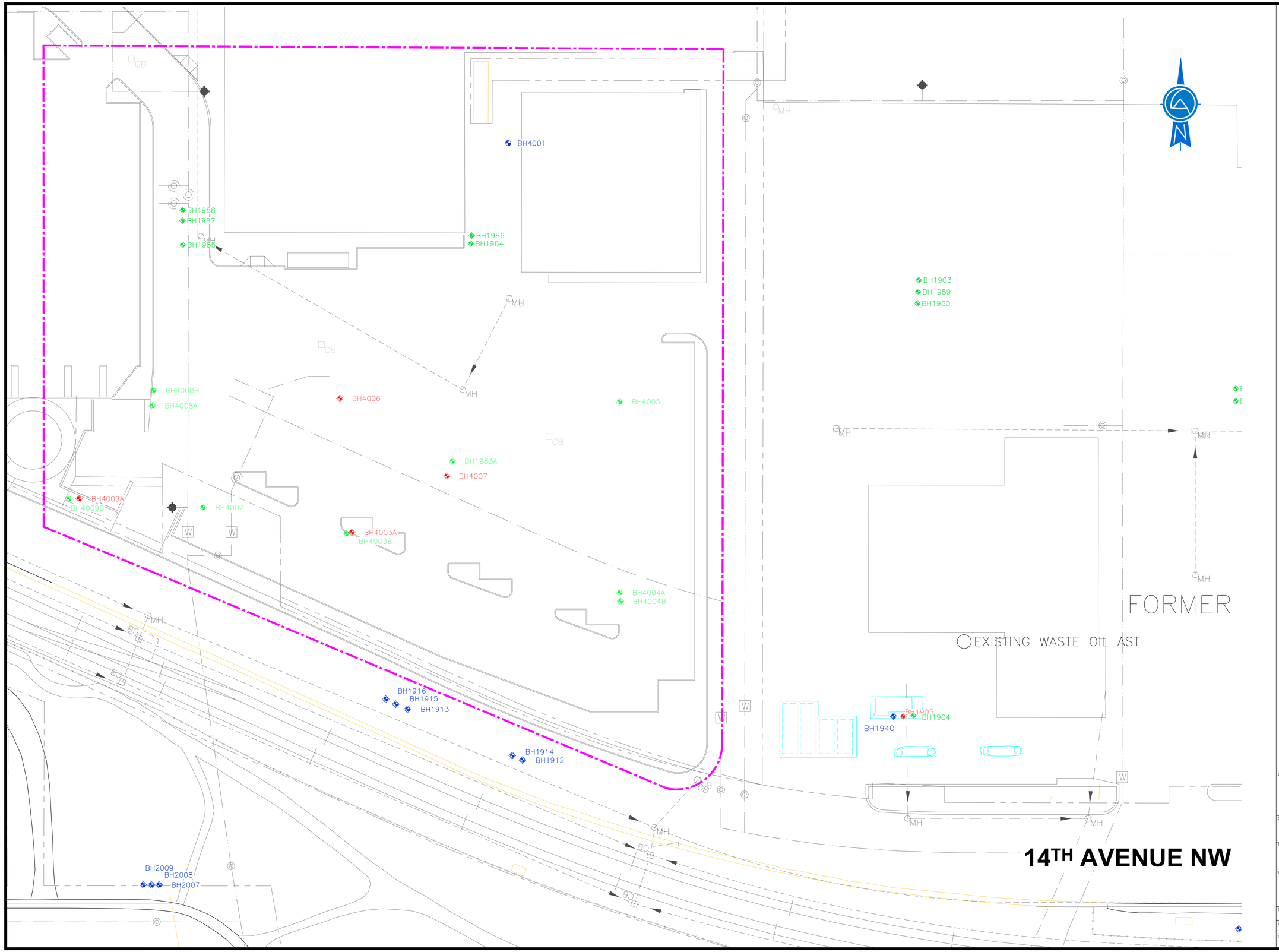
SUPPLEMENTAL PHASE II
ENVIRONMENTAL SITE ASSESSMENT
NORTH HILL MALL-1616 14TH AVENUE NW, CALGARY, AB

TITLE

GROUNDWATER EXCEEDANCES
BTEX F1 TO F2

DESIGNED	SCALE	DATE
	1:300	2019-11-26
DRAWN IW	PROJECT NO. CG2430.1 E39	FIG. 7
CHECKED SD	FILE NO. CG2430.1-E39-07	



LEGEND

- SITE BOUNDARY
- LRT TRACKS
- FENCE LINE
- LEGAL LINE
- FORMER FACILITY/FEATURE
- GROUNDWATER MONITORING WELL
- BOREHOLE
- GROUNDWATER RESULT EXCEEDS 2019 AEP TIER 1 GUIDELINES
- GROUNDWATER RESULT MEETS 2019 AEP TIER 1 GUIDELINES

UTILITY LINES & SYMBOLS

- NATURAL GAS LINE
- SANITARY SEWER
- STORM SEWER
- WATER
- CATCH BASIN
- FIRE HYDRANT
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NOTES:

1 DRAWING COMPILED FROM PLANIMETRIC FILES SUPPLIED BY THE CITY OF CALGARY (INCLUDING U/G UTILITIES) & FROM SITE ASSESSMENT INFORMATION. ADDITIONAL REFERENCES FROM SEACOR ENVIRONMENTAL ENGINEERING INC., DRAWINGS 149-5A11.DWG, 149-5A6.DWG.

5 0 5 10 15 20 25

22"x34" (559mm x 864mm) DRAWING METERS 1:300

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PROJECT

SUPPLEMENTAL PHASE II
ENVIRONMENTAL SITE ASSESSMENT
NORTH HILL MALL-1616 14TH AVENUE NW, CALGARY, AB

TITLE

GROUNDWATER EXCEEDANCES
VOCs

DESIGNED	SCALE	DATE
	1:300	2019-11-26
DRAWN IW	PROJECT NO. CG2430.1 E39	FIG.
CHECKED SD	FILE NO. CG2430.1-E39-08	8

Tables

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Table 1 - Summary of Well Monitoring

Monitor Well	Monitor Date (dd-mmm-yy)	Top of PVC Pipe Elevation (masl[1])	Ground Surface Elevation (masl[2])	Total Depth bTOP[3] (m)	Depth to Water bTOP (m)	Depth to Water BGS[4] (m)	Water Elevation (m asl)	Monitor Well Vapour Concentration[5] HEX/IBL (ppm)
BH4002	2-Jul-19	1091.101	1091.00	13.320	10.05	9.944	1081.051	6450/58
BH4003A	6-Jul-19	1090.967	1090.87	12.510	10.01	9.911	1080.957	4300/12
BH4003B	2-Jul-19	1090.973	1090.92	16.157	10.06	10.008	1080.909	210/1
BH4004A	5-Jul-19	1090.685	1090.62	12.970	9.79	9.730	1080.891	730/1
BH4004B	2-Jul-19	1090.707	1090.64	16.101	10.07	9.999	1080.637	2000/3
BH4005	2-Jul-19	1090.410	1090.36	12.335	9.33	9.277	1081.078	670/10
BH4006	3-Jul-19	1090.623	1090.51	13.010	9.38	9.269	1081.241	710/18
BH4007	3-Jul-19	1090.726	1090.652	11.780	9.59	9.516	1081.136	130/1
BH4008A	17-Oct-19	1090.830	1090.741	12.040	9.452	9.363	1081.378	NT
BH4008B	17-Oct-19	1090.836	1090.759	15.890	9.608	9.531	1081.228	0/0
BH4009A	17-Oct-19	1091.522	1091.43	12.055	10.092	10.001	1081.430	0/0
BH4009B	17-Oct-19	1091.558	1091.435	16.740	10.185	10.062	1081.373	0/0

Notes:

1 Meter above sea level
2 Ground surface elevation based on survey completed in July and October 2019 by Tronnes Geomatics Inc.
3 Below top of pipe
4 Below ground surface
5 Vapour concentrations measured in monitoring wells with an RKI Eagle gas portable monitor with PID.
HEX/IBL Hexane/Isobutylene
NT Not Tested
\- not measured

Table 2 - Summary of Soil Laboratory Analyses
QA / QC - Field Duplicates - VOCs

Sample ID	RDL[1]	4008-20	4008B-20	RPD %[2]	Acceptable Range
Sample Date		15-Oct-2019			
1,1,1,2-Tetrachloroethane	0.10	<0.050	<0.050	NC	80
1,1,1-Trichloroethane	0.020	<0.020	<0.020	NC	80
1,1,2,2-Tetrachloroethane	0.050	<0.050	<0.050	NC	80
1,1,2-Trichloroethane	0.020	<0.020	<0.020	NC	80
1,1-Dichloroethane	0.020	<0.020	<0.020	NC	80
1,1-Dichloroethylene	0.020	<0.020	<0.020	NC	80
1,2,3-Trichlorobenzene	0.040	<0.040	<0.040	NC	80
1,2,4-Trichlorobenzene	0.040	<0.040	<0.040	NC	80
1,2,4-Trimethylbenzene	0.50	<0.50	<0.50	NC	80
1,2-Dibromoethane	0.0020	<0.0020	<0.0020	NC	80
1,2-Dichlorobenzene	0.020	<0.020	<0.020	NC	80
1,2-Dichloroethane	0.0020	<0.0020	<0.0020	NC	80
1,2-Dichloropropane	0.020	<0.020	<0.020	NC	80
1,3,5-Trichlorobenzene	0.040	<0.040	<0.040	NC	80
1,3,5-Trimethylbenzene	0.50	<0.50	<0.50	NC	80
1,3-Dichlorobenzene	0.020	<0.020	<0.020	NC	80
1,4-Dichlorobenzene	0.020	<0.020	<0.020	NC	80
Bromodichloromethane	0.030	<0.030	<0.030	NC	80
Bromoform	0.050	<0.050	<0.050	NC	80
Bromomethane	0.020	<0.020	<0.020	NC	80
Carbon Tetrachloride	0.00050	<0.00050	<0.00050	NC	80
Chlorobenzene	0.0010	<0.0010	<0.0010	NC	80
Chlorodibromomethane	0.020	<0.020	<0.020	NC	80
Chloroethane	0.020	<0.020	<0.020	NC	80
Chloroform	0.00080	<0.010	<0.010	NC	80
Chloromethane	0.030	<0.030	<0.030	NC	80
cis- 1,2-Dichloroethylene	0.020	<0.020	<0.020	NC	80
cis-1,3-Dichloropropene	0.020	<0.020	<0.020	NC	80
Dichloromethane	0.030	<0.030	<0.030	NC	80
Methyl Methacrylate	0.040	<0.040	<0.040	NC	80
Methyl tert-butyl ether	0.030	<0.030	<0.030	NC	80
Styrene	0.020	<0.020	<0.020	NC	80
Tetrachloroethene	0.010	<0.010	<0.010	NC	80
trans- 1,2-dichloroethylene	0.020	<0.020	<0.020	NC	80
trans-1,3-Dichloropropene	0.020	<0.020	<0.020	NC	80
Trichloroethylene	0.010	<0.010	<0.010	NC	80
Trichlorofluoromethane	0.020	<0.020	<0.020	NC	80
Vinyl Chloride	0.00030	<0.00030	<0.00030	NC	80

Notes:

1 Reportable detection limits.

2 Relative percent difference = $((X_1-X_2) / ((X_1 + X_2) / 2)) \times 100$

NC Not calculated

All results in mg/kg unless otherwise noted.

Testing was conducted by Bureau Veritas , Calgary, Alberta.

Table 3 - Summary of Soil Laboratory Analyses
QA / QC - Field Duplicates - BTEX, PHC Fraction F1 to F4

Sample ID	RDL[1]	MJ 012	Dup 001	RPD[2] (%)	MJ 098	Dup 002	RPD[2] (%)	Acceptable Range
Sample Date		24-Jun-19			27-Jun-19			
BTEX and PHC fractions F1 - F2								
Benzene	0.0050	2.0	1.4	35.3	0.90	0.88	2	80
Toluene	0.050	0.065	<0.050	NC	<0.050	<0.050	NC	80
Ethylbenzene	0.010	<0.010	<0.010	NC	<0.010	<0.010	NC	80
Xylenes (Total)	0.045	0.92	1	8.3	0.92	0.99	7.3	80
F1 minus BTEX (C6 - C10)	10	<10	<10	NC	<10	<10	NC	80
F2 (C10 - C16)	10	<10	<10	NC	<10	<10	NC	80
F3 (C16 - C34)	50	<50	<50	NC	<50	<50	NC	80
F4 (C34 - C50)	50	<50	<50	NC	<50	<50	NC	80

Notes:

1 Reportable detection limit.

2 Relative percent difference = $((X_1-X_2) / ((X_1 + X_2) / 2)) \times 100$

NC Not calculated.

All results in mg/L unless otherwise noted.

Testing was conducted by Bureau Veritas , Calgary, Alberta.

Table 4 - Summary of Groundwater Laboratory Analyses
QA/QC - Field Duplicates - BTEX, PHC fractions F1 - F2, and PAHs

Sample ID	RDL[1]	BH4003A	BH94003A	RPD[2] (%)	BH4004A	BH94004A	RPD[2] (%)
Sample Date		7-Jul-19			7-Jul-19		
BTEX and PHC fractions F1 - F2							
Benzene	0.00040	0.74	0.73	NC	<0.00040	<0.00040	NC
Toluene	0.00040	0.024	0.024	NC	<0.00040	<0.00040	NC
Ethylbenzene	0.00040	0.0021	0.0022	NC	<0.00040	<0.00040	NC
Xylenes (Total)	0.00089	1.1	1.1	**0.0**	<0.00089	<0.00089	NC
F1 minus BTEX (C6 - C10)	0.10	1.3	1.3	**0.0**	<0.10	<0.10	NC
F2 (C10 - C16)	0.10	0.34	0.32	**6.1**	<0.10	<0.10	NC
PAHs							
1-Methylnaphthalene	0.00010	<0.00010	<0.00010	NC	<0.00010	<0.00010	NC
2-Methylnaphthalene	0.00010	<0.00010	<0.00010	NC	<0.00010	<0.00010	NC
Acenaphthene	0.00010	<0.00010	<0.00010	NC	<0.00010	<0.00010	NC
Acenaphthylene	0.00010	<0.00010	<0.00010	NC	<0.00010	<0.00010	NC
Acridine	0.00020	<0.000050	<0.000050	NC	<0.000050	<0.000050	NC
Anthracene	0.000010	<0.000010	<0.000010	NC	<0.000010	<0.000010	NC
Benzo(a)anthracene	0.0000085	<0.0000085	<0.0000085	NC	<0.0000085	<0.0000085	NC
Benzo(a)pyrene	0.0000075	<0.0000075	<0.0000075	NC	<0.0000075	<0.0000075	NC
Benzo(b&j)fluoranthene	0.0000085	<0.0000085	<0.0000085	NC	<0.0000085	<0.0000085	NC
Benzo(c)phenanthrene	0.000050	<0.000050	<0.000050	NC	<0.000050	<0.000050	NC
Benzo(g,h,i)perylene	0.0000085	<0.0000085	<0.0000085	NC	<0.0000085	<0.0000085	NC
Benzo(k)fluoranthene	0.0000085	<0.0000085	<0.0000085	NC	<0.0000085	<0.0000085	NC
Benzo[a]pyrene equivalency	0.000010	<0.000010	<0.000010	NC	<0.000010	<0.000010	NC
Benzo[e]pyrene	0.000050	<0.000050	<0.000050	NC	<0.000050	<0.000050	NC
Chrysene	0.0000085	<0.0000085	<0.0000085	NC	<0.0000085	<0.0000085	NC
Dibenz(a,h)anthracene	0.0000075	<0.0000075	<0.0000075	NC	<0.0000075	<0.0000075	NC
Fluoranthene	0.000010	<0.000010	<0.000010	NC	<0.000010	<0.000010	NC
Fluorene	0.000050	<0.000050	<0.000050	NC	<0.000050	<0.000050	NC
Indeno(1,2,3-cd)pyrene	0.0000085	<0.0000085	<0.0000085	NC	<0.0000085	<0.0000085	NC
Naphthalene	0.00010	0.013	0.012	**8**	<0.00010	<0.00010	NC
Perylene	0.000050	<0.000050	<0.000050	NC	<0.000050	<0.000050	NC
Phenanthrene	0.000050	<0.000050	<0.000050	NC	<0.000050	<0.000050	NC
Pyrene	0.000020	<0.000020	<0.000020	NC	<0.000020	<0.000020	NC
Quinoline	0.00020	<0.00020	<0.00020	NC	<0.00020	<0.00020	NC

Notes:

1 Reportable detection limit.

2 Relative percent difference = $((X_1-X_2) / ((X_1 + X_2) / 2)) \times 100$

NC Not calculated.

All results in mg/L unless otherwise noted.

Testing was conducted by Bureau Veritas , Calgary, Alberta.

Table 5 - Summary of Groundwater Laboratory Analyses
QA/QC - Field Duplicates - VOCs

Sample ID	RDL[1]	BH4003A	BH94003A	RPD[2] (%)	BH4004A	BH94004A	RPD[2] (%)	Acceptable Range
Sample Date		7-Jul-19			7-Jul-19			
1,1,1,2-tetrachloroethane	0.0010	<0.0010	<0.0010	NC	<0.0010	<0.0010	NC	60
1,1,1-trichloroethane	0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	NC	60
1,1,2,2-tetrachloroethane	0.0020	<0.0020	<0.0020	NC	<0.0020	<0.0020	NC	60
1,1,2-trichloroethane	0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	NC	60
1,1-dichloroethane	0.00050	<0.00050	0.00074	NC	<0.00050	<0.00050	NC	60
1,1-dichloroethene	0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	NC	60
1,2,3-trichlorobenzene	0.0010	<0.0010	<0.0010	NC	<0.0010	<0.0010	NC	60
1,2,4-trichlorobenzene	0.0010	<0.0010	<0.0010	NC	<0.0010	<0.0010	NC	60
1,2,4-trimethylbenzene	0.00050	0.025	0.027	8	<0.00050	<0.00050	NC	60
1,2-dibromoethane	0.00020	0.00090	0.00088	NC	<0.00020	<0.00020	NC	60
1,2-dichlorobenzene	0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	NC	60
1,2-dichloroethane	0.00050	0.088	0.088	0	<0.00050	<0.00050	NC	60
1,2-dichloropropane	0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	NC	60
1,3,5-trichlorobenzene	0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	NC	60
1,3,5-trimethylbenzene	0.00050	0.0045	0.0050	11	<0.00050	<0.00050	NC	60
1,3-dichlorobenzene	0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	NC	60
1,4-dichlorobenzene	0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	NC	60
Bromodichloromethane	0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	NC	60
Bromoform	0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	NC	60
Bromomethane	0.0020	<0.0020	<0.0020	NC	<0.0020	<0.0020	NC	60
Carbon tetrachloride	0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	NC	60
Chlorobenzene	0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	NC	60
Chlorodibromomethane	0.0010	<0.0010	<0.0010	NC	<0.0010	<0.0010	NC	60
Chloroethane	0.0010	<0.0010	<0.0010	NC	<0.0010	<0.0010	NC	60
Chloroform	0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	NC	60
Chloromethane	0.0020	<0.0020	<0.0020	NC	<0.0020	<0.0020	NC	60
cis-1,2-dichloroethene	0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	NC	60
cis-1,3-dichloropropene	0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	NC	60
Dichloromethane	0.0020	<0.0020	<0.0020	NC	<0.0020	<0.0020	NC	60
Methyl methacrylate	0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	NC	60
Methyl-tert-butylether (MTBE)	0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	NC	60
Styrene	0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	NC	60
Tetrachloroethene	0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	NC	60
Total Trihalomethanes	0.0013	<0.0013	<0.0013	NC	<0.0013	<0.0013	NC	60
trans-1,2-dichloroethene	0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	NC	60
trans-1,3-dichloropropene	0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	NC	60
Trichloroethene	0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	NC	60
Trichlorofluoromethane	0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	NC	60
Vinyl chloride	0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	NC	60

Notes:

1 Reportable detection limit.

2 Relative percent difference = $((X_1-X_2) / ((X_1 + X_2) / 2)) \times 100$

NC Not calculated.

All results in mg/L unless otherwise noted.

Testing was conducted by Bureau Veritas , Calgary, Alberta.

Table 6 - Summary of Groundwater Laboratory Analyses
QA/QC - Trip Blank - VOCs

Sample ID	TRIP BLANK	RDL[1]	TRIP BLANK	RDL[1]	TRIP BLANK	RDL[1]	TRIP BLANK	RDL[1]	TRIP BLANK	RDL[1]	TRIP BLANK 7	RDL[1]	TRIP BLANK 7	RDL[1]	TRIP BLANK 7	RDL[1]	TRIP BLANK	RDL[1]	TRIP BLANK	RDL[1]
Sample Date	24-Jun-2019		25-Jun-2019		19-Jun-2019		27-Jun-2019		28-Jun-2019		3-Jul-2019		4-Jul-2019		7-Jul-2019		15-Oct-2019		18-Oct-2019	
Total Trihalomethanes	<0.0013	0.0013	<0.0013	0.0013	<0.0013	0.0013	<0.0013	N/A	<0.0013	0.0013	<0.0013	0.0013	<0.0013	0.0013	<0.0013	0.0013	-		<0.0013	0.0013
Benzene	<0.00040	0.00040	<0.00040	0.00040	<0.00040	0.00040	<0.00040	0.00066	<0.00040	0.0004	<0.00040	0.00040	<0.00040	0.00040	<0.00040	0.00040	-		<0.00040	0.00040
Bromodichloromethane	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.030	0.030	<0.00050	0.00050
Bromoform	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.050	0.050	<0.00050	0.00050
Bromomethane	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.0020	<0.0020	<0.0020	0.002	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.020	0.020	<0.0020	0.0020
Carbon tetrachloride	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050
Chlorobenzene	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.0010	0.0010	<0.00050	0.00050
Chlorodibromomethane	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	0.001	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	<0.020	0.020	<0.0010	0.0010
Chloroethane	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	0.001	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	<0.020	0.020	<0.0010	0.0010
Chloroform	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.010	0.010	<0.00050	0.00050
Chloromethane	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.0020	<0.0020	<0.0020	0.002	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.030	0.030	<0.0020	0.0020
1,2-dibromoethane	<0.00020	0.00020	<0.00020	0.00020	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	0.0002	<0.00020	0.00020	<0.00020	0.00020	<0.00020	0.00020	<0.0020	0.0020	<0.00020	0.00020
1,2-dichlorobenzene	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.020	0.020	<0.00050	0.00050
1,3-dichlorobenzene	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.020	0.020	<0.00050	0.00050
1,4-dichlorobenzene	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.020	0.020	<0.00050	0.00050
1,1-dichloroethane	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.020	0.020	<0.00050	0.00050
1,2-dichloroethane	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.0020	0.0020	<0.00050	0.00050
1,1-dichloroethene	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.020	0.020	<0.00050	0.00050
cis-1,2-dichloroethene	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.020	0.020	<0.00050	0.00050
trans-1,2-dichloroethene	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.020	0.020	<0.00050	0.00050
Dichloromethane	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.0020	<0.0020	<0.0020	0.002	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.030	0.030	<0.0020	0.0020
1,2-dichloropropane	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.020	0.020	<0.00050	0.00050
cis-1,3-dichloropropene	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.020	0.020	<0.00050	0.00050
trans-1,3-dichloropropene	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.020	0.020	<0.00050	0.00050
Ethylbenzene	<0.00040	0.00040	<0.00040	0.00040	<0.00040	0.00040	<0.00040	<0.00040	<0.00040	0.0004	<0.00040	0.00040	<0.00040	0.00040	<0.00040	0.00040	-	-	<0.00040	0.00040
Methyl methacrylate	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.040	0.040	<0.00050	0.00050
Methyl-tert-butylether (MTBE)	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.030	0.030	<0.00050	0.00050
Styrene	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.020	0.020	<0.00050	0.00050
1,1,1,2-tetrachloroethane	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	0.001	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	<0.050	0.050	<0.0010	0.0010
1,1,2,2-tetrachloroethane	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.0020	<0.0020	<0.0020	0.002	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.050	0.050	<0.0020	0.0020
Tetrachloroethene	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.010	0.010	<0.00050	0.00050
Toluene	<0.00040	0.00040	<0.00040	0.00040	<0.00040	0.00040	<0.00040	<0.00040	<0.00040	0.0004	<0.00040	0.00040	<0.00040	0.00040	<0.00040	0.00040	-	-	<0.00040	0.00040
1,2,3-trichlorobenzene	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	0.001	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	<0.040	0.040	<0.0010	0.0010
1,2,4-trichlorobenzene	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	0.001	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	<0.040	0.040	<0.0010	0.0010
1,3,5-trichlorobenzene	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.040	0.040	<0.00050	0.00050
1,1,1-trichloroethane	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.020	0.020	<0.00050	0.00050
1,1,2-trichloroethane	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.020	0.020	<0.00050	0.00050
Trichloroethene	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.010	0.010	<0.00050	0.00050
Trichlorofluoromethane	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.020	0.020	<0.00050	0.00050
1,2,4-trimethylbenzene	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.50	0.50	<0.00050	0.00050
1,3,5-trimethylbenzene	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.50	0.50	<0.00050	0.00050
Vinyl chloride	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00030	0.00030	<0.00050	0.00050
Xylenes (Total)	<0.00080	0.00080	<0.00080	0.00080	<0.00080	0.00080	<0.00080	<0.00080	<0.00080	0.0008	<0.00080	0.00080	<0.00080	0.00080	<0.00080	0.00080	-	-	<0.00080	0.00080
m & p-Xylene	<0.00080	0.00080	<0.00080	0.00080	<0.00080	0.00080	<0.00080	<0.00080	<0.00080	0.0008	<0.00080	0.00080	<0.00080	0.00080	<0.00080	0.00080	-	-	<0.00080	0.00080
o-Xylene	<0.00040	0.00040	<0.00040	0.00040	<0.00040	0.00040	<0.00040	<0.00040	<0.00040	0.0004	<0.00040	0.00040	<0.00040	0.00040	<0.00040	0.00040	-	-	<0.00040	0.00040

Notes:

1 Reportable detection limits.

All results in mg/L unless otherwise noted.

Testing was conducted by Bureau Veritas , Calgary, Alberta.

Table 7 - Summary of Soil Laboratory Analyses
BTEX and PHC fractions F1-F4

Borehole ID	BH4001	BH4001	BH4002	BH4002	BH4002	BH4003B	BH4003B	BH4003B	BH4004B	BH4004B	Guideline[1]	Guideline[2]	Guideline[3]	Guideline[4]
Sample ID	MJ-52	MJ-59	MJ-70	MJ-77	MJ-82	MJ-92	MJ-98	MJ-102	MJ-007	MJ-12				
Grain Size	Fine	-	-	-	Fine	-	-	-	-	-				
Depth (m bgs)	6.90	12.40	7.10	12.25	16.10	5.70	10.15	13.00	5.00	8.65				
Sample Date	26-Jun-2019	26-Jun-2019	26-Jun-2019	26-Jun-2019	26-Jun-2019	27-Jun-2019	27-Jun-2019	27-Jun-2019	24-Jun-2019	24-Jun-2019				
Benzene	0.014	<0.0050	<0.0050	<0.0050	<0.0050	0.021	**0.90**	<0.0050	**0.092**	**2.0**	0.073	0.046	0.9	11
Toluene	<0.050	<0.050	<0.050	0.19	<0.050	<0.050	<0.050	<0.050	0.15	0.065	0.12	0.52	1,200	13,000
Ethylbenzene	0.010	<0.010	<0.010	0.064	<0.010	<0.010	<0.010	<0.010	0.075	<0.010	0.14	0.073	530	6,500
Xylenes (Total)	<0.045	<0.045	<0.045	**9.0**	<0.045	<0.045	0.92	<0.045	0.76	0.92	1.9	0.99	140	1,700
F1 minus BTEX (C6 - C10)	<10	<10	<10	13	<10	<10	<10	<10	<10	<10	24	210	270	4,500
F2 (C10 - C16)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	130	150	1,500	23,000
F3 (C16 - C34)	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	300	1,300	NG	NG
F4 (C34 - C50)	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	2,800	5,600	NG	NG

Notes:

1 AEP 2019 Tier 1 Guidelines for commercial land use of coarse-grained subsoil (> 3.0 m bgs).
2 AEP 2019 Tier 1 Guidelines for Commercial land use of fine-grained subsoil (> 3.0 m bgs).
3 AEP 2019 Tier 1 Guidelines for Commerical land use of coarse-grained subsoil, soil vapour inhalation pathway (>3.0 m bgs)
4 AEP 2019 Tier 1 Guidelines for Commerical land use of fine-grained subsoil, soil vapour inhalation pathway (>3.0 m bgs)
BOLD Exceeds AEP Tier 1 Guideline
BOLD Exceeds AEP Tier 1 Vapour Inhalation Pathway Guideline
m bgs meters below grade surface.
All results are expressed as mg/kg unless otherwise noted.
Testing was conducted by Bureau Veritas, Calgary, Alberta.

Table 7 - Summary of Soil Laboratory Analyses
BTEX and PHC fractions F1-F4

Borehole ID	BH4004B	BH4005	BH4005	BH4005	BH4006	BH4006	BH4006	BH4007	BH4007	BH4007	Guideline[1]	Guideline[2]	Guideline[3]	Guideline[4]
Sample ID	MJ-20	MJ-131	MJ-138	MJ-141	AM -116	AM-122	AM-125	MJ-32	MJ-38	MJ-41				
Grain Size	-	Fine	Coarse	Coarse	-	-	Fine	Fine	Fine	Fine				
Depth (m bgs)	14.60	4.11	9.60	11.89	5.64	10.36	12.65	5.60	10.00	12.50				
Sample Date	24-Jun-2019	28-Jun-2019	28-Jun-2019	28-Jun-2019	28-Jun-2019	28-Jun-2019	28-Jun-2019	25-Jun-2019	25-Jun-2019	25-Jun-2019				
Benzene	<0.0050	**0.12**	**0.42**	<0.0050	0.028	**0.46**	<0.0050	**0.25**	**0.73**	0.043	0.073	0.046	0.9	11
Toluene	<0.050	0.071	<0.050	<0.050	0.077	<0.050	<0.050	**2.2**	<0.050	<0.050	0.12	0.52	1,200	13,000
Ethylbenzene	<0.010	<0.010	**0.22**	<0.010	0.014	<0.010	<0.010	**0.91**	<0.010	<0.010	0.14	0.073	530	6,500
Xylenes (Total)	<0.045	0.11	0.13	<0.045	0.099	1.3	<0.045	**10**	0.059	<0.045	1.9	0.99	140	1,700
F1 minus BTEX (C6 - C10)	<10	<10	<10	<10	<10	<10	<10	85	<10	<10	24	210	270	4,500
F2 (C10 - C16)	<10	<10	<10	<10	<10	<10	<10	59	<10	<10	130	150	1,500	23,000
F3 (C16 - C34)	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	300	1,300	NG	NG
F4 (C34 - C50)	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	2,800	5,600	NG	NG

Notes:

1 AEP 2019 Tier 1 Guidelines for commercial land use of coarse-grained subsoil (> 3.0 m bgs).
2 AEP 2019 Tier 1 Guidelines for Commercial land use of fine-grained subsoil (> 3.0 m bgs).
3 AEP 2019 Tier 1 Guidelines for Commerical land use of coarse-grained subsoil, soil vapour inhalation pathway (>3.0 m bgs)
4 AEP 2019 Tier 1 Guidelines for Commerical land use of fine-grained subsoil, soil vapour inhalation pathway (>3.0 m bgs)
BOLD Exceeds AEP Tier 1 Guideline
BOLD Exceeds AEP Tier 1 Vapour Inhalation Pathway Guideline
m bgs meters below grade surface.
All results are expressed as mg/kg unless otherwise noted.
Testing was conducted by Bureau Veritas, Calgary, Alberta.

Table 7 - Summary of Soil Laboratory Analyses
BTEX and PHC fractions F1-F4

Borehole ID	BH4008B	BH4008B	BH4009B	BH4009B	Guideline[1]	Guideline[2]	Guideline[3]	Guideline[4]
Sample ID	**4008-14**	**4008-18**	**4009-14**	**4009-17**				
Grain Size	-	-	-	-				
Depth (m bgs)	10.51	13.41	10.51	12.65				
Sample Date	15-Oct-2019	15-Oct-2019	15-Oct-2019	15-Oct-2019				
Benzene	<0.0050	<0.0050	<0.0050	<0.0050	0.073	0.046	0.9	11
Toluene	0.11	<0.050	<0.050	<0.050	0.12	0.52	1,200	13,000
Ethylbenzene	**0.16**	<0.010	<0.010	<0.010	0.14	0.073	530	6,500
Xylenes (Total)	**6.9**	<0.045	<0.045	<0.045	1.9	0.99	140	1,700
F1 minus BTEX	65	<10	<10	<10	24	210	270	4,500
F2 (C10 - C16)	<10	<10	<10	<10	130	150	1,500	23,000
F3 (C16 - C34)	<50	<50	<50	<50	300	1,300	NG	NG
F4 (C34 - C50)	<50	<50	<50	<50	2,800	5,600	NG	NG

Notes:

1 AEP 2019 Tier 1 Guidelines for commercial land use of coarse-grained subsoil (> 3.0 m bgs).
2 AEP 2019 Tier 1 Guidelines for Commercial land use of fine-grained subsoil (> 3.0 m bgs).
3 AEP 2019 Tier 1 Guidelines for Commerical land use of coarse-grained subsoil, soil vapour inhalation pathway (>3.0 m bgs)
4 AEP 2019 Tier 1 Guidelines for Commerical land use of fine-grained subsoil, soil vapour inhalation pathway (>3.0 m bgs)
BOLD Exceeds AEP Tier 1 Guideline
BOLD Exceeds AEP Tier 1 Vapour Inhalation Pathway Guideline
m bgs meters below grade surface.
All results are expressed as mg/kg unless otherwise noted.
Testing was conducted by Bureau Veritas, Calgary, Alberta.

Table 8 - Summary of Soil Laboratory Analyses
PAHs

Borehole ID	BH4001	BH4001	BH4002	BH4002	BH4002	BH4003B	BH4003B	BH4003B	BH4004B	BH4004B	Guideline[1]	Guideline[2]
Sample ID	MJ-52	MJ-59	MJ-70	MJ-77	MJ-82	MJ-92	MJ-98	MJ-102	MJ-007	MJ-12		
Depth (m bgs)	6.90	12.40	7.10	12.25	16.10	5.70	10.15	13.00	5.00	8.65		
Grain Size	Fine	-	-	-	Fine	-	-	-	-	-		
Sample Date	26-Jun-2019	26-Jun-2019	26-Jun-2019	26-Jun-2019	26-Jun-2019	27-Jun-2019	27-Jun-2019	27-Jun-2019	24-Jun-2019	24-Jun-2019		
Acenaphthene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	8000	8000
Benzo[a]pyrene equivalency	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<8.0	<8.0
Acenaphthylene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NG	NG
Acridine	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	NG	NG
Anthracene	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	32	32
Benzo(a)anthracene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	12	6.40
Benzo(b&j)fluoranthene	<0.0050	0.0095	<0.0050	<0.0050	0.0078	<0.0050	<0.0050	<0.0050	0.0066	<0.0050	5.8	3
Benzo(k)fluoranthene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	1.2	0.64
Benzo(g,h,i)perylene	<0.0050	0.013	<0.0050	<0.0050	0.011	0.0057	<0.0050	<0.0050	0.0059	<0.0050	250	130
Benzo(c)phenanthrene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NG	NG
Benzo(a)pyrene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	14	7
Benzo[e]pyrene	<0.0050	0.0082	<0.0050	<0.0050	0.0078	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NG	NG
Chrysene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	78	40
Dibenz(a,h)anthracene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	8.5	4..4
Fluoranthene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	180	180
Fluorene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	4100	4100
Indeno(1,2,3-cd)pyrene	<0.0050	0.0068	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	98	51
1-Methylnaphthalene	<0.0050	0.0079	<0.0050	0.037	0.0063	<0.0050	<0.0050	<0.0050	0.038	0.015	NG	NG
2-Methylnaphthalene	<0.0050	0.0067	<0.0050	0.043	<0.0050	<0.0050	<0.0050	<0.0050	0.075	0.032	NG	NG
Naphthalene	<0.0050	<0.0050	<0.0050	0.47	<0.0050	<0.0050	<0.0050	<0.0050	0.066	0.022	28	53
Phenanthrene	<0.0050	0.0078	<0.0050	<0.0050	0.0073	<0.0050	<0.0050	<0.0050	0.0095	<0.0050	NG	NG
Perylene	<0.0050	0.034	<0.0050	<0.0050	0.044	<0.0050	<0.0050	0.0062	0.011	<0.0050	NG	NG
Pyrene	<0.0050	<0.0050	<0.0050	<0.0050	0.0090	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	3200	3200
Quinoline	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	NG	NG
IACR	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1	<1

Notes:

1 AEP 2019 Tier 1 and 2 Guidelines for commercial land use of coarse-grained soil with FAL removed.
2 AEP 2019 Tier 1 and 2 Guidelines for commercial land use of fine-grained soil with FAL removed.
BOLD Exceeds AEP 2019 Tier 1/2 Guidelines
m bgs meters below grade surface.
NG No Specified Guideline Value.
All results are expressed as mg/kg unless otherwise noted.
Testing was conducted by Bureau Veritas, Calgary, Alberta.

Table 8 - Summary of Soil Laboratory Analyses
PAHs

Borehole ID	BH4004B	BH4005	BH4005	BH4005	BH4006	BH4006	BH4006	BH4007	BH4007	BH4007	Guideline[1]	Guideline[2]
Sample ID	**MJ-20**	**AM-131**	**AM-138**	**AM-141**	**AM -116**	**AM-122**	**AM-125**	**MJ-32**	**MJ-38**	**MJ-41**		
Depth (m bgs)	14.60	4.11	9.60	11.89	5.64	10.36	12.65	5.60	10.00	12.50		
Grain Size	Fine	Coarse	Coarse	-	-	-	Fine	Fine	Fine	Fine		
Sample Date	24-Jun-2019	28-Jun-2019	28-Jun-2019	28-Jun-2019	28-Jun-2019	28-Jun-2019	28-Jun-2019	25-Jun-2019	25-Jun-2019	25-Jun-2019		
Acenaphthene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0081	<0.0050	<0.0050	8000	8000
Benzo[a]pyrene equivalency	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<8.0	<8.0
Acenaphthylene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NG	NG
Acridine	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	NG	NG
Anthracene	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	32	32
Benzo(a)anthracene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	12	6.40
Benzo(b&j)fluoranthene	0.0066	0.012	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	5.8	3
Benzo(k)fluoranthene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	1.2	0.64
Benzo(g,h,i)perylene	0.0066	0.0089	<0.0050	<0.0050	0.0065	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	250	130
Benzo(c)phenanthrene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NG	NG
Benzo(a)pyrene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	14	7
Benzo[e]pyrene	0.0064	0.0083	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NG	NG
Chrysene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	78	40
Dibenz(a,h)anthracene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	8.5	4..4
Fluoranthene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	180	180
Fluorene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0088	<0.0050	<0.0050	4100	4100
Indeno(1,2,3-cd)pyrene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	98	51
1-Methylnaphthalene	0.0069	0.037	0.04	<0.0050	0.051	0.028	<0.0050	0.66	<0.0050	<0.0050	NG	NG
2-Methylnaphthalene	<0.0050	0.071	0.056	<0.0050	0.092	0.044	<0.0050	1.4	<0.0050	<0.0050	NG	NG
Naphthalene	<0.0050	0.051	0.27	<0.0050	0.05	0.21	<0.0050	1.5	0.040	<0.0050	28	53
Phenanthrene	0.0070	0.01	<0.0050	<0.0050	0.009	<0.0050	<0.0050	0.023	<0.0050	<0.0050	NG	NG
Perylene	0.030	0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NG	NG
Pyrene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0058	<0.0050	<0.0050	3200	3200
Quinoline	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	NG	NG
IACR	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1	<1

Notes:

1 AEP 2019 Tier 1 and 2 Guidelines for commercial land use of coarse-grained soil with FAL removed.
2 AEP 2019 Tier 1 and 2 Guidelines for commercial land use of fine-grained soil with FAL removed.
BOLD Exceeds AEP 2019 Tier 1/2 Guidelines
m bgs meters below grade surface.
NG No Specified Guideline Value.
All results are expressed as mg/kg unless otherwise noted.
Testing was conducted by Bureau Veritas, Calgary, Alberta.

Table 9 - Summary of Soil Laboratory Analyses
VOCs

Borehole ID	BH4001	BH4001	BH4002	BH4002	BH4002	BH4003B	BH4003B	BH4003B	BH4003B	BH4004B	BH4004B	Guideline[1]	Guideline[2]	Guideline[3]	Guideline[4]
Sample ID	MJ-52	MJ-59	MJ-70	MJ-77	MJ-82	MJ-92	MJ-98	MJ-102	MJ-105	MJ-007	MJ-12				
Depth (m bgs)	6.90	12.40	7.10	12.25	16.10	5.70	10.15	13.00	15.3	5.00	8.65				
Grain Size	Fine	-	-	-	Fine	-	-	-	-	-	-				
Sample Date	26-Jun-2019	26-Jun-2019	26-Jun-2019	26-Jun-2019	26-Jun-2019	27-Jun-2019	27-Jun-2019	27-Jun-2019	28-Jun-2019	24-Jun-2019	24-Jun-2019				
Bromodichloromethane	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	NG	NG	NG	NG
Bromoform	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NG	NG	NG	NG
Bromomethane	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
Carbon Tetrachloride	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0069	0.037	0.14	1.5
Chlorobenzene	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.22	0.61	0.22	2.7
Chlorodibromomethane	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	1.5	0.91	2.5	76
Chloroethane	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
Chloroform	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.88	0.53	0.14	1.5
Chloromethane	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	NG	NG	NG	NG
1,2-Dibromoethane	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	NG	NG	NG	NG
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.8	0.097	130	1700
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.098	0.051	8	100
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
1,2-Dichloroethane	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	**0.058**	<0.0020	**0.071**	<0.0020	**0.034**	**0.23**	0.033	0.025	0.033	0.37
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.24	0.15	0.27	3.1
cis- 1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
trans- 1,2-dichloroethylene	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
Dichloromethane	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	0.32	0.21	9	110
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
cis-1,3-Dichloropropene	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
trans-1,3-Dichloropropene	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
Methyl Methacrylate	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	1.3	1.3	1.3	20
Methyl tert-butyl ether	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	0.062	0.044	0.57	7.4
Styrene	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	210	110	120	1600
1,1,1,2-Tetrachloroethane	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NG	NG	NG	NG
1,1,2,2-Tetrachloroethane	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NG	NG	NG	NG
Tetrachloroethene	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.22	0.26	0.22	2.9
1,2,3-Trichlorobenzene	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	2.7	1.9	2.7	58
1,2,4-Trichlorobenzene	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	2.4	2	2.4	51
1,3,5-Trichlorobenzene	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	1.3	1.9	1.3	27
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
Trichloroethylene	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.093	0.054	0.15	1.9
Trichlorofluoromethane	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
1,2,4-Trimethylbenzene	<0.50	<0.50	<0.50	2.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NG	NG	NG	NG
1,3,5-Trimethylbenzene	<0.50	<0.50	<0.50	0.74	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NG	NG	NG	NG
Vinyl Chloride	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	0.0043	0.014	0.0043	0.055

Notes:

1 AEP 2019 Tier 1 and 2 Guidelines for Commercial land use of coarse-grained subsoil (> 3.0 m bgs). Freshwater Aquatic Life Pathway removed.
2 AEP 2019 Tier 1 and 2 Guidelines for Commercial land use of fine-grained subsoil (> 3.0 m bgs). Freshwater Aquatic Life Pathway removed.
3 AEP 2019 Tier 1 Guidelines for Commerical land use of coarse-grained subsoil, soil vapour inhalation pathway (>3.0 m bgs)
4 AEP 2019 Tier 1 Guidelines for Commerical land use of fine-grained subsoil, soil vapour inhalation pathway (>3.0 m bgs)

BOLD Exceeds AEP Tier 1 and 2 Guideline
BOLD Exceeds AEP Tier 1 Vapor Inhalation Pathway Guideline
m bgs meters below grade surface.
All results are expressed as mg/kg unless otherwise noted.
Testing was conducted by Bureau Veritas, Calgary, Alberta.

Table 9 - Summary of Soil Laboratory Analyses
VOCs

Borehole ID	BH4004B	BH4005	BH4005	BH4005	BH4006	BH4006	BH4006	BH4007	BH4007	BH4007	Guideline[1]	Guideline[2]	Guideline[3]	Guideline[4]
Sample ID	MJ-20	AM-131	AM-138	AM-141	AM -116	AM-122	AM-125	MJ-32	MJ-38	MJ-41				
Depth (m bgs)	14.60	4.11	9.60	11.89	5.64	10.36	12.65	5.60	10.00	12.50				
Grain size	-	Fine	Coarse	Coarse	-	-	Fine	Fine	Fine	Fine				
Sample Date	24-Jun-2019	28-Jun-2019	28-Jun-2019	28-Jun-2019	28-Jun-2019	28-Jun-2019	28-Jun-2019	25-Jun-2019	25-Jun-2019	25-Jun-2019				
Bromodichloromethane	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	NG	NG	NG	NG
Bromoform	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NG	NG	NG	NG
Bromomethane	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
Carbon Tetrachloride	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0069	0.037	0.14	1.5
Chlorobenzene	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.22	0.61	0.22	2.7
Chlorodibromomethane	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	1.5	0.91	2.5	76
Chloroethane	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
Chloroform	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.88	0.53	0.14	1.5
Chloromethane	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	NG	NG	NG	NG
1,2-Dibromoethane	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.018	<0.0020	<0.0020	NG	NG	NG	NG
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.8	0.097	130	1700
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.098	0.051	8	100
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
1,2-Dichloroethane	<0.0020	0.02	0.0048	<0.0020	0.0085	**0.044**	<0.0020	**0.080**	**0.040**	0.0029	0.033	0.025	0.033	0.37
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.24	0.15	0.27	3.1
cis- 1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
trans- 1,2-dichloroethylene	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
Dichloromethane	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	0.32	0.21	9	110
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
cis-1,3-Dichloropropene	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
trans-1,3-Dichloropropene	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
Methyl Methacrylate	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	1.3	1.3	1.3	20
Methyl tert-butyl ether	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	0.062	0.044	0.57	7.4
Styrene	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	210	110	120	1600
1,1,1,2-Tetrachloroethane	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NG	NG	NG	NG
1,1,2,2-Tetrachloroethane	<0.050	0.076	<0.050	<0.050	<0.050	<0.050	<0.050	0.52	<0.050	<0.050	NG	NG	NG	NG
Tetrachloroethene	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.22	0.26	0.22	2.9
1,2,3-Trichlorobenzene	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	2.7	1.9	2.7	58
1,2,4-Trichlorobenzene	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	2.4	2	2.4	51
1,3,5-Trichlorobenzene	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	1.3	1.9	1.3	27
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
Trichloroethylene	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.093	0.054	0.15	1.9
Trichlorofluoromethane	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
1,2,4-Trimethylbenzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	6.8	<0.50	<0.50	NG	NG	NG	NG
1,3,5-Trimethylbenzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.6	<0.50	<0.50	NG	NG	NG	NG
Vinyl Chloride	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	0.0010	<0.00030	<0.00030	0.0043	0.014	0.0043	0.055

Notes:

1 AEP 2019 Tier 1 and 2 Guidelines for Commercial land use of coarse-grained subsoil (> 3.0 m bgs). Freshwater Aquatic Life Pathway removed.
2 AEP 2019 Tier 1 and 2 Guidelines for Commercial land use of fine-grained subsoil (> 3.0 m bgs). Freshwater Aquatic Life Pathway removed.
3 AEP 2019 Tier 1 Guidelines for Commerical land use of coarse-grained subsoil, soil vapour inhalation pathway (>3.0 m bgs)
4 AEP 2019 Tier 1 Guidelines for Commerical land use of fine-grained subsoil, soil vapour inhalation pathway (>3.0 m bgs)

BOLD Exceeds AEP Tier 1 and 2 Guideline
BOLD Exceeds AEP Tier 1 Vapor Inhalation Pathway Guideline
m bgs meters below grade surface.
All results are expressed as mg/kg unless otherwise noted.
Testing was conducted by Bureau Veritas, Calgary, Alberta.

Table 9 - Summary of Soil Laboratory Analyses
VOCs

Borehole ID	BH4008B	BH4008B	BH4009B	BH4009B	Guideline[1]	Guideline[2]	Guideline[3]	Guideline[4]
Sample ID	4008-14	4008-18	4009-14	4009-17				
Depth (m bgs)	10.51	13.41	10.51	12.65				
Grain size	-	-	-	-				
Sample Date	15-Oct-2019	15-Oct-2019	15-Oct-2019	15-Oct-2019				
Bromodichloromethane	<0.030	<0.030	<0.030	<0.030	NG	NG	NG	NG
Bromoform	<0.050	<0.050	<0.050	<0.050	NG	NG	NG	NG
Bromomethane	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
Carbon Tetrachloride	<0.00050	<0.00050	<0.00050	<0.00050	0.0069	0.037	0.14	1.5
Chlorobenzene	<0.0010	<0.0010	<0.0010	<0.0010	0.22	0.61	0.22	2.7
Chlorodibromomethane	<0.020	<0.020	<0.020	<0.020	1.5	0.91	2.5	76
Chloroethane	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
Chloroform	<0.010	<0.010	<0.010	<0.010	0.88	0.53	0.14	1.5
Chloromethane	<0.030	<0.030	<0.030	<0.030	NG	NG	NG	NG
1,2-Dibromoethane	<0.0020	<0.0020	<0.0020	<0.0020	NG	NG	NG	NG
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.8	0.097	130	1700
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.098	0.051	8	100
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
1,2-Dichloroethane	<0.0020	<0.020	<0.020	0.015	0.033	0.025	0.033	0.37
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.24	0.15	0.27	3.1
cis- 1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
trans- 1,2-dichloroethylene	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
Dichloromethane	<0.030	<0.030	<0.030	<0.030	0.32	0.21	9	110
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
cis-1,3-Dichloropropene	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
trans-1,3-Dichloropropene	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
Methyl Methacrylate	<0.040	<0.040	<0.040	<0.040	1.3	1.3	1.3	20
Methyl tert-butyl ether	<0.030	<0.030	<0.030	<0.030	0.062	0.044	0.57	7.4
Styrene	<0.020	<0.020	<0.020	<0.020	210	110	120	1600
1,1,1,2-Tetrachloroethane	<0.050	<0.050	<0.050	<0.050	NG	NG	NG	NG
1,1,2,2-Tetrachloroethane	<0.050	<0.050	<0.050	<0.050	NG	NG	NG	NG
Tetrachloroethene	<0.010	<0.010	<0.010	<0.010	0.22	0.26	0.22	2.9
1,2,3-Trichlorobenzene	<0.040	<0.040	<0.040	<0.040	2.7	1.9	2.7	58
1,2,4-Trichlorobenzene	<0.040	<0.040	<0.040	<0.040	2.4	2	2.4	51
1,3,5-Trichlorobenzene	<0.040	<0.040	<0.040	<0.040	1.3	1.9	1.3	27
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
Trichloroethylene	<0.010	<0.010	<0.010	<0.010	0.093	0.054	0.15	1.9
Trichlorofluoromethane	<0.020	<0.020	<0.020	<0.020	NG	NG	NG	NG
1,2,4-Trimethylbenzene	3.9	<0.50	<0.50	<0.50	NG	NG	NG	NG
1,3,5-Trimethylbenzene	0.87	<0.50	<0.50	<0.50	NG	NG	NG	NG
Vinyl Chloride	<0.00030	<0.00030	<0.00030	<0.00030	0.0043	0.014	0.0043	0.055

Notes:

1 AEP 2019 Tier 1 and 2 Guidelines for Commercial land use of coarse-grained subsoil (> 3.0 m bgs). Freshwater Aquatic Life Pathway removed.
2 AEP 2019 Tier 1 and 2 Guidelines for Commercial land use of fine-grained subsoil (> 3.0 m bgs). Freshwater Aquatic Life Pathway removed.
3 AEP 2019 Tier 1 Guidelines for Commerical land use of coarse-grained subsoil, soil vapour inhalation pathway (>3.0 m bgs)
4 AEP 2019 Tier 1 Guidelines for Commerical land use of fine-grained subsoil, soil vapour inhalation pathway (>3.0 m bgs)

BOLD Exceeds AEP Tier 1 and 2 Guideline
BOLD Exceeds AEP Tier 1 Vapor Inhalation Pathway Guideline
m bgs meters below grade surface.
All results are expressed as mg/kg unless otherwise noted.
Testing was conducted by Bureau Veritas, Calgary, Alberta.

Table 10 - Summary of Soil Laboratory Analyses
Class II Landfill Analysis

Sample ID	SOIL CUTTINGS	Cutting	Guideline[1]
Sample Date	28-Jun-2019	15-Oct-2019	
Soluble (1:1) pH	7.47	8.14	2.0 - 12.5
Closed Cup Flash point (deg C)	>61	>61	> 61 deg C
Leachable Antimony	<1.0	<1.0	500
Leachable Arsenic	<0.50	<0.50	5.0
Leachable Barium	3.7	1.7	100
Leachable Beryllium	<0.50	<0.50	5.0
Leachable Boron	<1.0	<1.0	500
Leachable Cadmium	<0.10	<0.10	1.0
Leachable Chromium	<0.50	<0.50	5.0
Leachable Cobalt	<1.0	<1.0	100
Leachable Copper	<1.0	<1.0	100
Leachable Iron	1.9	2.0	1,000
Leachable Lead	<0.50	<0.50	5.0
Leachable Mercury	<0.020	<0.020	0.2
Leachable Nickel	<0.50	<0.50	5.0
Leachable Selenium	<0.10	<0.10	1.0
Leachable Silver	<0.50	<0.50	5.0
Leachable Thallium	<0.50	<0.50	5.0
Leachable Uranium	<0.20	<0.20	2.0
Leachable Vanadium	<1.0	<1.0	100
Leachable Zinc	<1.0	<1.0	500
Leachable Zirconium	<1.0	<1.0	500
Leachable Benzene	<0.010	<0.010	0.5
Leachable Toluene	<0.010	<0.010	0.5
Leachable Ethylbenzene	<0.010	<0.010	0.5
Leachable Xylenes (Total)	<0.020	<0.020	0.5

Notes:

1 1996 Alberta User Guide for Waste Managers, Part 4

m bgs meters below grade surface.

All results are expressed as mg/L unless otherwise noted.

Testing was conducted by Maxxam Analytics, Calgary, Alberta.

Table 11 - Summary of Groundwater Laboratory Analyses
BTEX and PHC fractions F1-F2

Sample ID	Land Use[1]	Screened Interval (m bgs)	Sample Date	Benzene	Toluene	Ethylbenzene	Xylenes (Total)	F1 minus BTEX (C6 - C10)	F2 (C10 - C16)
BH4002	C	11.7 - 13.2	3-Jul-19	0.0018	**0.23**	**0.019**	**4.5**	**3.9**	0.66
BH4003A	C	10.5-12.0	7-Jul-19	**0.74**	0.024	**0.0021**	**1.1**	**1.3**	0.34
BH94003A (duplicate of BH4003A)	C	10.5-12.0	7-Jul-19	**0.73**	0.024	**0.0022**	**1.1**	**1.3**	0.32
BH4003B	C	14.9-16.4	3-Jul-19	0.0017	<0.00040	<0.00040	<0.00089	<0.10	<0.10
BH4004A	C	11.5-13.0	7-Jul-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10
BH94004A (duplicate of BH4004A)	C	11.5-13.0	7-Jul-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10
BH4004B	C	14.5-16.0	3-Jul-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10
BH4005	C	10.7- 12.2	3-Jul-19	**0.031**	0.014	**0.063**	**0.28**	0.44	<0.10
BH4006	C	10.7- 12.2	4-Jul-19	**0.49**	0.0064	<0.00040	**0.26**	0.64	0.13
BH4007	C	10.6-12.1	4-Jul-19	**0.76**	0.0014	<0.00040	0.013	0.39	<0.10
BH4008A	C	10.5-12.0	18-Oct-19	<0.00040	0.0025	0.00048	**0.093**	<0.10	<0.10
BH4008B	C	15.2-16.7	18-Oct-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10
BH4009A	C	10.5-12.0	18-Oct-19	<0.00040	0.0045	<0.00040	<0.00089	<0.10	<0.10
BH4009B	C	14.5-16.0	18-Oct-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10
			Guideline[2]	0.005	0.024	0.0016	0.02	2.2	1.1
			Guideline[3]	19	NGR	NGR	NGR	NGR	NGR

Notes:

1 Land Use abbreviations: C=Commercial; R=Residential; I=Industrial; N=Natural.
2 AEP 2019 Tier 1 Guidelines for commerical/industrial land use and fine-grained soil Freshwater aquatic life pathway removed.
3 AEP 2019 Tier 1 Guidelines for commerical/industrial land use, fine grained soil - vapor inhalation pathway.
BOLD Exceeds AEP 2019 Tier 1 Guidelines
BOLD Exceeds AEP Tier 1 Vapor Inhalation Pathway Guideline
m bgs Meters below ground surface
NGR No Guideline Required
All results in mg/L unless otherwise noted.
Testing was conducted by Bureau Veritas, Calgary, Alberta.

Table 12 - Summary of Groundwater Laboratory Analyses
PAHs

Sample ID	BH4002	BH4003A	BH94003A (duplicate of BH4003A)	BH4003B	BH4004A	BH94004A (duplicate of BH4004A)	BH4004B	BH4005	BH4006	BH4007	BH4008A	BH4008B	BH4009A	BH4009B	Guideline [1]
Land Use [2]	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
Screened Interval (m bgs)	11.7 - 13.2	10.5-12.0	10.5-12.0	14.9-16.4	11.5-13.0	11.5-13.0	14.5-16.0	10.7- 12.2	10.7- 12.2	10.6-12.1	10.5-12.0	15.2-16.7	10.5-12.0	14.5-16.0	
Sample Date	3-Jul-19	7-Jul-19	7-Jul-19	3-Jul-19	7-Jul-19	7-Jul-19	3-Jul-19	3-Jul-19	4-Jul-19	4-Jul-19	18-Oct-19	18-Oct-19	18-Oct-19	18-Oct-19	
Benzo[a]pyrene equivalency	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.0004
Acenaphthene	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	1.4
Acenaphthylene	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	NG
Acridine	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	NG
Anthracene	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.32
Benzo(a)anthracene	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	NG
Benzo(b+j)fluoranthene	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	NG
Benzo(k)fluoranthene	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	NG
Benzo(g,h,i)perylene	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	NG
Benzo(c)phenanthrene	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	NG
Benzo(a)pyrene	<0.0000075	<0.0000075	<0.0000075	<0.0000075	<0.0000075	<0.0000075	<0.0000075	<0.0000075	<0.0000075	<0.0000075	<0.0000075	<0.0000075	<0.0000075	<0.0000075	0.0066
Benzo[e]pyrene	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	NG
Chrysene	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	NG
Dibenz(a,h)anthracene	<0.0000075	<0.0000075	<0.0000075	<0.0000075	<0.0000075	<0.0000075	<0.0000075	<0.0000075	<0.0000075	<0.0000075	<0.0000075	<0.0000075	<0.0000075	<0.0000075	NG
Fluoranthene	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.86
Fluorene	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.94
Indeno(1,2,3-cd) pyrene	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	NG
1-Methylnaphthalene	0.0052	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00014	<0.00010	0.0017	0.00029	<0.00010	<0.00010	<0.00010	NG
2-Methylnaphthalene	0.0073	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.0029	0.00032	<0.00010	<0.00010	<0.00010	NG
Naphthalene	0.054	0.013	0.012	<0.00010	<0.00010	<0.00010	<0.00010	0.0065	0.0028	0.014	0.0052	<0.00010	<0.00010	<0.00010	0.47
Phenanthrene	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	NG
Perylene	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	NG
Pyrene	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	0.71
Quinoline	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	NG

Notes:

1 AEP 2019 Tier 1and 2 Guidelines for commerical/industrial land use and fine-grained soil Freshwater aquatic life pathway removed.
2 Land Use abbreviations: C=Commercial; R=Residential; I=Industrial; N=Natural.
BOLD Exceeds AEP 2019 Tier 1 and 2 Guideline
NG No Guideline/No Guideline Required
m bgs Meters below ground surface
All results in mg/L unless otherwise noted.
Testing was conducted by Bureau Veritas, Calgary, Alberta.

Table 13 - Summary of Groundwater Laboratory Analyses
VOCs

Sample ID	BH4002	BH4003A	BH94003A (duplicate of BH4003A)	BH4003B	BH4004A	BH94004A (duplicate of BH4004A)	BH4004B	BH4005	BH4006	BH4007	BH4008A	BH4008B	BH4009A	BH4009B	Guideline [2]	Guideline [3]
Land Use [1]	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
Screened Interval (m bgs)	11.7 - 13.2	10.5-12.0	10.5-12.0	14.9-16.4	11.5-13.0	11.5-13.0	14.5-16.0	10.7- 12.2	10.7- 12.2	10.6-12.1	10.5-12.0	15.2-16.7	10.5-12.0	14.5-16.0		
Sample Date	3-Jul-19	7-Jul-19	7-Jul-19	3-Jul-19	7-Jul-19	7-Jul-19	3-Jul-19	3-Jul-19	4-Jul-19	4-Jul-19	18-Oct-19	18-Oct-19	18-Oct-19	18-Oct-19		
Total Trihalomethanes	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	0.0025	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	0.1	NG
Bromodichloromethane	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NG	NG
Bromoform	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NG	NG
Bromomethane	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	NG	NG
Carbon tetrachloride	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.002	0.08
Chlorobenzene	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.03	2.2
Chlorodibromomethane	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.19	250
Chloroethane	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NG	NG
Chloroform	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0025	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.08	3.5
Chloromethane	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	NG	NG
1,2-dibromoethane	<0.00020	0.00090	0.00088	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	NG	NG
1,2-dichlorobenzene	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.003	NGR
1,3-dichlorobenzene	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NG	NG
1,4-dichlorobenzene	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.001	32
1,1-dichloroethane	0.00074	<0.00050	0.00074	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NG	NG
1,2-dichloroethane	<0.00050	**0.088**	**0.088**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	**0.033**	**0.039**	<0.00050	<0.00050	**0.0077**	0.0045	0.005	1.2
1,1-dichloroethene	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.014	4.5
cis-1,2-dichloroethene	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NG	NG
trans-1,2-dichloroethene	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NG	NG
Dichloromethane	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.05	410
1,2-dichloropropane	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NG	NG
cis-1,3-dichloropropene	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NG	NG
trans-1,3-dichloropropene	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NG	NG
Methyl methacrylate	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.47	120
Methyl-tert-butyl-ether (MTBE)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.015	40
Styrene	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	2.8	NGR
1,1,1,2-tetrachloroethane	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NG	NG
1,1,2,2-tetrachloroethane	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	NG	NG
Tetrachloroethene	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.01	1.8
1,2,3-trichlorobenzene	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.014	6.9
1,2,4-trichlorobenzene	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.015	6.1
1,3,5-trichlorobenzene	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.014	3.3
1,1,1-trichloroethane	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NG	NG
1,1,2-trichloroethane	<0.0010 (2)	<0.00080 (1)	<0.00080 (1)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00055 (2)	<0.0020 (1)	<0.0015 (1)	<0.00050	<0.00050	<0.00050	<0.00050	NG	NG
Trichloroethene	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.005	2.8
Trichlorofluoromethane	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NG	NG
1,2,4-trimethylbenzene	0.44	0.025	0.027	<0.00050	<0.00050	<0.00050	<0.00060 (3)	0.081	0.0063	<0.00050	0.0062	<0.00050	<0.00050	<0.00050	NG	NG
1,3,5-trimethylbenzene	0.14	0.0045	0.0050	<0.00050	<0.00050	<0.00050	<0.00050	0.029	<0.00050	<0.00050	0.0014	<0.00050	<0.00050	<0.00050	NG	NG
Vinyl chloride	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.002	0.12

Notes:

1 Land Use abbreviations: C=Commercial; R=Residential; I=Industrial; N=Natural.
2 AEP 2019 Tier 1and 2 Guidelines for commerical/industrial land use and fine-grained soil Freshwater aquatic life pathway removed.
3 AEP 2019 Tier 1 Guidelines for commerical/industrial land use, fine grained soil - vapor inhalation pathway.
BOLD Exceeds AEP 2019 Tier 1 and 2 Guideline
BOLD Exceeds AEP Tier 1 Vapor Inhalation Pathway Guideline
NG/NGR No Guideline/No Guideline Required
m bgs Meters below ground surface
All results in mg/L unless otherwise noted.
Testing was conducted by Bureau Veritas, Calgary, Alberta.

Appendix A
Borehole Logs

Clifton

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BOREHOLE LOG

Borehole: 4001

Client:	Sears Canada	Northing:	5658811.259	Date:	26 June 2019
Project:	North Hill Mall Drilling	Easting:	-6949.77	Driller:	All Service Drilling
Location:	North Hill Mall parking lot	Ground Elev.:	1090.522	Method:	Direct Push
Project No.:	CG2430.1 - E37	Top Casing Elev.:	N/A	Logged by:	Matt Johnson

Elev (m)	Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USC	EC Reading dS/m (0–20)	Headspace Vapour ppm (10, 100, 1000, 10000)	Monitor Well Construction Detail
	0		NR: No recovery, borehole was excavated by hydrovac to 3.3 m							
1090										
	1									
1089										
	2									
1088										
	3									
1087			CLAY: Silty, some fine to medium - grained sand, brown, oxidized, moist, stiff, low plastic		MJ047				0	
	4		@ 4.1 m: 3 cm sand lens, well-sorted, clayey, olive brown, wet		MJ048				0	
1086			@ 5 m: 9 cm sand lens, fine to medium grained, clayey, light olive brown, wet, firm		MJ049				0	
	5									
1085			@ 5.5 m: light olive brown, very hard, iron spotting		MJ050				0	
	6		@ 6.25 m: coal inclusions		MJ051				5	
1084										
	7		SAND: Silty, clayey, light olive brown, oxidized, moist, compact		MJ052*				45	
			@ 7.15 m: some clay, some silt, stiff							
1083										Hydrated bentonite
	8		@ 7.5 m: trace clay, loose		MJ053				20	
			@ 8.25 m: wet, firm							
1082					MJ054				25	
	9									
					MJ055				15	
1081										
	10		@ 9.8 m: Clayey, silty, trace fine gravel, moist							

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BOREHOLE LOG

Borehole: 4001

Client:	Sears Canada	Northing:	5658811.259	Date:	26 June 2019
Project:	North Hill Mall Drilling	Easting:	-6949.77	Driller:	All Service Drilling
Location:	North Hill Mall parking lot	Ground Elev.:	1090.522	Method:	Direct Push
Project No.:	CG2430.1 - E37	Top Casing Elev.:	N/A	Logged by:	Matt Johnson

Elev (m)	Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USC	EC Reading dS/m (0–20)	Headspace Vapour ppm (10, 100, 1000, 10000)	Monitor Well Construction Detail
	10		SAND: Silty, clayey, light olive brown, oxidized, moist, compact		MJ056				35	
1080					MJ057				10	
	11		CLAY: Silty, sandy, light olive brown, oxidized, moist, firm		MJ058				15	
1079										
	12		@ 12.3 m: wet		MJ059*				90	
1078										
	13		@ 13 m: some sand, moist @ 13.3 m: Sandy, wet		MJ060				0	
1077										
	14		End of hole @ 13.5 m, *Samples submitted for laboratory analyses.							
1076										
	15									
1075										
	16									
1074										
	17									
1073										
	18									
1072										
	19									
1071										
	20									

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BOREHOLE LOG

Borehole: BH4002

Client:	Sears Canada	Northing:	5628749.496	Date:	26 June 2019
Project:	North Hill Mall Drilling	Easting:	-7001.511	Driller:	All Service Drilling
Location:	North Hill Mall parking lot	Ground Elev.:	1091.101	Method:	Direct Push
Project No.:	CG2430.1 - E37	Top Casing Elev.:	1090.995	Logged by:	Matthew Johnson

Elev (m)	Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USC	EC Reading dS/m (0–20)	Headspace Vapour ppm (10, 100, 1000, 10000)	Monitor Well Construction Detail
	0		ASPHALT							Flush mount
			SAND: Clayey, silty, light brown, oxidized, moist, stiff, trace organics, iron staining		MJ061				0	Sand
1090	1		@ 1 m: dark brown, increase in organics		MJ062				0	Hydrated bentonite
1089	2		@ 2.3 m: cobble layer ~ 15 cm		MJ063				25	
			@ 2.5 m: Some clay, no organics		MJ064				20	
1088	3		@ 2.8 m: olive brown		MJ065				0	
1087	4		SILT: Clayey, sandy, light olive brown, oxidized, moist, stiff		MJ066				15	
					MJ067				5	
1086	5		@ 5.2 m: wet		MJ068				0	Grout
1085	6				MJ069				0	
			@ 6.5 m: Clay lens, very stiff, ~ 21 cm							
1084	7		@ 6.98 m: Clay lens, very stiff, ~ 9 cm		MJ070*				0	Schedule 40 50mm PVC Pipe
					MJ071				0	
1083	8		@ 8.3 m: Sand lens, well sorted, wet, ~ 11 cm		MJ072				0	
1082	9				MJ073				0	
1081	10									

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BOREHOLE LOG

Borehole: BH4002

Client:	Sears Canada	Northing:	5628749.496	Date:	26 June 2019
Project:	North Hill Mall Drilling	Easting:	-7001.511	Driller:	All Service Drilling
Location:	North Hill Mall parking lot	Ground Elev.:	1091.101	Method:	Direct Push
Project No.:	CG2430.1 - E37	Top Casing Elev.:	1090.995	Logged by:	Matthew Johnson

Elev (m)	Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USC	EC Reading dS/m (0–20)	Headspace Vapour ppm (10, 100, 1000, 10000)	Monitor Well Construction Detail
	10		SILT: Clayey, sandy, light olive brown, oxidized, moist, stiff		MJ074				0	Hydrated peltonite
			SAND: well sorted, silty, some clay, light olive brown oxidized, wet, homogeneous		MJ075				0	
1080	11		@ 11.5 m: olive brown		MJ076				0	10/20 Filter sand
1079	12				MJ077*				105	Pre-Packed Schedule 40 50mm 10 slot PVC Screen
1078	13				MJ078				15	
			@ 13.7 m: Clayey		MJ079				0	
1077	14				MJ080				0	
1076	15		@ 14.7 m: Clay lens ~ 5 cm, dark olive brown, stiff, moist		MJ081				0	Hydrated bentonite
			@ 15.6 m: dark olive grey @ 15.7 m: Clayey							
1075	16		@ 15.85 m: some clay		MJ082*				0	
			CLAY: trace silt, trace sand, dark olive brown, oxidized, moist, stiff							
1074	17				MJ083				0	
			SAND: well sorted, silty, some clay, light olive brown oxidized, wet, homogeneous							
1073	18				MJ084				5	
			End of hole @ 18 m, *Samples submitted for laboratory analyses							
1072	19									
1071	20									

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BOREHOLE LOG

Borehole: 4003A

Page: 1 of 1

Client:	Sears Canada	Northing:	5658745	Date:	5 July 2019
Project:	North Hill Mall Drilling	Easting:	-6976.3	Driller:	All Service Drilling
Location:	North Hill Mall parking lot	Ground Elev.:	1090.967	Method:	Hollow Stem
Project No.:	CG2430.1-E37	Top Casing Elev.:	1090.868	Logged by:	Melanie Maloney

Elev (m)	Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USC	EC Reading dS/m (0–20)	Headspace Vapour ppm (10, 100, 1000, 10000)	Monitor Well Construction Detail
1090	0									Flush mount
	1									Sand
										Hydrated bentonite
1089	2									
1088	3									
1087	4									Grout
1086	5									
1085	6		Borehole not logged. See BH4003B for soil description.							Schedule 40 50 mm PVC pipe
1084	7									
1083	8									
1082	9									
1081	10									Hydrated peltonite
										10/20 Filter sand
1080	11									Schedule 40 50 mm PVC screen
1079	12		End of hole @ 12 m							
1078	13									
1077	14									
1076	15									
1075	16									
1074	17									
1073	18									
1072	19									
1071	20									

Env BH m elev CAL v09.tdf

BOREHOLE LOG

Borehole: BH4003B

Client:	Sears Canada	Northing:	5658745.08	Date:	27 June 2019
Project:	North Hill Mall Drilling	Easting:	-6977.197	Driller:	All Service Drilling
Location:	North Hill Mall parking lot	Ground Elev.:	1090.973	Method:	Direct Push
Project No.:	CG2430.1 - E37	Top Casing Elev.:	1090.917	Logged by:	Matthew Johnson

Elev (m)	Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USC	EC Reading dS/m (0–20)	Headspace Vapour ppm (10, 100, 1000, 10000)	Monitor Well Construction Detail
	0		ASPHALT							Flush mount
			SAND: AND CLAY, gravelly, some silt, olive brown, oxidized, moist, stiff		MJ085				0	Sand
1090	1		CLAY: Silty, some sand, some gravel, light olive brown oxidized, moist, very stiff		MJ086				0	Hydrated bentonite
1089	2		@ 1.6 m: Sandy, no gravel, iron staining @ 2.1 m: Gravelly		MJ087				0	
1088	3		@ 3 m: trace gravel		MJ088				0	
1087	4				MJ089				0	Grout
					MJ090				0	
1086	5		SAND: Silty, some clay, trace gravel, light olive brown, oxidized, moist, firm		MJ091				0	
1085	6				MJ092*				0	Schedule 40 50mm PVC pip
1084	7		@ 6.4 m: Thinly bedded with clay to 6.95 m		MJ093				0	
					MJ094				0	
1083	8				MJ095				0	
1082	9		@ 8.65 m: wet		MJ096				0	
1081	10				MJ097				30	

Env BH m elev CAL v09.tdf

BOREHOLE LOG

Borehole: BH4003B

Client:	Sears Canada	Northing:	5658745.08	Date:	27 June 2019
Project:	North Hill Mall Drilling	Easting:	-6977.197	Driller:	All Service Drilling
Location:	North Hill Mall parking lot	Ground Elev.:	1090.973	Method:	Direct Push
Project No.:	CG2430.1 - E37	Top Casing Elev.:	1090.917	Logged by:	Matthew Johnson

Elev (m)	Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USC	EC Reading dS/m (0–20)	Headspace Vapour ppm (10, 100, 1000, 10000)	Monitor Well Construction Detail
	10		SAND: Silty, some clay, trace gravel, light olive brown, oxidized, moist, firm		MJ098*				125	
					MJ099				100	
1080	11		@ 10.9 m: Clayey							
			@ 11.5 m: some clay		MJ100				5	
1079	12				MJ101				5	
1078	13		@ 12.85 m: Clayey		MJ102*				5	
					MJ103				0	
1077	14		CLAY: Silty, some sand, olive brown, oxidized, moist, stiff @ 14.4 m: Sandy, wet, firm @ 14.85 m: some sand, moist, stiff		MJ104				0	Hydrated peltonite 10/20 Filter sand
1076	15		SAND: Silty, some clay, dark olive brown, oxidized, moist, firm @ 15.4 m: Clayey, stiff @ 15.5 m: some clay, soft, wet		MJ105*				5	Pre-packed schedule 40 50mm 10 slot screen
1075	16				MJ106				5	
1074	17				MJ107				0	Hydrated bentonite
					MJ108				5	
1073	18		End of hole @ 18 m, *Samples submitted for laboratory analyses							
1072	19									
1071	20									

Env BH m elev CAL v09.tdf

BOREHOLE LOG

Borehole: BH4004A

Page: 1 of 1

Client:	Sears Canada	Northing:	5658735.081	Date:	24 June 2019
Project:	North Hill Mall Drilling	Easting:	-6930.783	Driller:	All Service Drilling
Location:	North Hill Mall parking lot	Ground Elev.:	1090.685	Method:	Direct Push
Project No.:	CG2430.1 - E37	Top Casing Elev.:	1090.621	Logged by:	Matthew Johnson

Elev (m)	Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USC	EC Reading dS/m (0 – 20)	Headspace Vapour ppm (10, 100, 1000, 10000)	Monitor Well Construction Detail
1090	0									Flush mount
										Sand
1089	1									Hydrated bentonite
1088	2									
1087	3									Grout
1086	4									
1085	5									Schedule 40 50 mm PVC pipe
1084	6		Borehole not logged. See BH4004B for soil description.							
1083	7									
1082	8									
1081	9									
1080	10									
1079	11									Hydrated peltonite
	12									10/20 Filter sand
1078	13									Pre-packed schedule 40 50 mm 10 slot screen
1077			End of hole @ 13 m							Hydrated bentonite
1076	14									
1075	15									
1074	16									
1073	17									
1072	18									
1071	19									
	20									

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BOREHOLE LOG

Borehole: BH4004B

Client:	Sears Canada	Northing:	5658733.621	Date:	24 June 2019
Project:	North Hill Mall Drilling	Easting:	-6930.713	Driller:	All Service Drilling
Location:	North Hill Mall parking lot	Ground Elev.:	1090.707	Method:	Direct Push
Project No.:	CG2430.1 - E37	Top Casing Elev.:	1090.63	Logged by:	Matthew Johnson

Elev (m)	Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USC	EC Reading dS/m (0–20)	Headspace Vapour ppm (10, 100, 1000, 10000)	Monitor Well Construction Detail
0	0		ASPHALT							Flush mount; Sand; Hydrated bentonite
			CLAY: Sandy, silty, trace gravel light olive brown, oxidized, moist, homogeneous, firm		MJ001				35	
-1	1		@ 0.5 m: trace gravel		MJ002				50	
			@ 1.5 m: increase in moisture							
-2	2		@ 1.8 m: some sand, decrease in moisture, trace lime		MJ003				35	
			@ 2.4 m: trace cobbles, iron staining		MJ004				40	
-3	3				MJ005				35	Grout
-4	4				MJ006				20	
-5	5				MJ007*				50	Schedule 40 50 mm PVC pipe
			@ 5.3 m: some silt, stiff		MJ008				25	
-6	6		SAND: Clayey, silty, light olive brown, oxidized, moist, firm		MJ009				5	
-7	7		CLAY: Sandy, silty, trace gravel, light olive brown, oxidized, moist, firm		MJ010				105	
			@ 7.5 m: no gravel, firm		MJ011				140	
-8	8		@ 8.5 m: trace gravel, trace cobble		MJ012*				330	
-9	9				MJ013				195	
-10	10		SAND: Clayey, silty, olive brown, oxidized, wet, soft							

Env BH m elev CAL v09.tdf

BOREHOLE LOG

Borehole: BH4004B

Client:	Sears Canada	Northing:	5658733.621	Date:	24 June 2019
Project:	North Hill Mall Drilling	Easting:	-6930.713	Driller:	All Service Drilling
Location:	North Hill Mall parking lot	Ground Elev.:	1090.707	Method:	Direct Push
Project No.:	CG2430.1 - E37	Top Casing Elev.:	1090.63	Logged by:	Matthew Johnson

Elev (m)	Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USC	EC Reading dS/m (0–20)	Headspace Vapour ppm (10, 100, 1000, 10000)	Monitor Well Construction Detail
-10	10		SAND: Clayey, silty, olive brown, oxidized, wet, soft @ 10 m: moist, firm		MJ014				50	
-11	11		@ 10.5 m: wet, soft		MJ015				30	
					MJ016				30	
-12	12		@ 12m: Silty, hard @ 12.3 m: very soft		MJ017				35	
-13	13		CLAY: Silty, sandy, olive brown, oxidized, moist, hard, homogeneous		MJ018				15	
			SAND: Clayey, silty, olive brown, oxidized, wet, soft		MJ019				30	Hydrated peltonite
-14	14				MJ020*				40	10/20 Filter sand
-15	15		@ 14.7 m: moist, firm @ 15 m: dark olive brown, wet, calcareous		MJ021				15	Pre-packed schedule 40 50 mm 10 slot screen
-16	16				MJ022				15	Hydrated bentonite
			@ 16.5 m: some clay, soft		MJ023				15	
-17	17		CLAY: Silty, sandy, dark olive brown, oxidized, moist, soft @ 17.50 m: stiff @ 17.60 m: soft		MJ024				15	
-18	18		End of hole @ 18 m, *Samples submitted for laboratory analyses							
-19	19									
-20	20									

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BOREHOLE LOG

Borehole: BH4005

Client:	Sears Canada	Northing:	5658767.395	Date:	28 June 2019
Project:	North Hill Mall Drilling	Easting:	-6930.857	Driller:	All Service Drilling
Location:	North Hill Mall parking lot	Ground Elev.:	1090.41	Method:	Direct Push
Project No.:	CG2430.1 - E37	Top Casing Elev.:	1090.355	Logged by:	Austin Mei

Elev (m) / Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USC	EC Reading dS/m (0–20)	Headspace Vapour ppm (10, 100, 1000, 10000)	Monitor Well Construction Detail
0		ASPHALT							Flush mount; Sand
1090		SILT: some gravel, trace clay, trace sand, olive brown, oxidized, moist, firm		MJ126				145	Hydrated bentonite
1				MJ127				60	
1089									
2				MJ128				105	
1088									
				MJ129				150	
3		@ 3 m: some clay							Grout
1087				MJ130				150	
4				MJ131*				135	
1086									
5				MJ132				105	Schedule 40 50 mm PVC pipe
1085		CLAY: Silty, some sand, olive brown, oxidized, moist, firm, low plastic		MJ133				80	
6		SILT: some clay, trace sand, olive brown, oxidized, moist, firm							
1084		CLAY: Silty, trace sand, olive brown, oxidized, moist, firm, medium plastic		MJ134				95	
7									
1083				MJ135				140	
8		SILT: Clayey, some sand, trace cobbles olive brown, oxidized, moist, firm		MJ136				170	
1082									
9				MJ137				55	
1081		SAND: fine grained, silty, trace clay, olive brown, oxidized, wet, soft		MJ138*				210	
10									

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BOREHOLE LOG

Borehole: BH4005

Client:	Sears Canada	Northing:	5658767.395	Date:	28 June 2019
Project:	North Hill Mall Drilling	Easting:	-6930.857	Driller:	All Service Drilling
Location:	North Hill Mall parking lot	Ground Elev.:	1090.41	Method:	Direct Push
Project No.:	CG2430.1 - E37	Top Casing Elev.:	1090.355	Logged by:	Austin Mei

Elev (m)	Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USC	EC Reading dS/m (0 – 20)	Headspace Vapour ppm (10, 100, 1000, 10000)	Monitor Well Construction Detail
1080	10		SAND: fine grained, silty, trace clay, olive brown, oxidized, wet, soft		MJ139				30	10/20 Filter sand
1079	11				MJ140				35	Pre-packed schedule 40 50 mm 10 slot PVC screen
1078	12		@ 12.55 m: Clay lens ~ 8 cm		MJ141*				60	
					MJ142				105	Hydrated bentonite
1077	13		End of hole @ 13 m, *Samples submitted for laboratory analyses							
1076	14									
1075	15									
1074	16									
1073	17									
1072	18									
1071	19									
	20									

Env BH m elev CAL v09.tdf

BOREHOLE LOG

Borehole: BH4006

Client:	Sears Canada	Northing:	5658767.922	Date:	28 June 2019
Project:	North Hill Mall Drilling	Easting:	-6978.374	Driller:	All Service Drilling
Location:	North Hill Mall parking lot	Ground Elev.:	1090.623	Method:	Direct Push
Project No.:	CG2430.1 - E37	Top Casing Elev.:	1090.51	Logged by:	Austin Mei

Elev (m)	Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USC	EC Reading dS/m (0–20)	Headspace Vapour ppm (10, 100, 1000, 10000)	Monitor Well Construction Detail
	0		ASPHALT							Flush mount
1090			SILT: Clayey, some sand, trace gravel, olive brown, oxidized, moist, firm		MJ109				70	Sand
	1				MJ110				105	Hydrated bentonite
1089										
	2				MJ111				45	
1088					MJ112				125	
	3									Grout
1087					MJ113				100	
	4				MJ114				125	
1086										
	5		@ 5.10 m: trace cobble		MJ115				155	Schedule 40 50 mm PVC pipe
1085					MJ116*				175	
	6									
1084					MJ117				155	
	7				MJ118				100	
1083			@ 7.62 m: Sandy							
	8				MJ119				160	
1082					MJ120				115	
	9									
1081					MJ121				105	
	10		@ 9.90 m: wet							

Env BH m elev CAL v09.tdf

BOREHOLE LOG

Borehole: BH4006

Client:	Sears Canada	Northing:	5658767.922	Date:	28 June 2019
Project:	North Hill Mall Drilling	Easting:	-6978.374	Driller:	All Service Drilling
Location:	North Hill Mall parking lot	Ground Elev.:	1090.623	Method:	Direct Push
Project No.:	CG2430.1 - E37	Top Casing Elev.:	1090.51	Logged by:	Austin Mei

Elev (m)	Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USC	EC Reading dS/m (0–20)	Headspace Vapour ppm (10, 100, 1000, 10000)	Monitor Well Construction Detail
	10		SILT: Clayey, some sand, trace gravel, olive brown, oxidized, moist, firm		MJ122*				220	10/20 Filter sand
1080										
	11		SAND: fine grained, silty, olive brown, oxidized, soft, wet		MJ123				210	Pre-packed schedule 40 50 mm 10 slot PVC screen
1079										
	12				MJ124				170	
1078									185	
					MJ125*					Hydrated bentonite
	13		End of hole @ 13 m, *Samples submitted for laboratory analyses							
1077										
	14									
1076										
	15									
1075										
	16									
1074										
	17									
1073										
	18									
1072										
	19									
1071										
	20									

Env BH m elev CAL v09.tdf

BOREHOLE LOG

Borehole: BH4007

Client:	Sears Canada	Northing:	5658754.803	Date:	25 June 2019
Project:	North Hill Mall Drilling	Easting:	-6960.208	Driller:	All Service Drilling
Location:	North Hill Mall parking lot	Ground Elev.:	1090.762	Method:	Direct Push
Project No.:	CG2430.1 - E37	Top Casing Elev.:	1090.652	Logged by:	Matthew Johnson

Elev (m)	Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USC	EC Reading dS/m (0–20)	Headspace Vapour ppm (10, 100, 1000, 10000)	Monitor Well Construction Detail
	0		ASPHALT							Flush mount; Sand
1090			CLAY: Sandy, silty, gravelly, light olive brown, oxidized, moist, firm		MJ025				5	Hydrated bentonite
	1		@ 0.95 m: trace gravel, very stiff		MJ026				15	
1089					MJ027				20	
	2		@ 1.9 m: hard, iron spotting							
1088					MJ028				25	
	3									Grout
					MJ029				0	
1087										
	4		@ 4 m: stiff		MJ030				15	
1086			@ 4.5 m: strong hydrocarbon-like odour, decrease of moisture							
	5				MJ031				200	Schedule 40 50 mm PVC pipe
1085					MJ032*				920	
	6									
1084					MJ033				85	
	7				MJ034				110	
1083										
	8		@ 8 m: some clay		MJ035				60	
1082					MJ036				65	
	9									
1081			SAND: fine to coarse grained, well-sorted, silty, some clay, oxidized, wet, soft,		MJ037				75	Hydrated peltonite
	10								410	

Env BH m elev CAL v09.tdf

BOREHOLE LOG

Borehole: BH4007

Client:	Sears Canada	Northing:	5658754.803	Date:	25 June 2019
Project:	North Hill Mall Drilling	Easting:	-6960.208	Driller:	All Service Drilling
Location:	North Hill Mall parking lot	Ground Elev.:	1090.762	Method:	Direct Push
Project No.:	CG2430.1 - E37	Top Casing Elev.:	1090.652	Logged by:	Matthew Johnson

Elev (m)	Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USC	EC Reading dS/m (0–20)	Headspace Vapour ppm (10, 100, 1000, 10000)	Monitor Well Construction Detail
	10		SAND: fine to coarse grained, well-sorted, silty, some clay, oxidized, wet, soft,		MJ038*				410	10/20 Filter sand
1080			@ 10.3 m: Clayey		MJ039				120	
	11		@ 10.75 m: some clay, some silt							
1079					MJ040				0	Pre-packed schedule 40 50 mm PVC screen
	12									
1078					MJ041*				60	Hydrated bentonite
	13		@ 13.2 m: Clayey, silty, moist		MJ042				0	
1077										
	14		End of hole @ 13.5 m, *Samples submitted for laboratory analyses							
1076										
	15									
1075										
	16									
1074										
	17									
1073										
	18									
1072										
	19									
1071										
	20									

Env BH m elev CAL v09.tdf

BOREHOLE LOG

Borehole: 4008A

Page: 1 of 1

Client:	Sears Canada	Northing:	5661067.0	Date:	16 Octorber 2019
Project:	Supplemental Mall Drilling	Easting:	703187.0	Driller:	All Service Drilling
Location:	North Hill Mall parking lot	Ground Elev.:	1090.50	Method:	Direct Push
Project No.:	CG2430.1 E39	Top Casing Elev.:	1090.43	Logged by:	Austin Mei

Elev (m)	Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USC	EC Reading dS/m (0 – 20)	Headspace Vapour ppm (10, 100, 1000, 10000)	Monitor Well Construction Detail
1090	0		Soil Lithology refer to 4008B							Flush-mount road box
1089	1									
1088	2									Schedule 40 PVC pipe, 50 mm ID
1087	3									
1086	4									
1085	5									
1084	6									bentonite grout
1083	7									
1082	8									
1081	9									Water Level 9.54 m bgs on 17 Oct. 2019
1080	10									10 - 20 filter sand
1079	11									1.52 m screen, 0.25 mm slotted PVC
1078	12		End of Hole @ 12.0 m							Hole Dia: 114 mm
	13									

Env BH m elev CAL v09.tdf

BOREHOLE LOG

Borehole: 4008B

Client:	Sears Canada	Northing:	5658769.339	Date:	15 October 2019
Project:	North Hill Mall Drilling	Easting:	-7009.933	Driller:	All Service Drilling
Location:	North Hill Mall parking lot	Ground Elev.:	1090.836	Method:	Direct Push
Project No.:	CG2430.1- E39	Top Casing Elev.:	1090.759	Logged by:	Austin Mei

Elev (m)	Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USC	EC Reading dS/m (0–20)	Headspace Vapour ppm (10, 100, 1000, 10000)	Monitor Well Construction Detail
	0		ASPHALT: Asphalt							Flushmount
			FILL: Gravel, brown, moist							Filter Sand
1090					4008B-1				0	
	1		SAND: some gravel, medium grained, brown, moist, oxidized, compact		4008B-2				35	
1089										
	2				4008B-3				0	
					4008B-4				0	
1088										
	3		@ 3.0 mbgs: trace gravel, compact							
					4008B-5				0	
1087										
	4									Grout
					4008B-6				0	
1086										
	5				4008B-7				0	
			SILT: some clay, some sand, brown, wet, oxidized							
1085					4008B-8				0	
	6		CLAY: Silty, brown, moist, oxidized, firm, low plasticity							Schedule 40 50mm PVC pipe
					4008B-9				0	
1084			@ 6.5 mbgs: ~ 8 cm silt lense, wet, soft							
	7				4008B-10				0	
1083			SILT: Clayey, brown, moist, oxidized, soft							
	8				4008B-11				0	
			@ 8.2 mbgs: ~16 cm clay lense, moist, firm							
1082			@ 9.0 mbgs: ~ 10 cm clay lense, moist, firm		4008B-12				0	
	9		@ 9.1 mbgs: wet, soft							
					4008B-13				0	
1081										
	10									

Env BH m elev CAL v09.tdf

BOREHOLE LOG

Borehole: 4008B

Client:	Sears Canada	Northing:	5658769.339	Date:	15 October 2019
Project:	North Hill Mall Drilling	Easting:	-7009.933	Driller:	All Service Drilling
Location:	North Hill Mall parking lot	Ground Elev.:	1090.836	Method:	Direct Push
Project No.:	CG2430.1- E39	Top Casing Elev.:	1090.759	Logged by:	Austin Mei

Elev (m)	Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USC	EC Reading dS/m (0–20)	Headspace Vapour ppm (10, 100, 1000, 10000)	Monitor Well Construction Detail
1080	11		SAND: brown, coarse grained, moist, compact		4008B-14*				0	
					4008B-15				0	
1079	12				4008B-16				0	
					4008B-17				50	
1078	13				4008B-18*				125	
1077	14		SILT: some clay, brown, wet, loose @ 14.7 mbgs: ~ 5 cm clay lense		4008B-19				95	
1076	15		@ 14.8 mbgs: grey		4008B-20				60	10/20 Filter sand
1075	16				4008B-21				75	Schedule 40 50mm 10 slot screen
					4008B-22				80	
1074	17									Hydrated bentonite
1073	18		End of hole @ 16.8 mbgs, *Samples submitted for laboratory analyses							
1072	19									
1071	20									

Env BH m elev CAL v09.tdf

BOREHOLE LOG

Borehole: 4009A

Page: 1 of 1

Client:	Sears Canada	Northing:	5661067.0	Date:	16 Octorber 2019
Project:	Supplemental Mall Drilling	Easting:	703187.0	Driller:	All Service Drilling
Location:	North Hill Mall parking lot	Ground Elev.:	1090.50	Method:	Direct Push
Project No.:	CG2430.1 E39	Top Casing Elev.:	1090.43	Logged by:	Austin Mei

Elev (m)	Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USC	EC Reading dS/m (0 – 20)	Headspace Vapour ppm (10, 100, 1000, 10000)	Monitor Well Construction Detail
1090	0		Soil Lithology refer to 4009B							Flush-mount road box
1089	1									
1088	2									Schedule 40 PVC pipe, 50 mm ID
1087	3									
1086	4									
1085	5									
1084	6									bentonite grout
1083	7									
1082	8									
1081	9									Water Level 10.18 m bgs on 17 Oct. 2019
1080	10									10 - 20 filter sand
1079	11									1.52 m screen, 0.25 mm slotted PVC
1078	12		End of Hole @ 12.0 m							Hole Dia: 114 mm
	13									

Env BH m elev CAL v09.tdf

BOREHOLE LOG

Borehole: 4009B

Client:	Sears Canada	Northing:	5658750.945	Date:	15 October 2019
Project:	North Hill Mall Drilling	Easting:	-7024.221	Driller:	All Service Drilling
Location:	North Hill Mall parking lot	Ground Elev.:	1091.558	Method:	Direct Push
Project No.:	CG2430.1- E39	Top Casing Elev.:	1091.435	Logged by:	Austin Mei

Elev (m)	Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USC	EC Reading dS/m (0–20)	Headspace Vapour ppm (10, 100, 1000, 10000)	Monitor Well Construction Detail
	0		Material removed by hydrovac to 2.44 m due to proximity of underground utilities							Flushmount; Filter Sand
1091										
	1									
1090										
	2									
1089			SAND: medium grained, brown, moist, compact		4009B-4				85	
	3									
1088					4009B-5				45	
	4									
					4009B-6				45	
1087										
	5				4009B-7				100	Grout
			@ 5.20 m: ~10 cm sand lense, wet							
1086			CLAY: Silty, brown, moist, oxidized, firm, low plasticity		4009B-8				65	
	6		@ 6.10 m: medium plasticity							
1085					4009B-9				70	
	7		@ 7.10 m: ~10 cm silt lense, wet, soft		4009B-10				70	
1084			@ 7.60 m: trace silt, trace coal inclusions							
	8				4009B-11				75	Schedule 40 50mm PVC pipe
1083										
					4009B-12*				90	
	9		@ 9.15 m: Silty, low plasticity							
1082					4009B-13				65	
	10									
			@ 10.35 m: ~10 cm silt lense, wet, soft		4009B-14*				80	
1081										

Env BH m elev CAL v09.tdf

BOREHOLE LOG

Borehole: 4009B

Client:	Sears Canada	Northing:	5658750.945	Date:	15 October 2019
Project:	North Hill Mall Drilling	Easting:	-7024.221	Driller:	All Service Drilling
Location:	North Hill Mall parking lot	Ground Elev.:	1091.558	Method:	Direct Push
Project No.:	CG2430.1- E39	Top Casing Elev.:	1091.435	Logged by:	Austin Mei

Elev (m)	Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USC	EC Reading dS/m (0–20)	Headspace Vapour ppm (10, 100, 1000, 10000)	Monitor Well Construction Detail
	11		SAND: Silty, trace clay, uniform, brown, wet, loose		4009B-15				65	
1080										
	12				4009B-16				60	
1079					4009B-17*				45	
	13									
1078					4009B-18				45	
	14									
					4009B-19				50	10/20 Filter sand
1077			@ 14.65 m: ~8 cm clay lense, moist							
	15		SILT: some sand, brown, wet, compact		4009B-20				60	Schedule 40 50mm 10 slot screen
1076					4009B-21				55	
	16		@ 15.85 m: grey							
1075					4009B-22				35	
	17		End of hole @ 16.5 m, * Samples submitted for laboratory anlysis							
1074										
	18									
1073										
	19									
1072										
	20									

Appendix B
Laboratory Certificate of Analysis

Clifton

Your Project #: CG2430.1 - E37
Site Location: CALGARY
Your C.O.C. #: M085257

Attention: STEPHEN D'ABADIE

CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
CANADA T2E 7K9

Report Date: 2019/07/02
Report #: R2746278
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B950229
Received: 2019/06/24, 17:47

Sample Matrix: Soil
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS/FID (MeOH extract) (1)	3	N/A	2019/06/26	AB SOP-00039	CCME CWS/EPA 8260d m
BTEX/F1 by HS GC/MS/FID (MeOH extract) (1)	1	N/A	2019/06/27	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX	3	N/A	2019/06/27		Auto Calc
F1-BTEX	1	N/A	2019/06/28		Auto Calc
CCME Hydrocarbons (F2-F4 in soil) (2)	4	2019/06/26	2019/06/27	AB SOP-00036	CCME PHC-CWS m
Moisture	3	N/A	2019/06/26	AB SOP-00002	CCME PHC-CWS m
Moisture	1	N/A	2019/06/27	AB SOP-00002	CCME PHC-CWS m
Benzo[a]pyrene Equivalency	3	N/A	2019/06/28		Auto Calc
PAH in Soil by GC/MS	3	2019/06/26	2019/06/27	AB SOP-00036 / AB SOP-00003	EPA 3540C/8270E m

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total Trihalomethanes Calculation	1	N/A	2019/07/02		Auto Calc
VOCs in Water by HS GC/MS (Std List)	1	N/A	2019/06/30	AB SOP-00056	EPA 5021a/8260d m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

Your Project #: CG2430.1 - E37
Site Location: CALGARY
Your C.O.C. #: M085257

Attention: STEPHEN D'ABADIE

CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
CANADA T2E 7K9

Report Date: 2019/07/02
Report #: R2746278
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B950229
Received: 2019/06/24, 17:47

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.
(2) All CCME results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods September 2003. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

AUTHORIZED REPORT
RAPPORT AUTORISÉ

Bureau Veritas Laboratories
02 Jul 2019 15:54:44

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Linsay Sunderman, Key Account Specialist
Email: Lsunderman@bvlabs.com
Phone# (403)735-2237 Ext:2237

==========

This report has been generated and distributed using a secure automated process.
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B950229
Report Date: 2019/07/02

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		VY7310	VY7311	VY7312		VY7313		
Sampling Date		2019/06/24	2019/06/24	2019/06/24		2019/06/24		
COC Number		M085257	M085257	M085257		M085257		
	UNITS	**MJ 007**	**MJ 012**	**MJ 020**	**QC Batch**	**DUP 001**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	9483300	<10	10	9483300
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	<50	9483300	<50	50	9483300
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	9483300	<50	50	9483300
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	9483300	Yes	N/A	9483300
Physical Properties								
Moisture	%	15	14	22	9482788	14	0.30	9483662
Volatiles								
Xylenes (Total)	mg/kg	0.76	0.92	<0.045	9481243	1.0	0.045	9482545
F1 (C6-C10) - BTEX	mg/kg	<10	<10	<10	9481243	<10	10	9482545
Field Preserved Volatiles								
Benzene	mg/kg	0.092	2.0	<0.0050	9483187	1.4	0.0050	9484576
Toluene	mg/kg	0.15	0.065	<0.050	9483187	<0.050	0.050	9484576
Ethylbenzene	mg/kg	0.075	<0.010	<0.010	9483187	<0.010	0.010	9484576
m & p-Xylene	mg/kg	0.49	<0.040	<0.040	9483187	<0.040	0.040	9484576
o-Xylene	mg/kg	0.27	0.92	<0.020	9483187	1.0	0.020	9484576
F1 (C6-C10)	mg/kg	<10	<10	<10	9483187	<10	10	9484576
Surrogate Recovery (%)								
1,4-Difluorobenzene (sur.)	%	93	92	89	9483187	96	N/A	9484576
4-Bromofluorobenzene (sur.)	%	102	102	103	9483187	101	N/A	9484576
D10-o-Xylene (sur.)	%	104	116	113	9483187	91	N/A	9484576
D4-1,2-Dichloroethane (sur.)	%	96	97	107	9483187	92	N/A	9484576
O-TERPHENYL (sur.)	%	97	94	98	9483300	98	N/A	9483300

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B950229
Report Date: 2019/07/02

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		VY7310	VY7311	VY7312		
Sampling Date		2019/06/24	2019/06/24	2019/06/24		
COC Number		M085257	M085257	M085257		
	UNITS	**MJ 007**	**MJ 012**	**MJ 020**	**RDL**	**QC Batch**
Polycyclic Aromatics						
Acenaphthene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483392
B[a]P TPE Total Potency Equivalents	mg/kg	<0.0071	<0.0071	<0.0071	0.0071	9481756
Acenaphthylene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483392
Acridine	mg/kg	<0.010	<0.010	<0.010	0.010	9483392
Anthracene	mg/kg	<0.0040	<0.0040	<0.0040	0.0040	9483392
Benzo(a)anthracene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483392
Benzo(b&j)fluoranthene	mg/kg	0.0066	<0.0050	0.0066	0.0050	9483392
Benzo(k)fluoranthene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483392
Benzo(g,h,i)perylene	mg/kg	0.0059	<0.0050	0.0066	0.0050	9483392
Benzo(c)phenanthrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483392
Benzo(a)pyrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483392
Benzo[e]pyrene	mg/kg	<0.0050	<0.0050	0.0064	0.0050	9483392
Chrysene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483392
Dibenz(a,h)anthracene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483392
Fluoranthene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483392
Fluorene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483392
Indeno(1,2,3-cd)pyrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483392
1-Methylnaphthalene	mg/kg	0.038	0.015	0.0069	0.0050	9483392
2-Methylnaphthalene	mg/kg	0.075	0.032	<0.0050	0.0050	9483392
Naphthalene	mg/kg	0.066	0.022	<0.0050	0.0050	9483392
Phenanthrene	mg/kg	0.0095	<0.0050	0.0070	0.0050	9483392
Perylene	mg/kg	0.011	<0.0050	0.030	0.0050	9483392
Pyrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483392
Quinoline	mg/kg	<0.010	<0.010	<0.010	0.010	9483392
Surrogate Recovery (%)						
D10-ANTHRACENE (sur.)	%	86	85	85	N/A	9483392
D8-ACENAPHTHYLENE (sur.)	%	97	95	97	N/A	9483392
D8-NAPHTHALENE (sur.)	%	91	90	92	N/A	9483392
TERPHENYL-D14 (sur.)	%	103	101	106	N/A	9483392

RDL = Reportable Detection Limit
N/A = Not Applicable

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BV Labs Job #: B950229
Report Date: 2019/07/02

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		VY7314	VY7314		
Sampling Date		2019/06/24	2019/06/24		
COC Number		M085257	M085257		
	UNITS	**TRIP 001**	**TRIP 001 Lab-Dup**	**RDL**	**QC Batch**
Volatiles					
Total Trihalomethanes	mg/L	<0.0013	N/A	0.0013	9482257
Benzene	mg/L	<0.00040	<0.00040	0.00040	9486514
Bromodichloromethane	mg/L	<0.00050	<0.00050	0.00050	9486514
Bromoform	mg/L	<0.00050	<0.00050	0.00050	9486514
Bromomethane	mg/L	<0.0020	<0.0020	0.0020	9486514
Carbon tetrachloride	mg/L	<0.00050	<0.00050	0.00050	9486514
Chlorobenzene	mg/L	<0.00050	<0.00050	0.00050	9486514
Chlorodibromomethane	mg/L	<0.0010	<0.0010	0.0010	9486514
Chloroethane	mg/L	<0.0010	<0.0010	0.0010	9486514
Chloroform	mg/L	<0.00050	<0.00050	0.00050	9486514
Chloromethane	mg/L	<0.0020	<0.0020	0.0020	9486514
1,2-dibromoethane	mg/L	<0.00020	<0.00020	0.00020	9486514
1,2-dichlorobenzene	mg/L	<0.00050	<0.00050	0.00050	9486514
1,3-dichlorobenzene	mg/L	<0.00050	<0.00050	0.00050	9486514
1,4-dichlorobenzene	mg/L	<0.00050	<0.00050	0.00050	9486514
1,1-dichloroethane	mg/L	<0.00050	<0.00050	0.00050	9486514
1,2-dichloroethane	mg/L	<0.00050	<0.00050	0.00050	9486514
1,1-dichloroethene	mg/L	<0.00050	<0.00050	0.00050	9486514
cis-1,2-dichloroethene	mg/L	<0.00050	<0.00050	0.00050	9486514
trans-1,2-dichloroethene	mg/L	<0.00050	<0.00050	0.00050	9486514
Dichloromethane	mg/L	<0.0020	<0.0020	0.0020	9486514
1,2-dichloropropane	mg/L	<0.00050	<0.00050	0.00050	9486514
cis-1,3-dichloropropene	mg/L	<0.00050	<0.00050	0.00050	9486514
trans-1,3-dichloropropene	mg/L	<0.00050	<0.00050	0.00050	9486514
Ethylbenzene	mg/L	<0.00040	<0.00040	0.00040	9486514
Methyl methacrylate	mg/L	<0.00050	<0.00050	0.00050	9486514
Methyl-tert-butylether (MTBE)	mg/L	<0.00050	<0.00050	0.00050	9486514
Styrene	mg/L	<0.00050	<0.00050	0.00050	9486514
1,1,1,2-tetrachloroethane	mg/L	<0.0010	<0.0010	0.0010	9486514
1,1,2,2-tetrachloroethane	mg/L	<0.0020	<0.0020	0.0020	9486514

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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BV Labs Job #: B950229
Report Date: 2019/07/02

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		VY7314	VY7314		
Sampling Date		2019/06/24	2019/06/24		
COC Number		M085257	M085257		
	UNITS	**TRIP 001**	**TRIP 001 Lab-Dup**	**RDL**	**QC Batch**
Tetrachloroethene	mg/L	<0.00050	<0.00050	0.00050	9486514
Toluene	mg/L	<0.00040	<0.00040	0.00040	9486514
1,2,3-trichlorobenzene	mg/L	<0.0010	<0.0010	0.0010	9486514
1,2,4-trichlorobenzene	mg/L	<0.0010	<0.0010	0.0010	9486514
1,3,5-trichlorobenzene	mg/L	<0.00050	<0.00050	0.00050	9486514
1,1,1-trichloroethane	mg/L	<0.00050	<0.00050	0.00050	9486514
1,1,2-trichloroethane	mg/L	<0.00050	<0.00050	0.00050	9486514
Trichloroethene	mg/L	<0.00050	<0.00050	0.00050	9486514
Trichlorofluoromethane	mg/L	<0.00050	<0.00050	0.00050	9486514
1,2,4-trimethylbenzene	mg/L	<0.00050	<0.00050	0.00050	9486514
1,3,5-trimethylbenzene	mg/L	<0.00050	<0.00050	0.00050	9486514
Vinyl chloride	mg/L	<0.00050	<0.00050	0.00050	9486514
Xylenes (Total)	mg/L	<0.00080	<0.00080	0.00080	9486514
m & p-Xylene	mg/L	<0.00080	<0.00080	0.00080	9486514
o-Xylene	mg/L	<0.00040	<0.00040	0.00040	9486514
Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	101	100	N/A	9486514
4-Bromofluorobenzene (sur.)	%	92	93	N/A	9486514
D4-1,2-Dichloroethane (sur.)	%	91	93	N/A	9486514

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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BV Labs Job #: B950229
Report Date: 2019/07/02

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	12.3°C

Results relate only to the items tested.

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BV Labs Job #: B950229
Report Date: 2019/07/02

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9482788	TL0	Method Blank	Moisture	2019/06/26	<0.30		%	
9482788	TL0	RPD	Moisture	2019/06/26	2.6		%	20
9483187	SAW	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/06/26		96	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/26		98	%	50 - 140
			D10-o-Xylene (sur.)	2019/06/26		126	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/26		94	%	50 - 140
			Benzene	2019/06/26		105	%	50 - 140
			Toluene	2019/06/26		112	%	50 - 140
			Ethylbenzene	2019/06/26		109	%	50 - 140
			m & p-Xylene	2019/06/26		109	%	50 - 140
			o-Xylene	2019/06/26		106	%	50 - 140
			F1 (C6-C10)	2019/06/26		72	%	60 - 140
9483187	SAW	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/06/26		93	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/26		102	%	50 - 140
			D10-o-Xylene (sur.)	2019/06/26		103	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/26		94	%	50 - 140
			Benzene	2019/06/26		93	%	60 - 130
			Toluene	2019/06/26		98	%	60 - 130
			Ethylbenzene	2019/06/26		98	%	60 - 130
			m & p-Xylene	2019/06/26		97	%	60 - 130
			o-Xylene	2019/06/26		99	%	60 - 130
			F1 (C6-C10)	2019/06/26		88	%	60 - 140
9483187	SAW	Method Blank	1,4-Difluorobenzene (sur.)	2019/06/26		94	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/26		101	%	50 - 140
			D10-o-Xylene (sur.)	2019/06/26		92	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/26		94	%	50 - 140
			Benzene	2019/06/26	<0.0050		mg/kg	
			Toluene	2019/06/26	<0.050		mg/kg	
			Ethylbenzene	2019/06/26	<0.010		mg/kg	
			m & p-Xylene	2019/06/26	<0.040		mg/kg	
			o-Xylene	2019/06/26	<0.020		mg/kg	
			F1 (C6-C10)	2019/06/26	<10		mg/kg	
9483187	SAW	RPD	Benzene	2019/06/26	11		%	50
			Toluene	2019/06/26	NC		%	50
			Ethylbenzene	2019/06/26	6.1		%	50
			m & p-Xylene	2019/06/26	3.8		%	50
			o-Xylene	2019/06/26	1.3		%	50
			F1 (C6-C10)	2019/06/26	5.6		%	30
9483300	VP4	Matrix Spike	O-TERPHENYL (sur.)	2019/06/26		91	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/06/26		101	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2019/06/26		98	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2019/06/26		95	%	60 - 140
9483300	VP4	Spiked Blank	O-TERPHENYL (sur.)	2019/06/26		104	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/06/26		113	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2019/06/26		111	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2019/06/26		109	%	60 - 140
9483300	VP4	Method Blank	O-TERPHENYL (sur.)	2019/06/26		92	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/06/26	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2019/06/26	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2019/06/26	<50		mg/kg	
9483300	VP4	RPD	F2 (C10-C16 Hydrocarbons)	2019/06/26	NC		%	40
			F3 (C16-C34 Hydrocarbons)	2019/06/26	NC		%	40
			F4 (C34-C50 Hydrocarbons)	2019/06/26	NC		%	40

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BV Labs Job #: B950229
Report Date: 2019/07/02

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9483392	NK3	Matrix Spike	D10-ANTHRACENE (sur.)	2019/06/27		86	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/06/27		98	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/06/27		91	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/06/27		99	%	50 - 130
			Acenaphthene	2019/06/27		88	%	50 - 130
			Acenaphthylene	2019/06/27		87	%	50 - 130
			Acridine	2019/06/27		71	%	50 - 130
			Anthracene	2019/06/27		84	%	50 - 130
			Benzo(a)anthracene	2019/06/27		90	%	50 - 130
			Benzo(b&j)fluoranthene	2019/06/27		81	%	50 - 130
			Benzo(k)fluoranthene	2019/06/27		83	%	50 - 130
			Benzo(g,h,i)perylene	2019/06/27		76	%	50 - 130
			Benzo(c)phenanthrene	2019/06/27		94	%	50 - 130
			Benzo(a)pyrene	2019/06/27		82	%	50 - 130
			Benzo[e]pyrene	2019/06/27		84	%	50 - 130
			Chrysene	2019/06/27		87	%	50 - 130
			Dibenz(a,h)anthracene	2019/06/27		83	%	50 - 130
			Fluoranthene	2019/06/27		90	%	50 - 130
			Fluorene	2019/06/27		89	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/06/27		81	%	50 - 130
			1-Methylnaphthalene	2019/06/27		89	%	50 - 130
			2-Methylnaphthalene	2019/06/27		86	%	50 - 130
			Naphthalene	2019/06/27		82	%	50 - 130
			Phenanthrene	2019/06/27		84	%	50 - 130
			Perylene	2019/06/27		82	%	50 - 130
			Pyrene	2019/06/27		89	%	50 - 130
			Quinoline	2019/06/27		92	%	50 - 130
9483392	NK3	Spiked Blank	D10-ANTHRACENE (sur.)	2019/06/27		94	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/06/27		107	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/06/27		99	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/06/27		108	%	50 - 130
			Acenaphthene	2019/06/27		94	%	50 - 130
			Acenaphthylene	2019/06/27		94	%	50 - 130
			Acridine	2019/06/27		74	%	50 - 130
			Anthracene	2019/06/27		92	%	50 - 130
			Benzo(a)anthracene	2019/06/27		99	%	50 - 130
			Benzo(b&j)fluoranthene	2019/06/27		91	%	50 - 130
			Benzo(k)fluoranthene	2019/06/27		92	%	50 - 130
			Benzo(g,h,i)perylene	2019/06/27		89	%	50 - 130
			Benzo(c)phenanthrene	2019/06/27		104	%	50 - 130
			Benzo(a)pyrene	2019/06/27		95	%	50 - 130
			Benzo[e]pyrene	2019/06/27		96	%	50 - 130
			Chrysene	2019/06/27		96	%	50 - 130
			Dibenz(a,h)anthracene	2019/06/27		93	%	50 - 130
			Fluoranthene	2019/06/27		97	%	50 - 130
			Fluorene	2019/06/27		95	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/06/27		93	%	50 - 130
			1-Methylnaphthalene	2019/06/27		95	%	50 - 130
			2-Methylnaphthalene	2019/06/27		92	%	50 - 130
			Naphthalene	2019/06/27		88	%	50 - 130
			Phenanthrene	2019/06/27		90	%	50 - 130
			Perylene	2019/06/27		91	%	50 - 130
			Pyrene	2019/06/27		96	%	50 - 130

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BV Labs Job #: B950229
Report Date: 2019/07/02

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Quinoline	2019/06/27		92	%	50 - 130
9483392	NK3	Method Blank	D10-ANTHRACENE (sur.)	2019/06/27		95	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/06/27		107	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/06/27		100	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/06/27		112	%	50 - 130
			Acenaphthene	2019/06/27	<0.0050		mg/kg	
			Acenaphthylene	2019/06/27	<0.0050		mg/kg	
			Acridine	2019/06/27	<0.010		mg/kg	
			Anthracene	2019/06/27	<0.0040		mg/kg	
			Benzo(a)anthracene	2019/06/27	<0.0050		mg/kg	
			Benzo(b&j)fluoranthene	2019/06/27	<0.0050		mg/kg	
			Benzo(k)fluoranthene	2019/06/27	<0.0050		mg/kg	
			Benzo(g,h,i)perylene	2019/06/27	<0.0050		mg/kg	
			Benzo(c)phenanthrene	2019/06/27	<0.0050		mg/kg	
			Benzo(a)pyrene	2019/06/27	<0.0050		mg/kg	
			Benzo[e]pyrene	2019/06/27	<0.0050		mg/kg	
			Chrysene	2019/06/27	<0.0050		mg/kg	
			Dibenz(a,h)anthracene	2019/06/27	<0.0050		mg/kg	
			Fluoranthene	2019/06/27	<0.0050		mg/kg	
			Fluorene	2019/06/27	<0.0050		mg/kg	
			Indeno(1,2,3-cd)pyrene	2019/06/27	<0.0050		mg/kg	
			1-Methylnaphthalene	2019/06/27	<0.0050		mg/kg	
			2-Methylnaphthalene	2019/06/27	<0.0050		mg/kg	
			Naphthalene	2019/06/27	<0.0050		mg/kg	
			Phenanthrene	2019/06/27	<0.0050		mg/kg	
			Perylene	2019/06/27	<0.0050		mg/kg	
			Pyrene	2019/06/27	<0.0050		mg/kg	
			Quinoline	2019/06/27	<0.010		mg/kg	
9483392	NK3	RPD	Acenaphthene	2019/06/27	NC		%	50
			Acenaphthylene	2019/06/27	NC		%	50
			Acridine	2019/06/27	NC		%	50
			Anthracene	2019/06/27	NC		%	50
			Benzo(a)anthracene	2019/06/27	NC		%	50
			Benzo(b&j)fluoranthene	2019/06/27	NC		%	50
			Benzo(k)fluoranthene	2019/06/27	NC		%	50
			Benzo(g,h,i)perylene	2019/06/27	NC		%	50
			Benzo(c)phenanthrene	2019/06/27	NC		%	50
			Benzo(a)pyrene	2019/06/27	NC		%	50
			Benzo[e]pyrene	2019/06/27	NC		%	50
			Chrysene	2019/06/27	NC		%	50
			Dibenz(a,h)anthracene	2019/06/27	NC		%	50
			Fluoranthene	2019/06/27	NC		%	50
			Fluorene	2019/06/27	NC		%	50
			Indeno(1,2,3-cd)pyrene	2019/06/27	NC		%	50
			1-Methylnaphthalene	2019/06/27	NC		%	50
			2-Methylnaphthalene	2019/06/27	NC		%	50
			Naphthalene	2019/06/27	NC		%	50
			Phenanthrene	2019/06/27	NC		%	50
			Perylene	2019/06/27	5.2		%	50
			Pyrene	2019/06/27	NC		%	50
			Quinoline	2019/06/27	NC		%	50
9483662	RV5	Method Blank	Moisture	2019/06/27	<0.30		%	
9483662	RV5	RPD	Moisture	2019/06/27	7.5		%	20

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BV Labs Job #: B950229
Report Date: 2019/07/02

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9484576	JNG	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/06/27		95	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/27		99	%	50 - 140
			D10-o-Xylene (sur.)	2019/06/27		92	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/27		108	%	50 - 140
			Benzene	2019/06/27		84	%	50 - 140
			Toluene	2019/06/27		85	%	50 - 140
			Ethylbenzene	2019/06/27		83	%	50 - 140
			m & p-Xylene	2019/06/27		85	%	50 - 140
			o-Xylene	2019/06/27		85	%	50 - 140
			F1 (C6-C10)	2019/06/27		91	%	60 - 140
9484576	JNG	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/06/27		115	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/27		121	%	50 - 140
			D10-o-Xylene (sur.)	2019/06/27		102	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/27		112	%	50 - 140
			Benzene	2019/06/27		101	%	60 - 130
			Toluene	2019/06/27		103	%	60 - 130
			Ethylbenzene	2019/06/27		89	%	60 - 130
			m & p-Xylene	2019/06/27		99	%	60 - 130
			o-Xylene	2019/06/27		108	%	60 - 130
			F1 (C6-C10)	2019/06/27		112	%	60 - 140
9484576	JNG	Method Blank	1,4-Difluorobenzene (sur.)	2019/06/27		99	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/27		103	%	50 - 140
			D10-o-Xylene (sur.)	2019/06/27		86	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/27		96	%	50 - 140
			Benzene	2019/06/27	<0.0050		mg/kg	
			Toluene	2019/06/27	<0.050		mg/kg	
			Ethylbenzene	2019/06/27	<0.010		mg/kg	
			m & p-Xylene	2019/06/27	<0.040		mg/kg	
			o-Xylene	2019/06/27	<0.020		mg/kg	
			F1 (C6-C10)	2019/06/27	<10		mg/kg	
9484576	JNG	RPD	Benzene	2019/06/27	8.8		%	50
			Toluene	2019/06/27	NC		%	50
			Ethylbenzene	2019/06/27	NC		%	50
			m & p-Xylene	2019/06/27	NC		%	50
			o-Xylene	2019/06/27	NC		%	50
			F1 (C6-C10)	2019/06/27	NC		%	30
9486514	QW1	Matrix Spike [VY7314-01]	1,4-Difluorobenzene (sur.)	2019/06/30		104	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/30		101	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/30		113	%	50 - 140
			Benzene	2019/06/30		85	%	50 - 140
			Bromodichloromethane	2019/06/30		101	%	50 - 140
			Bromoform	2019/06/30		111	%	50 - 140
			Bromomethane	2019/06/30		99	%	50 - 140
			Carbon tetrachloride	2019/06/30		89	%	50 - 140
			Chlorobenzene	2019/06/30		95	%	50 - 140
			Chlorodibromomethane	2019/06/30		108	%	50 - 140
			Chloroethane	2019/06/30		86	%	50 - 140
			Chloroform	2019/06/30		87	%	50 - 140
			Chloromethane	2019/06/30		96	%	50 - 140
			1,2-dibromoethane	2019/06/30		105	%	50 - 140
			1,2-dichlorobenzene	2019/06/30		98	%	50 - 140
			1,3-dichlorobenzene	2019/06/30		93	%	50 - 140
			1,4-dichlorobenzene	2019/06/30		92	%	50 - 140

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BV Labs Job #: B950229
Report Date: 2019/07/02

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,1-dichloroethane	2019/06/30		89	%	50 - 140
			1,2-dichloroethane	2019/06/30		99	%	50 - 140
			1,1-dichloroethene	2019/06/30		89	%	50 - 140
			cis-1,2-dichloroethene	2019/06/30		95	%	50 - 140
			trans-1,2-dichloroethene	2019/06/30		85	%	50 - 140
			Dichloromethane	2019/06/30		91	%	50 - 140
			1,2-dichloropropane	2019/06/30		98	%	50 - 140
			cis-1,3-dichloropropene	2019/06/30		132	%	50 - 140
			trans-1,3-dichloropropene	2019/06/30		145 (1)	%	50 - 140
			Ethylbenzene	2019/06/30		90	%	50 - 140
			Methyl methacrylate	2019/06/30		116	%	50 - 140
			Methyl-tert-butylether (MTBE)	2019/06/30		97	%	50 - 140
			Styrene	2019/06/30		102	%	50 - 140
			1,1,1,2-tetrachloroethane	2019/06/30		95	%	50 - 140
			1,1,2,2-tetrachloroethane	2019/06/30		107	%	50 - 140
			Tetrachloroethene	2019/06/30		88	%	50 - 140
			Toluene	2019/06/30		89	%	50 - 140
			1,2,3-trichlorobenzene	2019/06/30		92	%	50 - 140
			1,2,4-trichlorobenzene	2019/06/30		90	%	50 - 140
			1,3,5-trichlorobenzene	2019/06/30		88	%	50 - 140
			1,1,1-trichloroethane	2019/06/30		92	%	50 - 140
			1,1,2-trichloroethane	2019/06/30		106	%	50 - 140
			Trichloroethene	2019/06/30		99	%	50 - 140
			Trichlorofluoromethane	2019/06/30		81	%	50 - 140
			1,2,4-trimethylbenzene	2019/06/30		93	%	50 - 140
			1,3,5-trimethylbenzene	2019/06/30		93	%	50 - 140
			Vinyl chloride	2019/06/30		80	%	50 - 140
			m & p-Xylene	2019/06/30		89	%	50 - 140
			o-Xylene	2019/06/30		88	%	50 - 140
9486514	QW1	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/06/30		103	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/30		101	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/30		105	%	50 - 140
			Benzene	2019/06/30		83	%	60 - 130
			Bromodichloromethane	2019/06/30		96	%	60 - 130
			Bromoform	2019/06/30		103	%	60 - 130
			Bromomethane	2019/06/30		95	%	60 - 130
			Carbon tetrachloride	2019/06/30		89	%	60 - 130
			Chlorobenzene	2019/06/30		95	%	60 - 130
			Chlorodibromomethane	2019/06/30		103	%	60 - 130
			Chloroethane	2019/06/30		86	%	60 - 130
			Chloroform	2019/06/30		84	%	60 - 130
			Chloromethane	2019/06/30		99	%	60 - 130
			1,2-dibromoethane	2019/06/30		98	%	60 - 130
			1,2-dichlorobenzene	2019/06/30		97	%	60 - 130
			1,3-dichlorobenzene	2019/06/30		93	%	60 - 130
			1,4-dichlorobenzene	2019/06/30		92	%	60 - 130
			1,1-dichloroethane	2019/06/30		87	%	60 - 130
			1,2-dichloroethane	2019/06/30		90	%	60 - 130
			1,1-dichloroethene	2019/06/30		89	%	60 - 130
			cis-1,2-dichloroethene	2019/06/30		92	%	60 - 130
			trans-1,2-dichloroethene	2019/06/30		84	%	60 - 130
			Dichloromethane	2019/06/30		85	%	60 - 130
			1,2-dichloropropane	2019/06/30		93	%	60 - 130

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BV Labs Job #: B950229
Report Date: 2019/07/02

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			cis-1,3-dichloropropene	2019/06/30		121	%	60 - 130
			trans-1,3-dichloropropene	2019/06/30		127	%	60 - 130
			Ethylbenzene	2019/06/30		92	%	60 - 130
			Methyl methacrylate	2019/06/30		105	%	60 - 130
			Methyl-tert-butylether (MTBE)	2019/06/30		93	%	60 - 130
			Styrene	2019/06/30		102	%	60 - 130
			1,1,1,2-tetrachloroethane	2019/06/30		94	%	60 - 130
			1,1,2,2-tetrachloroethane	2019/06/30		99	%	60 - 130
			Tetrachloroethene	2019/06/30		90	%	60 - 130
			Toluene	2019/06/30		90	%	60 - 130
			1,2,3-trichlorobenzene	2019/06/30		89	%	60 - 130
			1,2,4-trichlorobenzene	2019/06/30		89	%	60 - 130
			1,3,5-trichlorobenzene	2019/06/30		88	%	60 - 130
			1,1,1-trichloroethane	2019/06/30		91	%	60 - 130
			1,1,2-trichloroethane	2019/06/30		98	%	60 - 130
			Trichloroethene	2019/06/30		98	%	60 - 130
			Trichlorofluoromethane	2019/06/30		82	%	60 - 130
			1,2,4-trimethylbenzene	2019/06/30		94	%	60 - 130
			1,3,5-trimethylbenzene	2019/06/30		96	%	60 - 130
			Vinyl chloride	2019/06/30		84	%	60 - 130
			m & p-Xylene	2019/06/30		89	%	60 - 130
			o-Xylene	2019/06/30		89	%	60 - 130
9486514	QW1	Method Blank	1,4-Difluorobenzene (sur.)	2019/06/30		100	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/30		93	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/30		89	%	50 - 140
			Benzene	2019/06/30	<0.00040		mg/L	
			Bromodichloromethane	2019/06/30	<0.00050		mg/L	
			Bromoform	2019/06/30	<0.00050		mg/L	
			Bromomethane	2019/06/30	<0.0020		mg/L	
			Carbon tetrachloride	2019/06/30	<0.00050		mg/L	
			Chlorobenzene	2019/06/30	<0.00050		mg/L	
			Chlorodibromomethane	2019/06/30	<0.0010		mg/L	
			Chloroethane	2019/06/30	<0.0010		mg/L	
			Chloroform	2019/06/30	<0.00050		mg/L	
			Chloromethane	2019/06/30	<0.0020		mg/L	
			1,2-dibromoethane	2019/06/30	<0.00020		mg/L	
			1,2-dichlorobenzene	2019/06/30	<0.00050		mg/L	
			1,3-dichlorobenzene	2019/06/30	<0.00050		mg/L	
			1,4-dichlorobenzene	2019/06/30	<0.00050		mg/L	
			1,1-dichloroethane	2019/06/30	<0.00050		mg/L	
			1,2-dichloroethane	2019/06/30	<0.00050		mg/L	
			1,1-dichloroethene	2019/06/30	<0.00050		mg/L	
			cis-1,2-dichloroethene	2019/06/30	<0.00050		mg/L	
			trans-1,2-dichloroethene	2019/06/30	<0.00050		mg/L	
			Dichloromethane	2019/06/30	<0.0020		mg/L	
			1,2-dichloropropane	2019/06/30	<0.00050		mg/L	
			cis-1,3-dichloropropene	2019/06/30	<0.00050		mg/L	
			trans-1,3-dichloropropene	2019/06/30	<0.00050		mg/L	
			Ethylbenzene	2019/06/30	<0.00040		mg/L	
			Methyl methacrylate	2019/06/30	<0.00050		mg/L	
			Methyl-tert-butylether (MTBE)	2019/06/30	<0.00050		mg/L	
			Styrene	2019/06/30	<0.00050		mg/L	
			1,1,1,2-tetrachloroethane	2019/06/30	<0.0010		mg/L	

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BV Labs Job #: B950229
Report Date: 2019/07/02

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,1,2,2-tetrachloroethane	2019/06/30	<0.0020		mg/L	
			Tetrachloroethene	2019/06/30	<0.00050		mg/L	
			Toluene	2019/06/30	<0.00040		mg/L	
			1,2,3-trichlorobenzene	2019/06/30	<0.0010		mg/L	
			1,2,4-trichlorobenzene	2019/06/30	<0.0010		mg/L	
			1,3,5-trichlorobenzene	2019/06/30	<0.00050		mg/L	
			1,1,1-trichloroethane	2019/06/30	<0.00050		mg/L	
			1,1,2-trichloroethane	2019/06/30	<0.00050		mg/L	
			Trichloroethene	2019/06/30	<0.00050		mg/L	
			Trichlorofluoromethane	2019/06/30	<0.00050		mg/L	
			1,2,4-trimethylbenzene	2019/06/30	<0.00050		mg/L	
			1,3,5-trimethylbenzene	2019/06/30	<0.00050		mg/L	
			Vinyl chloride	2019/06/30	<0.00050		mg/L	
			Xylenes (Total)	2019/06/30	<0.00080		mg/L	
			m & p-Xylene	2019/06/30	<0.00080		mg/L	
			o-Xylene	2019/06/30	<0.00040		mg/L	
9486514	QW1	RPD [VY7314-01]	Benzene	2019/06/30	NC		%	30
			Bromodichloromethane	2019/06/30	NC		%	30
			Bromoform	2019/06/30	NC		%	30
			Bromomethane	2019/06/30	NC		%	30
			Carbon tetrachloride	2019/06/30	NC		%	30
			Chlorobenzene	2019/06/30	NC		%	30
			Chlorodibromomethane	2019/06/30	NC		%	30
			Chloroethane	2019/06/30	NC		%	30
			Chloroform	2019/06/30	NC		%	30
			Chloromethane	2019/06/30	NC		%	30
			1,2-dibromoethane	2019/06/30	NC		%	30
			1,2-dichlorobenzene	2019/06/30	NC		%	30
			1,3-dichlorobenzene	2019/06/30	NC		%	30
			1,4-dichlorobenzene	2019/06/30	NC		%	30
			1,1-dichloroethane	2019/06/30	NC		%	30
			1,2-dichloroethane	2019/06/30	NC		%	30
			1,1-dichloroethene	2019/06/30	NC		%	30
			cis-1,2-dichloroethene	2019/06/30	NC		%	30
			trans-1,2-dichloroethene	2019/06/30	NC		%	30
			Dichloromethane	2019/06/30	NC		%	30
			1,2-dichloropropane	2019/06/30	NC		%	30
			cis-1,3-dichloropropene	2019/06/30	NC		%	30
			trans-1,3-dichloropropene	2019/06/30	NC		%	30
			Ethylbenzene	2019/06/30	NC		%	30
			Methyl methacrylate	2019/06/30	NC		%	30
			Methyl-tert-butylether (MTBE)	2019/06/30	NC		%	30
			Styrene	2019/06/30	NC		%	30
			1,1,1,2-tetrachloroethane	2019/06/30	NC		%	30
			1,1,2,2-tetrachloroethane	2019/06/30	NC		%	30
			Tetrachloroethene	2019/06/30	NC		%	30
			Toluene	2019/06/30	NC		%	30
			1,2,3-trichlorobenzene	2019/06/30	NC		%	30
			1,2,4-trichlorobenzene	2019/06/30	NC		%	30
			1,3,5-trichlorobenzene	2019/06/30	NC		%	30
			1,1,1-trichloroethane	2019/06/30	NC		%	30
			1,1,2-trichloroethane	2019/06/30	NC		%	30
			Trichloroethene	2019/06/30	NC		%	30

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BV Labs Job #: B950229
Report Date: 2019/07/02

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Trichlorofluoromethane	2019/06/30	NC		%	30
			1,2,4-trimethylbenzene	2019/06/30	NC		%	30
			1,3,5-trimethylbenzene	2019/06/30	NC		%	30
			Vinyl chloride	2019/06/30	NC		%	30
			Xylenes (Total)	2019/06/30	NC		%	30
			m & p-Xylene	2019/06/30	NC		%	30
			o-Xylene	2019/06/30	NC		%	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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NOTIFICATION LOG

No Reportable Regulation Exceedences Noted.

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BV Labs Job #: B950229
Report Date: 2019/07/02

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Dennis Ngondu, B.Sc., P.Chem., QP, Supervisor, Organics

Gita Pokhrel, Senior Analyst

Janet Gao, B.Sc., QP, Supervisor, Organics

Jingyuan Song, QP, Organics – Senior Analyst

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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CHAIN OF CUSTODY RECORD

947
M 085257

Page 1 of 1

Invoice Information		Report Information (if differs from invoice)		Project Information		Turnaround Time (TAT) Required
Company:	Clifton	Company:		Quotation #:		☒ 5 - 7 Days Regular (Most analyses)
Contact Name:	Stephen D'Abadie	Contact Name:		P.O. #/ AFE#:		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address:	2222 30 Ave NE Calgary	Address:		Project #:	CG2430.1 - E37	Rush TAT (Surcharges will be applied): ☐ Same Day ☐ 2 Days ☐ 1 Day ☐ 3-4 Days
Phone:	403 263-2556	Phone:		Site Location:	Calgary	
Email:	Stephen_dabadie@clifton.ca	Email:		Site #:		Date Required:
Copies:	1	Copies:		Sampled By:	Matt. J	Rush Confirmation #:

Laboratory Use Only

	YES	NO	Cooler ID			
Seal Present		✓				
Seal Intact		✓	Temp	11	12	14
Cooling Media	✓					
	YES	NO	Cooler ID			
Seal Present						
Seal Intact			Temp			
Cooling Media						
	YES	NO	Cooler ID			
Seal Present						
Seal Intact			Temp			
Cooling Media						

Depot Reception

Analysis Requested

	Sample Identification	Depth (Unit)	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	# of containers	~~BTEX F1-F4~~ ☒ VOC	BTEX F1-F2	BTEX F1-F4	Routine Water	Regulated Metals ☐ Tot ☐ Diss	Mercury ☐ Total ☐ Dissolved	Salinity 4	Sieve (75 micron)	Texture (% Sand, Silt, Clay)	Basic Class II Landfill	PAH	HOLD - DO NOT ANALYZE
1	MJ 007		2019/06/24		Soil	5	X		X								X	
2	MJ 012		↓		↓	5	X		X								X	
3	MJ 020		↓		↓	4	X		X								X	
4	Dup 001		↓		↓	1			X									
5	Trip 001					2												
6																		
7																		
8																		
9																		
10																		

Please indicate Filtered, Preserved or Both (F, P, F/P)

Regulatory Criteria

- ☐ AT1
- ☐ CCME
- ☐ Drinking Water
- ☐ D50 (Drilling Waste)
- ☐ Saskatchewan
- ☐ Other:

Special Instructions

Have a wonderfull Day!

Relinquished by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)	Received by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)
M. Johnson	2019/06/24	17:46	Jordan Bach	2019/06/24	17:47

24-Jun-19 17:47
Linsay Sunderman
B950229
SBZ INS-0150

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Maxxam's standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms which are available for viewing at www.maxx

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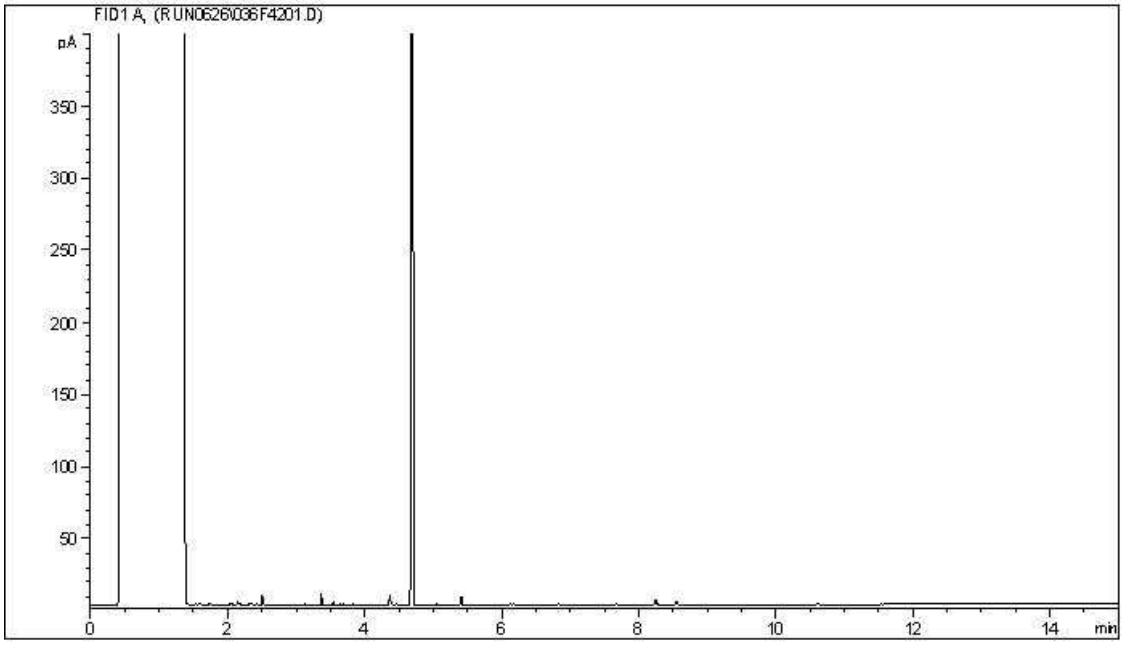
BV Labs Job #: B950229
Report Date: 2019/07/02
BV Labs Sample: VY7310

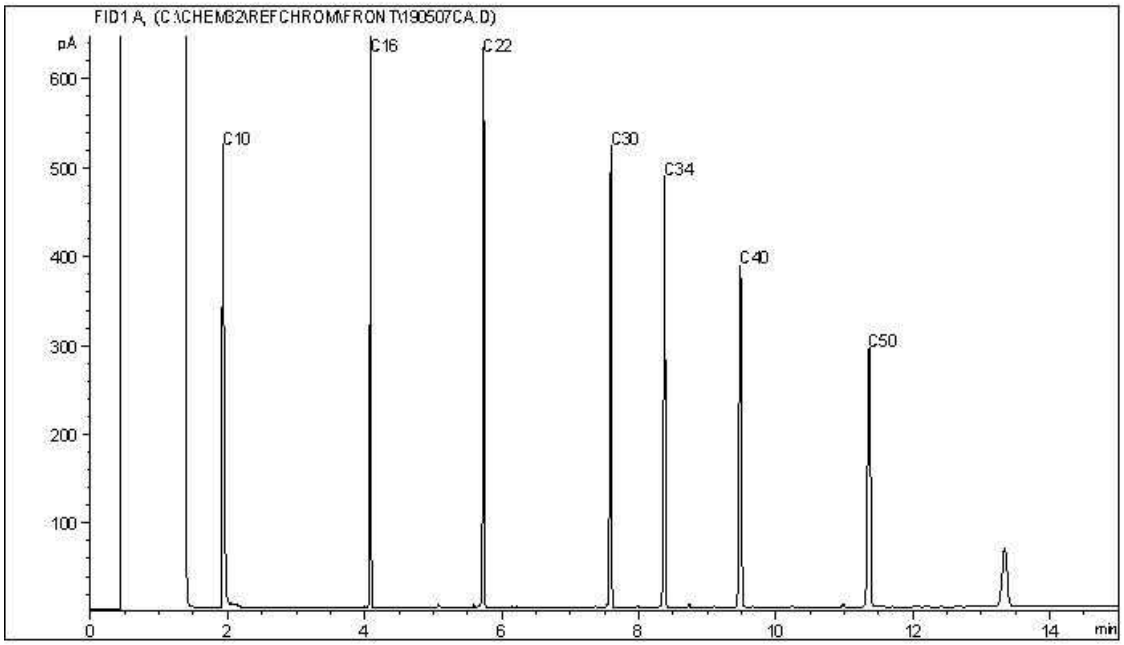
CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Reference: CALGARY
Client ID: MJ 007

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC12



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

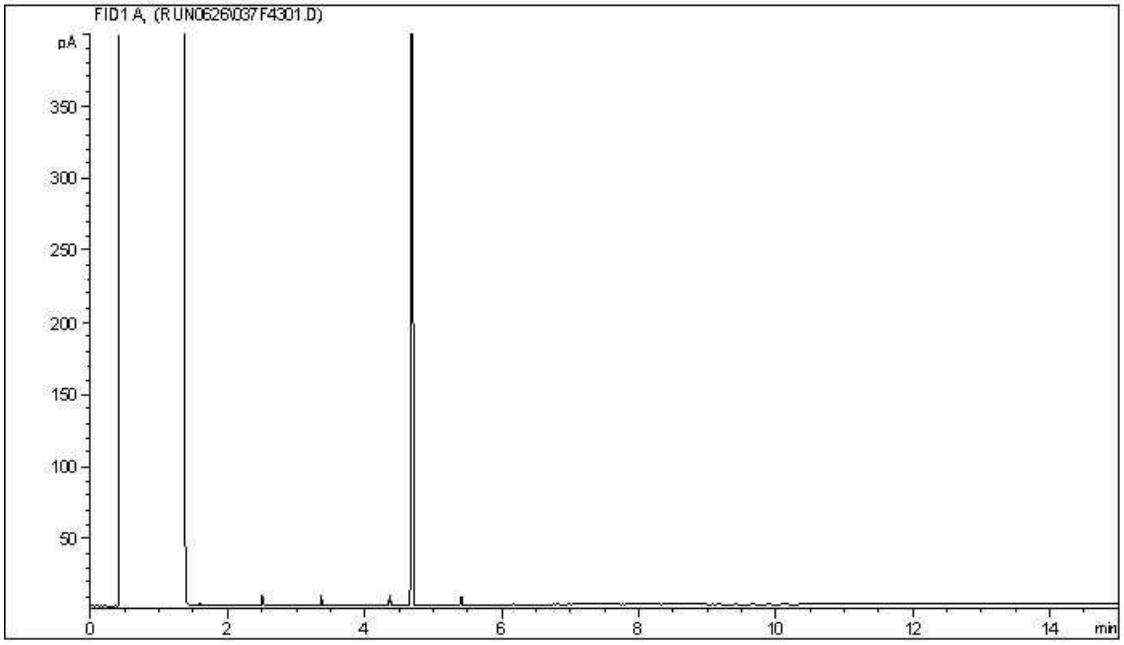
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B950229
Report Date: 2019/07/02
BV Labs Sample: VY7311

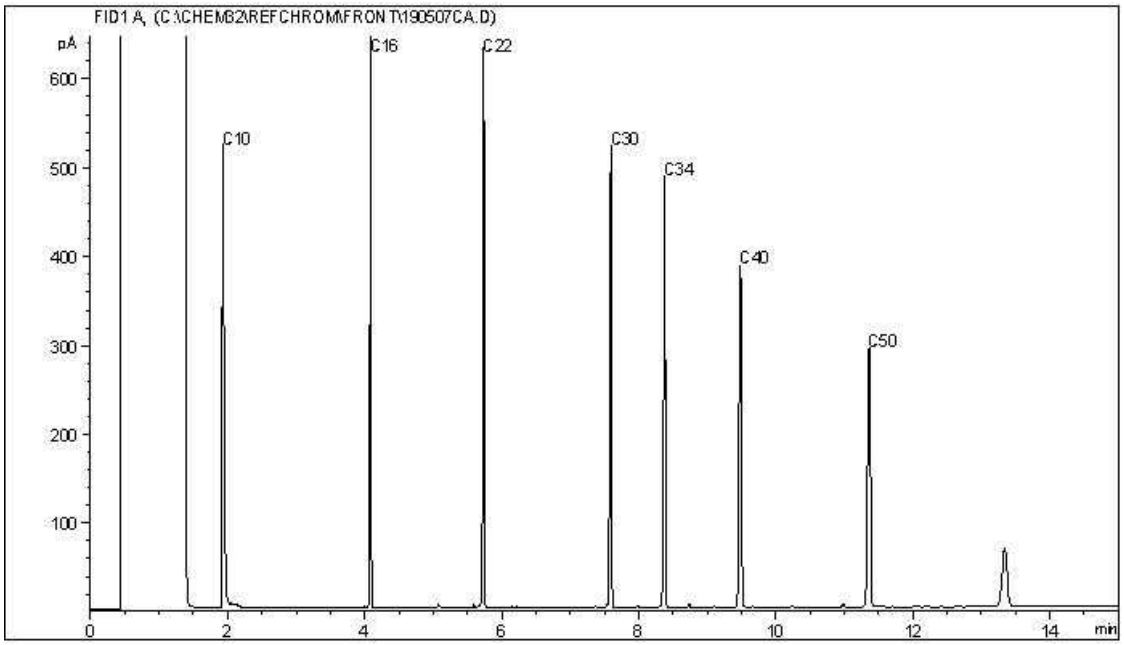
CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Reference: CALGARY
Client ID: MJ 012

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC12



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

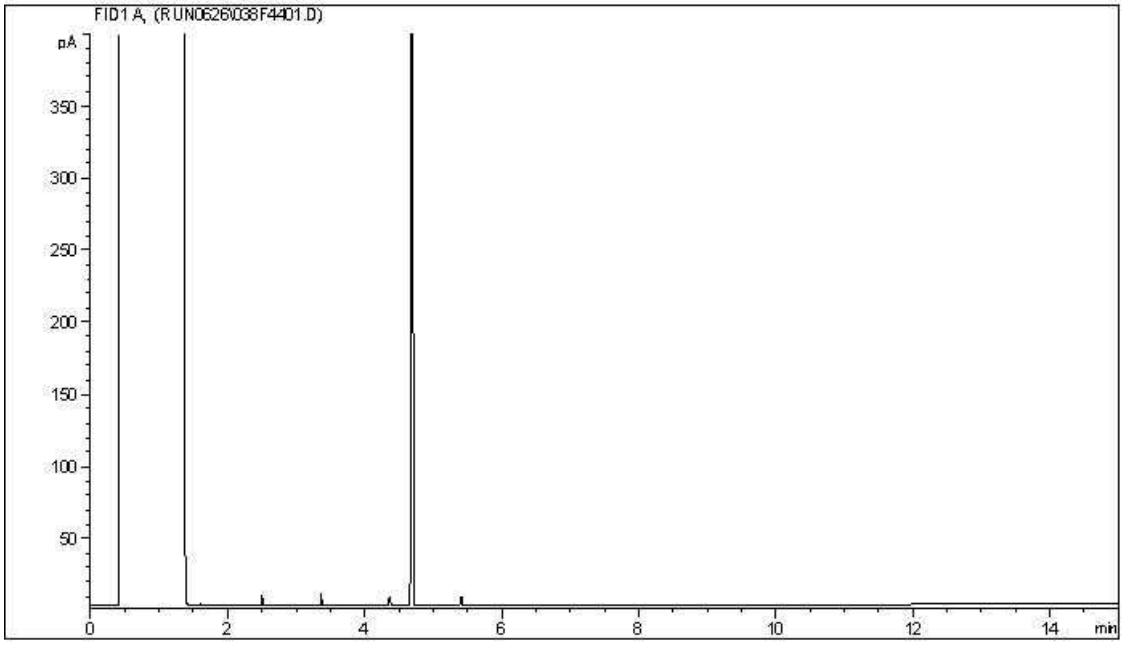
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B950229
Report Date: 2019/07/02
BV Labs Sample: VY7312

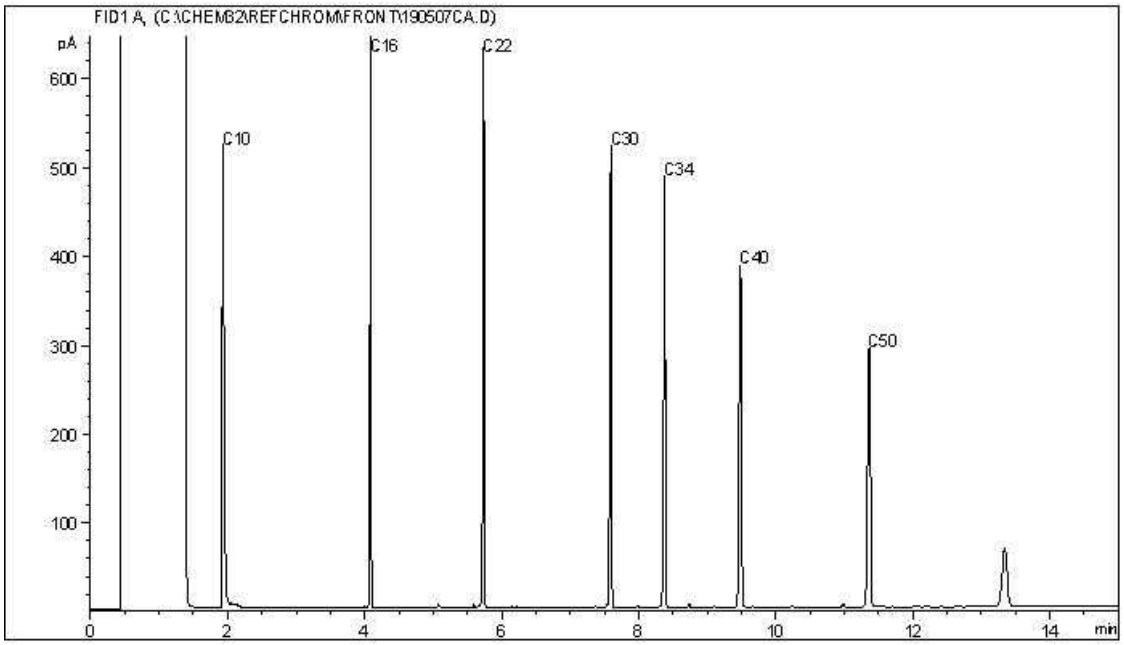
CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Reference: CALGARY
Client ID: MJ 020

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC12



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

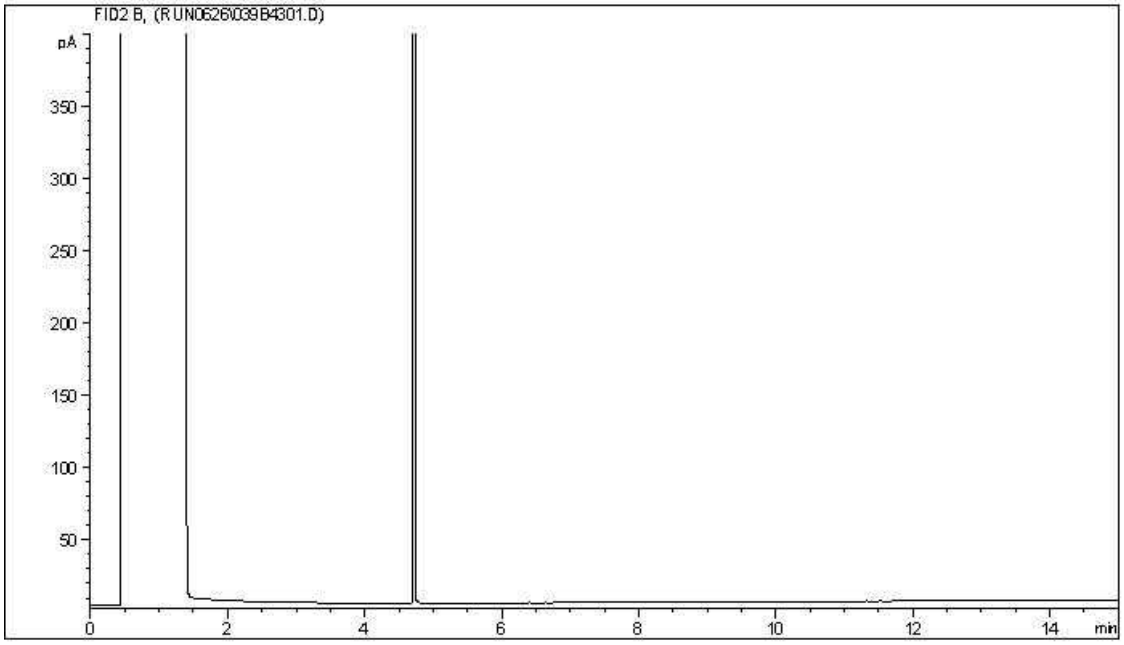
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B950229
Report Date: 2019/07/02
BV Labs Sample: VY7313

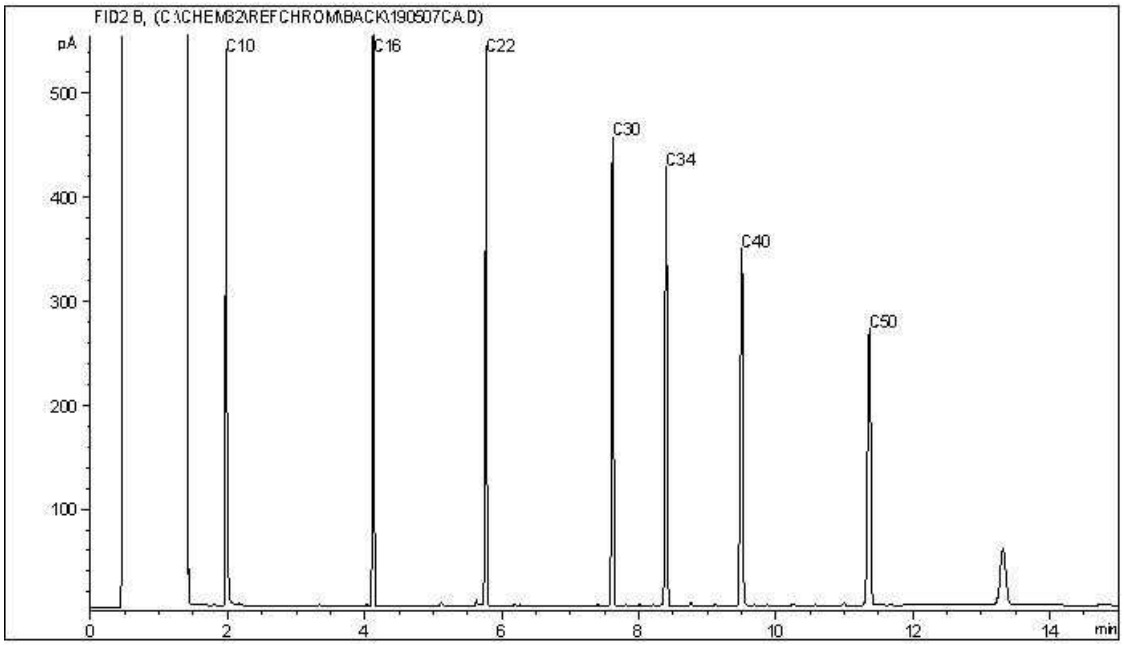
CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Reference: CALGARY
Client ID: DUP 001

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC12



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: CG2430.1 - E37
Site Location: CALGARY
Your C.O.C. #: M085257

Attention: STEPHEN D'ABADIE

CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
CANADA T2E 7K9

Report Date: 2019/07/04
Report #: R2747661
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BV LABS JOB #: B950229
Received: 2019/06/24, 17:47

Sample Matrix: Soil
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS/FID (MeOH extract) (1)	3	N/A	2019/06/26	AB SOP-00039	CCME CWS/EPA 8260d m
BTEX/F1 by HS GC/MS/FID (MeOH extract) (1)	1	N/A	2019/06/27	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX	3	N/A	2019/06/27		Auto Calc
F1-BTEX	1	N/A	2019/06/28		Auto Calc
CCME Hydrocarbons (F2-F4 in soil) (2)	4	2019/06/26	2019/06/27	AB SOP-00036	CCME PHC-CWS m
Moisture	3	N/A	2019/06/26	AB SOP-00002	CCME PHC-CWS m
Moisture	1	N/A	2019/06/27	AB SOP-00002	CCME PHC-CWS m
Benzo[a]pyrene Equivalency	3	N/A	2019/06/28		Auto Calc
PAH in Soil by GC/MS	3	2019/06/26	2019/06/27	AB SOP-00036 / AB SOP-00003	EPA 3540C/8270E m
VOCs in Soil by HS GC/MS (Std List) (1)	3	N/A	2019/07/04	AB SOP-00056	EPA 5021a/8260d m

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total Trihalomethanes Calculation	1	N/A	2019/07/02		Auto Calc
VOCs in Water by HS GC/MS (Std List)	1	N/A	2019/06/30	AB SOP-00056	EPA 5021a/8260d m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

Your Project #: CG2430.1 - E37
Site Location: CALGARY
Your C.O.C. #: M085257

Attention: STEPHEN D'ABADIE

CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
CANADA T2E 7K9

Report Date: 2019/07/04
Report #: R2747661
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BV LABS JOB #: B950229
Received: 2019/06/24, 17:47

dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.
(2) All CCME results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods September 2003. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Cynny Hagen
Sr. Customer Solutions
Representative
04 Jul 2019 17:25:23

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Linsay Sunderman, Key Account Specialist
Email: Lsunderman@bvlabs.com
Phone# (403)735-2237 Ext:2237
==========
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B950229
Report Date: 2019/07/04

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		VY7310	VY7311	VY7312		VY7313		
Sampling Date		2019/06/24	2019/06/24	2019/06/24		2019/06/24		
COC Number		M085257	M085257	M085257		M085257		
	UNITS	**MJ 007**	**MJ 012**	**MJ 020**	**QC Batch**	**DUP 001**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	9483300	<10	10	9483300
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	<50	9483300	<50	50	9483300
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	9483300	<50	50	9483300
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	9483300	Yes	N/A	9483300
Physical Properties								
Moisture	%	15	14	22	9482788	14	0.30	9483662
Volatiles								
Xylenes (Total)	mg/kg	0.76	0.92	<0.045	9481243	1.0	0.045	9482545
F1 (C6-C10) - BTEX	mg/kg	<10	<10	<10	9481243	<10	10	9482545
Field Preserved Volatiles								
Benzene	mg/kg	0.092	2.0	<0.0050	9483187	1.4	0.0050	9484576
Toluene	mg/kg	0.15	0.065	<0.050	9483187	<0.050	0.050	9484576
Ethylbenzene	mg/kg	0.075	<0.010	<0.010	9483187	<0.010	0.010	9484576
m & p-Xylene	mg/kg	0.49	<0.040	<0.040	9483187	<0.040	0.040	9484576
o-Xylene	mg/kg	0.27	0.92	<0.020	9483187	1.0	0.020	9484576
F1 (C6-C10)	mg/kg	<10	<10	<10	9483187	<10	10	9484576
Surrogate Recovery (%)								
1,4-Difluorobenzene (sur.)	%	93	92	89	9483187	96	N/A	9484576
4-Bromofluorobenzene (sur.)	%	102	102	103	9483187	101	N/A	9484576
D10-o-Xylene (sur.)	%	104	116	113	9483187	91	N/A	9484576
D4-1,2-Dichloroethane (sur.)	%	96	97	107	9483187	92	N/A	9484576
O-TERPHENYL (sur.)	%	97	94	98	9483300	98	N/A	9483300

RDL = Reportable Detection Limit
N/A = Not Applicable

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BV Labs Job #: B950229
Report Date: 2019/07/04

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		VY7310	VY7311	VY7312		
Sampling Date		2019/06/24	2019/06/24	2019/06/24		
COC Number		M085257	M085257	M085257		
	UNITS	**MJ 007**	**MJ 012**	**MJ 020**	**RDL**	**QC Batch**
Polycyclic Aromatics						
Acenaphthene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483392
B[a]P TPE Total Potency Equivalents	mg/kg	<0.0071	<0.0071	<0.0071	0.0071	9481756
Acenaphthylene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483392
Acridine	mg/kg	<0.010	<0.010	<0.010	0.010	9483392
Anthracene	mg/kg	<0.0040	<0.0040	<0.0040	0.0040	9483392
Benzo(a)anthracene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483392
Benzo(b&j)fluoranthene	mg/kg	0.0066	<0.0050	0.0066	0.0050	9483392
Benzo(k)fluoranthene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483392
Benzo(g,h,i)perylene	mg/kg	0.0059	<0.0050	0.0066	0.0050	9483392
Benzo(c)phenanthrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483392
Benzo(a)pyrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483392
Benzo[e]pyrene	mg/kg	<0.0050	<0.0050	0.0064	0.0050	9483392
Chrysene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483392
Dibenz(a,h)anthracene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483392
Fluoranthene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483392
Fluorene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483392
Indeno(1,2,3-cd)pyrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483392
1-Methylnaphthalene	mg/kg	0.038	0.015	0.0069	0.0050	9483392
2-Methylnaphthalene	mg/kg	0.075	0.032	<0.0050	0.0050	9483392
Naphthalene	mg/kg	0.066	0.022	<0.0050	0.0050	9483392
Phenanthrene	mg/kg	0.0095	<0.0050	0.0070	0.0050	9483392
Perylene	mg/kg	0.011	<0.0050	0.030	0.0050	9483392
Pyrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483392
Quinoline	mg/kg	<0.010	<0.010	<0.010	0.010	9483392
Surrogate Recovery (%)						
D10-ANTHRACENE (sur.)	%	86	85	85	N/A	9483392
D8-ACENAPHTHYLENE (sur.)	%	97	95	97	N/A	9483392
D8-NAPHTHALENE (sur.)	%	91	90	92	N/A	9483392
TERPHENYL-D14 (sur.)	%	103	101	106	N/A	9483392

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B950229
Report Date: 2019/07/04

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

VOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		VY7310	VY7310	VY7311	VY7312		
Sampling Date		2019/06/24	2019/06/24	2019/06/24	2019/06/24		
COC Number		M085257	M085257	M085257	M085257		
	UNITS	**MJ 007**	**MJ 007 Lab-Dup**	**MJ 012**	**MJ 020**	**RDL**	**QC Batch**
Field Preserved Volatiles							
Bromodichloromethane	mg/kg	<0.030	<0.030	<0.030	<0.030	0.030	9490331
Bromoform	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	9490331
Bromomethane	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9490331
Carbon tetrachloride	mg/kg	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9490331
Chlorobenzene	mg/kg	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	9490331
Chlorodibromomethane	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9490331
Chloroethane	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9490331
Chloroform	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	9490331
Chloromethane	mg/kg	<0.030	<0.030	<0.030	<0.030	0.030	9490331
1,2-dibromoethane	mg/kg	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	9490331
1,2-dichlorobenzene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9490331
1,3-dichlorobenzene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9490331
1,4-dichlorobenzene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9490331
1,1-dichloroethane	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9490331
1,2-dichloroethane	mg/kg	0.034	0.035	0.23	<0.0020	0.0020	9490331
1,1-dichloroethene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9490331
cis-1,2-dichloroethene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9490331
trans-1,2-dichloroethene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9490331
Dichloromethane	mg/kg	<0.030	<0.030	<0.030	<0.030	0.030	9490331
1,2-dichloropropane	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9490331
cis-1,3-dichloropropene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9490331
trans-1,3-dichloropropene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9490331
Methyl methacrylate	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	9490331
Methyl-tert-butylether (MTBE)	mg/kg	<0.030	<0.030	<0.030	<0.030	0.030	9490331
Styrene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9490331
1,1,1,2-tetrachloroethane	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	9490331
1,1,2,2-tetrachloroethane	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	9490331
Tetrachloroethene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	9490331
1,2,3-trichlorobenzene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	9490331
1,2,4-trichlorobenzene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	9490331
1,3,5-trichlorobenzene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	9490331

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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BV Labs Job #: B950229
Report Date: 2019/07/04

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

VOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		VY7310	VY7310	VY7311	VY7312		
Sampling Date		2019/06/24	2019/06/24	2019/06/24	2019/06/24		
COC Number		M085257	M085257	M085257	M085257		
	UNITS	**MJ 007**	**MJ 007 Lab-Dup**	**MJ 012**	**MJ 020**	**RDL**	**QC Batch**
1,1,1-trichloroethane	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9490331
1,1,2-trichloroethane	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9490331
Trichloroethene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	9490331
Trichlorofluoromethane	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9490331
1,2,4-trimethylbenzene	mg/kg	<0.50	<0.50	<0.50	<0.50	0.50	9490331
1,3,5-trimethylbenzene	mg/kg	<0.50	<0.50	<0.50	<0.50	0.50	9490331
Vinyl chloride	mg/kg	<0.00030	<0.00030	<0.00030	<0.00030	0.00030	9490331
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	96	95	100	94	N/A	9490331
4-Bromofluorobenzene (sur.)	%	97	99	90	94	N/A	9490331
D10-o-Xylene (sur.)	%	102	101	96	102	N/A	9490331
D4-1,2-Dichloroethane (sur.)	%	107	109	139	110	N/A	9490331

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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BV Labs Job #: B950229
Report Date: 2019/07/04

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		VY7314	VY7314		
Sampling Date		2019/06/24	2019/06/24		
COC Number		M085257	M085257		
	UNITS	**TRIP 001**	**TRIP 001 Lab-Dup**	**RDL**	**QC Batch**
Volatiles					
Total Trihalomethanes	mg/L	<0.0013	N/A	0.0013	9482257
Benzene	mg/L	<0.00040	<0.00040	0.00040	9486514
Bromodichloromethane	mg/L	<0.00050	<0.00050	0.00050	9486514
Bromoform	mg/L	<0.00050	<0.00050	0.00050	9486514
Bromomethane	mg/L	<0.0020	<0.0020	0.0020	9486514
Carbon tetrachloride	mg/L	<0.00050	<0.00050	0.00050	9486514
Chlorobenzene	mg/L	<0.00050	<0.00050	0.00050	9486514
Chlorodibromomethane	mg/L	<0.0010	<0.0010	0.0010	9486514
Chloroethane	mg/L	<0.0010	<0.0010	0.0010	9486514
Chloroform	mg/L	<0.00050	<0.00050	0.00050	9486514
Chloromethane	mg/L	<0.0020	<0.0020	0.0020	9486514
1,2-dibromoethane	mg/L	<0.00020	<0.00020	0.00020	9486514
1,2-dichlorobenzene	mg/L	<0.00050	<0.00050	0.00050	9486514
1,3-dichlorobenzene	mg/L	<0.00050	<0.00050	0.00050	9486514
1,4-dichlorobenzene	mg/L	<0.00050	<0.00050	0.00050	9486514
1,1-dichloroethane	mg/L	<0.00050	<0.00050	0.00050	9486514
1,2-dichloroethane	mg/L	<0.00050	<0.00050	0.00050	9486514
1,1-dichloroethene	mg/L	<0.00050	<0.00050	0.00050	9486514
cis-1,2-dichloroethene	mg/L	<0.00050	<0.00050	0.00050	9486514
trans-1,2-dichloroethene	mg/L	<0.00050	<0.00050	0.00050	9486514
Dichloromethane	mg/L	<0.0020	<0.0020	0.0020	9486514
1,2-dichloropropane	mg/L	<0.00050	<0.00050	0.00050	9486514
cis-1,3-dichloropropene	mg/L	<0.00050	<0.00050	0.00050	9486514
trans-1,3-dichloropropene	mg/L	<0.00050	<0.00050	0.00050	9486514
Ethylbenzene	mg/L	<0.00040	<0.00040	0.00040	9486514
Methyl methacrylate	mg/L	<0.00050	<0.00050	0.00050	9486514
Methyl-tert-butylether (MTBE)	mg/L	<0.00050	<0.00050	0.00050	9486514
Styrene	mg/L	<0.00050	<0.00050	0.00050	9486514
1,1,1,2-tetrachloroethane	mg/L	<0.0010	<0.0010	0.0010	9486514
1,1,2,2-tetrachloroethane	mg/L	<0.0020	<0.0020	0.0020	9486514

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N/A = Not Applicable

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BV Labs Job #: B950229
Report Date: 2019/07/04

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		VY7314	VY7314		
Sampling Date		2019/06/24	2019/06/24		
COC Number		M085257	M085257		
	UNITS	**TRIP 001**	**TRIP 001 Lab-Dup**	**RDL**	**QC Batch**
Tetrachloroethene	mg/L	<0.00050	<0.00050	0.00050	9486514
Toluene	mg/L	<0.00040	<0.00040	0.00040	9486514
1,2,3-trichlorobenzene	mg/L	<0.0010	<0.0010	0.0010	9486514
1,2,4-trichlorobenzene	mg/L	<0.0010	<0.0010	0.0010	9486514
1,3,5-trichlorobenzene	mg/L	<0.00050	<0.00050	0.00050	9486514
1,1,1-trichloroethane	mg/L	<0.00050	<0.00050	0.00050	9486514
1,1,2-trichloroethane	mg/L	<0.00050	<0.00050	0.00050	9486514
Trichloroethene	mg/L	<0.00050	<0.00050	0.00050	9486514
Trichlorofluoromethane	mg/L	<0.00050	<0.00050	0.00050	9486514
1,2,4-trimethylbenzene	mg/L	<0.00050	<0.00050	0.00050	9486514
1,3,5-trimethylbenzene	mg/L	<0.00050	<0.00050	0.00050	9486514
Vinyl chloride	mg/L	<0.00050	<0.00050	0.00050	9486514
Xylenes (Total)	mg/L	<0.00080	<0.00080	0.00080	9486514
m & p-Xylene	mg/L	<0.00080	<0.00080	0.00080	9486514
o-Xylene	mg/L	<0.00040	<0.00040	0.00040	9486514
Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	101	100	N/A	9486514
4-Bromofluorobenzene (sur.)	%	92	93	N/A	9486514
D4-1,2-Dichloroethane (sur.)	%	91	93	N/A	9486514

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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Report Date: 2019/07/04

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Client Project #: CG2430.1 - E37
Site Location: CALGARY
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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	12.3°C

Sample VY7310 [MJ 007] : Report re-issued with missing VOCs results. 20190704

Results relate only to the items tested.

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Report Date: 2019/07/04

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9482788	TL0	Method Blank	Moisture	2019/06/26	<0.30		%	
9482788	TL0	RPD	Moisture	2019/06/26	2.6		%	20
9483187	SAW	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/06/26		96	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/26		98	%	50 - 140
			D10-o-Xylene (sur.)	2019/06/26		126	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/26		94	%	50 - 140
			Benzene	2019/06/26		105	%	50 - 140
			Toluene	2019/06/26		112	%	50 - 140
			Ethylbenzene	2019/06/26		109	%	50 - 140
			m & p-Xylene	2019/06/26		109	%	50 - 140
			o-Xylene	2019/06/26		106	%	50 - 140
			F1 (C6-C10)	2019/06/26		72	%	60 - 140
9483187	SAW	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/06/26		93	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/26		102	%	50 - 140
			D10-o-Xylene (sur.)	2019/06/26		103	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/26		94	%	50 - 140
			Benzene	2019/06/26		93	%	60 - 130
			Toluene	2019/06/26		98	%	60 - 130
			Ethylbenzene	2019/06/26		98	%	60 - 130
			m & p-Xylene	2019/06/26		97	%	60 - 130
			o-Xylene	2019/06/26		99	%	60 - 130
			F1 (C6-C10)	2019/06/26		88	%	60 - 140
9483187	SAW	Method Blank	1,4-Difluorobenzene (sur.)	2019/06/26		94	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/26		101	%	50 - 140
			D10-o-Xylene (sur.)	2019/06/26		92	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/26		94	%	50 - 140
			Benzene	2019/06/26	<0.0050		mg/kg	
			Toluene	2019/06/26	<0.050		mg/kg	
			Ethylbenzene	2019/06/26	<0.010		mg/kg	
			m & p-Xylene	2019/06/26	<0.040		mg/kg	
			o-Xylene	2019/06/26	<0.020		mg/kg	
			F1 (C6-C10)	2019/06/26	<10		mg/kg	
9483187	SAW	RPD	Benzene	2019/06/26	11		%	50
			Toluene	2019/06/26	NC		%	50
			Ethylbenzene	2019/06/26	6.1		%	50
			m & p-Xylene	2019/06/26	3.8		%	50
			o-Xylene	2019/06/26	1.3		%	50
			F1 (C6-C10)	2019/06/26	5.6		%	30
9483300	VP4	Matrix Spike	O-TERPHENYL (sur.)	2019/06/26		91	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/06/26		101	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2019/06/26		98	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2019/06/26		95	%	60 - 140
9483300	VP4	Spiked Blank	O-TERPHENYL (sur.)	2019/06/26		104	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/06/26		113	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2019/06/26		111	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2019/06/26		109	%	60 - 140
9483300	VP4	Method Blank	O-TERPHENYL (sur.)	2019/06/26		92	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/06/26	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2019/06/26	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2019/06/26	<50		mg/kg	
9483300	VP4	RPD	F2 (C10-C16 Hydrocarbons)	2019/06/26	NC		%	40
			F3 (C16-C34 Hydrocarbons)	2019/06/26	NC		%	40
			F4 (C34-C50 Hydrocarbons)	2019/06/26	NC		%	40

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BV Labs Job #: B950229
Report Date: 2019/07/04

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9483392	NK3	Matrix Spike	D10-ANTHRACENE (sur.)	2019/06/27		86	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/06/27		98	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/06/27		91	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/06/27		99	%	50 - 130
			Acenaphthene	2019/06/27		88	%	50 - 130
			Acenaphthylene	2019/06/27		87	%	50 - 130
			Acridine	2019/06/27		71	%	50 - 130
			Anthracene	2019/06/27		84	%	50 - 130
			Benzo(a)anthracene	2019/06/27		90	%	50 - 130
			Benzo(b&j)fluoranthene	2019/06/27		81	%	50 - 130
			Benzo(k)fluoranthene	2019/06/27		83	%	50 - 130
			Benzo(g,h,i)perylene	2019/06/27		76	%	50 - 130
			Benzo(c)phenanthrene	2019/06/27		94	%	50 - 130
			Benzo(a)pyrene	2019/06/27		82	%	50 - 130
			Benzo[e]pyrene	2019/06/27		84	%	50 - 130
			Chrysene	2019/06/27		87	%	50 - 130
			Dibenz(a,h)anthracene	2019/06/27		83	%	50 - 130
			Fluoranthene	2019/06/27		90	%	50 - 130
			Fluorene	2019/06/27		89	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/06/27		81	%	50 - 130
			1-Methylnaphthalene	2019/06/27		89	%	50 - 130
			2-Methylnaphthalene	2019/06/27		86	%	50 - 130
			Naphthalene	2019/06/27		82	%	50 - 130
			Phenanthrene	2019/06/27		84	%	50 - 130
			Perylene	2019/06/27		82	%	50 - 130
			Pyrene	2019/06/27		89	%	50 - 130
			Quinoline	2019/06/27		92	%	50 - 130
9483392	NK3	Spiked Blank	D10-ANTHRACENE (sur.)	2019/06/27		94	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/06/27		107	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/06/27		99	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/06/27		108	%	50 - 130
			Acenaphthene	2019/06/27		94	%	50 - 130
			Acenaphthylene	2019/06/27		94	%	50 - 130
			Acridine	2019/06/27		74	%	50 - 130
			Anthracene	2019/06/27		92	%	50 - 130
			Benzo(a)anthracene	2019/06/27		99	%	50 - 130
			Benzo(b&j)fluoranthene	2019/06/27		91	%	50 - 130
			Benzo(k)fluoranthene	2019/06/27		92	%	50 - 130
			Benzo(g,h,i)perylene	2019/06/27		89	%	50 - 130
			Benzo(c)phenanthrene	2019/06/27		104	%	50 - 130
			Benzo(a)pyrene	2019/06/27		95	%	50 - 130
			Benzo[e]pyrene	2019/06/27		96	%	50 - 130
			Chrysene	2019/06/27		96	%	50 - 130
			Dibenz(a,h)anthracene	2019/06/27		93	%	50 - 130
			Fluoranthene	2019/06/27		97	%	50 - 130
			Fluorene	2019/06/27		95	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/06/27		93	%	50 - 130
			1-Methylnaphthalene	2019/06/27		95	%	50 - 130
			2-Methylnaphthalene	2019/06/27		92	%	50 - 130
			Naphthalene	2019/06/27		88	%	50 - 130
			Phenanthrene	2019/06/27		90	%	50 - 130
			Perylene	2019/06/27		91	%	50 - 130
			Pyrene	2019/06/27		96	%	50 - 130

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BV Labs Job #: B950229
Report Date: 2019/07/04

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Quinoline	2019/06/27		92	%	50 - 130
9483392	NK3	Method Blank	D10-ANTHRACENE (sur.)	2019/06/27		95	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/06/27		107	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/06/27		100	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/06/27		112	%	50 - 130
			Acenaphthene	2019/06/27	<0.0050		mg/kg	
			Acenaphthylene	2019/06/27	<0.0050		mg/kg	
			Acridine	2019/06/27	<0.010		mg/kg	
			Anthracene	2019/06/27	<0.0040		mg/kg	
			Benzo(a)anthracene	2019/06/27	<0.0050		mg/kg	
			Benzo(b&j)fluoranthene	2019/06/27	<0.0050		mg/kg	
			Benzo(k)fluoranthene	2019/06/27	<0.0050		mg/kg	
			Benzo(g,h,i)perylene	2019/06/27	<0.0050		mg/kg	
			Benzo(c)phenanthrene	2019/06/27	<0.0050		mg/kg	
			Benzo(a)pyrene	2019/06/27	<0.0050		mg/kg	
			Benzo[e]pyrene	2019/06/27	<0.0050		mg/kg	
			Chrysene	2019/06/27	<0.0050		mg/kg	
			Dibenz(a,h)anthracene	2019/06/27	<0.0050		mg/kg	
			Fluoranthene	2019/06/27	<0.0050		mg/kg	
			Fluorene	2019/06/27	<0.0050		mg/kg	
			Indeno(1,2,3-cd)pyrene	2019/06/27	<0.0050		mg/kg	
			1-Methylnaphthalene	2019/06/27	<0.0050		mg/kg	
			2-Methylnaphthalene	2019/06/27	<0.0050		mg/kg	
			Naphthalene	2019/06/27	<0.0050		mg/kg	
			Phenanthrene	2019/06/27	<0.0050		mg/kg	
			Perylene	2019/06/27	<0.0050		mg/kg	
			Pyrene	2019/06/27	<0.0050		mg/kg	
			Quinoline	2019/06/27	<0.010		mg/kg	
9483392	NK3	RPD	Acenaphthene	2019/06/27	NC		%	50
			Acenaphthylene	2019/06/27	NC		%	50
			Acridine	2019/06/27	NC		%	50
			Anthracene	2019/06/27	NC		%	50
			Benzo(a)anthracene	2019/06/27	NC		%	50
			Benzo(b&j)fluoranthene	2019/06/27	NC		%	50
			Benzo(k)fluoranthene	2019/06/27	NC		%	50
			Benzo(g,h,i)perylene	2019/06/27	NC		%	50
			Benzo(c)phenanthrene	2019/06/27	NC		%	50
			Benzo(a)pyrene	2019/06/27	NC		%	50
			Benzo[e]pyrene	2019/06/27	NC		%	50
			Chrysene	2019/06/27	NC		%	50
			Dibenz(a,h)anthracene	2019/06/27	NC		%	50
			Fluoranthene	2019/06/27	NC		%	50
			Fluorene	2019/06/27	NC		%	50
			Indeno(1,2,3-cd)pyrene	2019/06/27	NC		%	50
			1-Methylnaphthalene	2019/06/27	NC		%	50
			2-Methylnaphthalene	2019/06/27	NC		%	50
			Naphthalene	2019/06/27	NC		%	50
			Phenanthrene	2019/06/27	NC		%	50
			Perylene	2019/06/27	5.2		%	50
			Pyrene	2019/06/27	NC		%	50
			Quinoline	2019/06/27	NC		%	50
9483662	RV5	Method Blank	Moisture	2019/06/27	<0.30		%	
9483662	RV5	RPD	Moisture	2019/06/27	7.5		%	20

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BV Labs Job #: B950229
Report Date: 2019/07/04

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
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Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9484576	JNG	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/06/27		95	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/27		99	%	50 - 140
			D10-o-Xylene (sur.)	2019/06/27		92	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/27		108	%	50 - 140
			Benzene	2019/06/27		84	%	50 - 140
			Toluene	2019/06/27		85	%	50 - 140
			Ethylbenzene	2019/06/27		83	%	50 - 140
			m & p-Xylene	2019/06/27		85	%	50 - 140
			o-Xylene	2019/06/27		85	%	50 - 140
			F1 (C6-C10)	2019/06/27		91	%	60 - 140
9484576	JNG	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/06/27		115	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/27		121	%	50 - 140
			D10-o-Xylene (sur.)	2019/06/27		102	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/27		112	%	50 - 140
			Benzene	2019/06/27		101	%	60 - 130
			Toluene	2019/06/27		103	%	60 - 130
			Ethylbenzene	2019/06/27		89	%	60 - 130
			m & p-Xylene	2019/06/27		99	%	60 - 130
			o-Xylene	2019/06/27		108	%	60 - 130
			F1 (C6-C10)	2019/06/27		112	%	60 - 140
9484576	JNG	Method Blank	1,4-Difluorobenzene (sur.)	2019/06/27		99	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/27		103	%	50 - 140
			D10-o-Xylene (sur.)	2019/06/27		86	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/27		96	%	50 - 140
			Benzene	2019/06/27	<0.0050		mg/kg	
			Toluene	2019/06/27	<0.050		mg/kg	
			Ethylbenzene	2019/06/27	<0.010		mg/kg	
			m & p-Xylene	2019/06/27	<0.040		mg/kg	
			o-Xylene	2019/06/27	<0.020		mg/kg	
			F1 (C6-C10)	2019/06/27	<10		mg/kg	
9484576	JNG	RPD	Benzene	2019/06/27	8.8		%	50
			Toluene	2019/06/27	NC		%	50
			Ethylbenzene	2019/06/27	NC		%	50
			m & p-Xylene	2019/06/27	NC		%	50
			o-Xylene	2019/06/27	NC		%	50
			F1 (C6-C10)	2019/06/27	NC		%	30
9486514	QW1	Matrix Spike [VY7314-01]	1,4-Difluorobenzene (sur.)	2019/06/30		104	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/30		101	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/30		113	%	50 - 140
			Benzene	2019/06/30		85	%	50 - 140
			Bromodichloromethane	2019/06/30		101	%	50 - 140
			Bromoform	2019/06/30		111	%	50 - 140
			Bromomethane	2019/06/30		99	%	50 - 140
			Carbon tetrachloride	2019/06/30		89	%	50 - 140
			Chlorobenzene	2019/06/30		95	%	50 - 140
			Chlorodibromomethane	2019/06/30		108	%	50 - 140
			Chloroethane	2019/06/30		86	%	50 - 140
			Chloroform	2019/06/30		87	%	50 - 140
			Chloromethane	2019/06/30		96	%	50 - 140
			1,2-dibromoethane	2019/06/30		105	%	50 - 140
			1,2-dichlorobenzene	2019/06/30		98	%	50 - 140
			1,3-dichlorobenzene	2019/06/30		93	%	50 - 140
			1,4-dichlorobenzene	2019/06/30		92	%	50 - 140

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B950229
Report Date: 2019/07/04

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,1-dichloroethane	2019/06/30		89	%	50 - 140
			1,2-dichloroethane	2019/06/30		99	%	50 - 140
			1,1-dichloroethene	2019/06/30		89	%	50 - 140
			cis-1,2-dichloroethene	2019/06/30		95	%	50 - 140
			trans-1,2-dichloroethene	2019/06/30		85	%	50 - 140
			Dichloromethane	2019/06/30		91	%	50 - 140
			1,2-dichloropropane	2019/06/30		98	%	50 - 140
			cis-1,3-dichloropropene	2019/06/30		132	%	50 - 140
			trans-1,3-dichloropropene	2019/06/30		145 (1)	%	50 - 140
			Ethylbenzene	2019/06/30		90	%	50 - 140
			Methyl methacrylate	2019/06/30		116	%	50 - 140
			Methyl-tert-butylether (MTBE)	2019/06/30		97	%	50 - 140
			Styrene	2019/06/30		102	%	50 - 140
			1,1,1,2-tetrachloroethane	2019/06/30		95	%	50 - 140
			1,1,2,2-tetrachloroethane	2019/06/30		107	%	50 - 140
			Tetrachloroethene	2019/06/30		88	%	50 - 140
			Toluene	2019/06/30		89	%	50 - 140
			1,2,3-trichlorobenzene	2019/06/30		92	%	50 - 140
			1,2,4-trichlorobenzene	2019/06/30		90	%	50 - 140
			1,3,5-trichlorobenzene	2019/06/30		88	%	50 - 140
			1,1,1-trichloroethane	2019/06/30		92	%	50 - 140
			1,1,2-trichloroethane	2019/06/30		106	%	50 - 140
			Trichloroethene	2019/06/30		99	%	50 - 140
			Trichlorofluoromethane	2019/06/30		81	%	50 - 140
			1,2,4-trimethylbenzene	2019/06/30		93	%	50 - 140
			1,3,5-trimethylbenzene	2019/06/30		93	%	50 - 140
			Vinyl chloride	2019/06/30		80	%	50 - 140
			m & p-Xylene	2019/06/30		89	%	50 - 140
			o-Xylene	2019/06/30		88	%	50 - 140
9486514	QW1	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/06/30		103	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/30		101	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/30		105	%	50 - 140
			Benzene	2019/06/30		83	%	60 - 130
			Bromodichloromethane	2019/06/30		96	%	60 - 130
			Bromoform	2019/06/30		103	%	60 - 130
			Bromomethane	2019/06/30		95	%	60 - 130
			Carbon tetrachloride	2019/06/30		89	%	60 - 130
			Chlorobenzene	2019/06/30		95	%	60 - 130
			Chlorodibromomethane	2019/06/30		103	%	60 - 130
			Chloroethane	2019/06/30		86	%	60 - 130
			Chloroform	2019/06/30		84	%	60 - 130
			Chloromethane	2019/06/30		99	%	60 - 130
			1,2-dibromoethane	2019/06/30		98	%	60 - 130
			1,2-dichlorobenzene	2019/06/30		97	%	60 - 130
			1,3-dichlorobenzene	2019/06/30		93	%	60 - 130
			1,4-dichlorobenzene	2019/06/30		92	%	60 - 130
			1,1-dichloroethane	2019/06/30		87	%	60 - 130
			1,2-dichloroethane	2019/06/30		90	%	60 - 130
			1,1-dichloroethene	2019/06/30		89	%	60 - 130
			cis-1,2-dichloroethene	2019/06/30		92	%	60 - 130
			trans-1,2-dichloroethene	2019/06/30		84	%	60 - 130
			Dichloromethane	2019/06/30		85	%	60 - 130
			1,2-dichloropropane	2019/06/30		93	%	60 - 130

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B950229
Report Date: 2019/07/04

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			cis-1,3-dichloropropene	2019/06/30		121	%	60 - 130
			trans-1,3-dichloropropene	2019/06/30		127	%	60 - 130
			Ethylbenzene	2019/06/30		92	%	60 - 130
			Methyl methacrylate	2019/06/30		105	%	60 - 130
			Methyl-tert-butylether (MTBE)	2019/06/30		93	%	60 - 130
			Styrene	2019/06/30		102	%	60 - 130
			1,1,1,2-tetrachloroethane	2019/06/30		94	%	60 - 130
			1,1,2,2-tetrachloroethane	2019/06/30		99	%	60 - 130
			Tetrachloroethene	2019/06/30		90	%	60 - 130
			Toluene	2019/06/30		90	%	60 - 130
			1,2,3-trichlorobenzene	2019/06/30		89	%	60 - 130
			1,2,4-trichlorobenzene	2019/06/30		89	%	60 - 130
			1,3,5-trichlorobenzene	2019/06/30		88	%	60 - 130
			1,1,1-trichloroethane	2019/06/30		91	%	60 - 130
			1,1,2-trichloroethane	2019/06/30		98	%	60 - 130
			Trichloroethene	2019/06/30		98	%	60 - 130
			Trichlorofluoromethane	2019/06/30		82	%	60 - 130
			1,2,4-trimethylbenzene	2019/06/30		94	%	60 - 130
			1,3,5-trimethylbenzene	2019/06/30		96	%	60 - 130
			Vinyl chloride	2019/06/30		84	%	60 - 130
			m & p-Xylene	2019/06/30		89	%	60 - 130
			o-Xylene	2019/06/30		89	%	60 - 130
9486514	QW1	Method Blank	1,4-Difluorobenzene (sur.)	2019/06/30		100	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/30		93	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/30		89	%	50 - 140
			Benzene	2019/06/30	<0.00040		mg/L	
			Bromodichloromethane	2019/06/30	<0.00050		mg/L	
			Bromoform	2019/06/30	<0.00050		mg/L	
			Bromomethane	2019/06/30	<0.0020		mg/L	
			Carbon tetrachloride	2019/06/30	<0.00050		mg/L	
			Chlorobenzene	2019/06/30	<0.00050		mg/L	
			Chlorodibromomethane	2019/06/30	<0.0010		mg/L	
			Chloroethane	2019/06/30	<0.0010		mg/L	
			Chloroform	2019/06/30	<0.00050		mg/L	
			Chloromethane	2019/06/30	<0.0020		mg/L	
			1,2-dibromoethane	2019/06/30	<0.00020		mg/L	
			1,2-dichlorobenzene	2019/06/30	<0.00050		mg/L	
			1,3-dichlorobenzene	2019/06/30	<0.00050		mg/L	
			1,4-dichlorobenzene	2019/06/30	<0.00050		mg/L	
			1,1-dichloroethane	2019/06/30	<0.00050		mg/L	
			1,2-dichloroethane	2019/06/30	<0.00050		mg/L	
			1,1-dichloroethene	2019/06/30	<0.00050		mg/L	
			cis-1,2-dichloroethene	2019/06/30	<0.00050		mg/L	
			trans-1,2-dichloroethene	2019/06/30	<0.00050		mg/L	
			Dichloromethane	2019/06/30	<0.0020		mg/L	
			1,2-dichloropropane	2019/06/30	<0.00050		mg/L	
			cis-1,3-dichloropropene	2019/06/30	<0.00050		mg/L	
			trans-1,3-dichloropropene	2019/06/30	<0.00050		mg/L	
			Ethylbenzene	2019/06/30	<0.00040		mg/L	
			Methyl methacrylate	2019/06/30	<0.00050		mg/L	
			Methyl-tert-butylether (MTBE)	2019/06/30	<0.00050		mg/L	
			Styrene	2019/06/30	<0.00050		mg/L	
			1,1,1,2-tetrachloroethane	2019/06/30	<0.0010		mg/L	

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B950229
Report Date: 2019/07/04

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,1,2,2-tetrachloroethane	2019/06/30	<0.0020		mg/L	
			Tetrachloroethene	2019/06/30	<0.00050		mg/L	
			Toluene	2019/06/30	<0.00040		mg/L	
			1,2,3-trichlorobenzene	2019/06/30	<0.0010		mg/L	
			1,2,4-trichlorobenzene	2019/06/30	<0.0010		mg/L	
			1,3,5-trichlorobenzene	2019/06/30	<0.00050		mg/L	
			1,1,1-trichloroethane	2019/06/30	<0.00050		mg/L	
			1,1,2-trichloroethane	2019/06/30	<0.00050		mg/L	
			Trichloroethene	2019/06/30	<0.00050		mg/L	
			Trichlorofluoromethane	2019/06/30	<0.00050		mg/L	
			1,2,4-trimethylbenzene	2019/06/30	<0.00050		mg/L	
			1,3,5-trimethylbenzene	2019/06/30	<0.00050		mg/L	
			Vinyl chloride	2019/06/30	<0.00050		mg/L	
			Xylenes (Total)	2019/06/30	<0.00080		mg/L	
			m & p-Xylene	2019/06/30	<0.00080		mg/L	
			o-Xylene	2019/06/30	<0.00040		mg/L	
9486514	QW1	RPD [VY7314-01]	Benzene	2019/06/30	NC		%	30
			Bromodichloromethane	2019/06/30	NC		%	30
			Bromoform	2019/06/30	NC		%	30
			Bromomethane	2019/06/30	NC		%	30
			Carbon tetrachloride	2019/06/30	NC		%	30
			Chlorobenzene	2019/06/30	NC		%	30
			Chlorodibromomethane	2019/06/30	NC		%	30
			Chloroethane	2019/06/30	NC		%	30
			Chloroform	2019/06/30	NC		%	30
			Chloromethane	2019/06/30	NC		%	30
			1,2-dibromoethane	2019/06/30	NC		%	30
			1,2-dichlorobenzene	2019/06/30	NC		%	30
			1,3-dichlorobenzene	2019/06/30	NC		%	30
			1,4-dichlorobenzene	2019/06/30	NC		%	30
			1,1-dichloroethane	2019/06/30	NC		%	30
			1,2-dichloroethane	2019/06/30	NC		%	30
			1,1-dichloroethene	2019/06/30	NC		%	30
			cis-1,2-dichloroethene	2019/06/30	NC		%	30
			trans-1,2-dichloroethene	2019/06/30	NC		%	30
			Dichloromethane	2019/06/30	NC		%	30
			1,2-dichloropropane	2019/06/30	NC		%	30
			cis-1,3-dichloropropene	2019/06/30	NC		%	30
			trans-1,3-dichloropropene	2019/06/30	NC		%	30
			Ethylbenzene	2019/06/30	NC		%	30
			Methyl methacrylate	2019/06/30	NC		%	30
			Methyl-tert-butylether (MTBE)	2019/06/30	NC		%	30
			Styrene	2019/06/30	NC		%	30
			1,1,1,2-tetrachloroethane	2019/06/30	NC		%	30
			1,1,2,2-tetrachloroethane	2019/06/30	NC		%	30
			Tetrachloroethene	2019/06/30	NC		%	30
			Toluene	2019/06/30	NC		%	30
			1,2,3-trichlorobenzene	2019/06/30	NC		%	30
			1,2,4-trichlorobenzene	2019/06/30	NC		%	30
			1,3,5-trichlorobenzene	2019/06/30	NC		%	30
			1,1,1-trichloroethane	2019/06/30	NC		%	30
			1,1,2-trichloroethane	2019/06/30	NC		%	30
			Trichloroethene	2019/06/30	NC		%	30

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B950229
Report Date: 2019/07/04

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Trichlorofluoromethane	2019/06/30	NC		%	30
			1,2,4-trimethylbenzene	2019/06/30	NC		%	30
			1,3,5-trimethylbenzene	2019/06/30	NC		%	30
			Vinyl chloride	2019/06/30	NC		%	30
			Xylenes (Total)	2019/06/30	NC		%	30
			m & p-Xylene	2019/06/30	NC		%	30
			o-Xylene	2019/06/30	NC		%	30
9490331	QW1	Matrix Spike [VY7310-02]	1,4-Difluorobenzene (sur.)	2019/07/03		106	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/03		97	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/03		119	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/03		101	%	50 - 140
			Bromodichloromethane	2019/07/03		110	%	50 - 140
			Bromoform	2019/07/03		111	%	50 - 140
			Bromomethane	2019/07/03		124	%	50 - 140
			Carbon tetrachloride	2019/07/03		110	%	50 - 140
			Chlorobenzene	2019/07/03		98	%	50 - 140
			Chlorodibromomethane	2019/07/03		112	%	50 - 140
			Chloroethane	2019/07/03		100	%	50 - 140
			Chloroform	2019/07/03		97	%	50 - 140
			Chloromethane	2019/07/03		74	%	50 - 140
			1,2-dibromoethane	2019/07/03		103	%	50 - 140
			1,2-dichlorobenzene	2019/07/03		96	%	50 - 140
			1,3-dichlorobenzene	2019/07/03		101	%	50 - 140
			1,4-dichlorobenzene	2019/07/03		96	%	50 - 140
			1,1-dichloroethane	2019/07/03		95	%	50 - 140
			1,2-dichloroethane	2019/07/03		108	%	50 - 140
			1,1-dichloroethene	2019/07/03		96	%	50 - 140
			cis-1,2-dichloroethene	2019/07/03		100	%	50 - 140
			trans-1,2-dichloroethene	2019/07/03		96	%	50 - 140
			Dichloromethane	2019/07/03		87	%	50 - 140
			1,2-dichloropropane	2019/07/03		91	%	50 - 140
			cis-1,3-dichloropropene	2019/07/03		101	%	50 - 140
			trans-1,3-dichloropropene	2019/07/03		97	%	50 - 140
			Methyl methacrylate	2019/07/03		96	%	50 - 140
			Methyl-tert-butylether (MTBE)	2019/07/03		96	%	50 - 140
			Styrene	2019/07/03		103	%	50 - 140
			1,1,1,2-tetrachloroethane	2019/07/03		105	%	50 - 140
			1,1,2,2-tetrachloroethane	2019/07/03		85	%	50 - 140
			Tetrachloroethene	2019/07/03		109	%	50 - 140
			1,2,3-trichlorobenzene	2019/07/03		81	%	50 - 140
			1,2,4-trichlorobenzene	2019/07/03		87	%	50 - 140
			1,3,5-trichlorobenzene	2019/07/03		94	%	50 - 140
			1,1,1-trichloroethane	2019/07/03		111	%	50 - 140
			1,1,2-trichloroethane	2019/07/03		103	%	50 - 140
			Trichloroethene	2019/07/03		108	%	50 - 140
			Trichlorofluoromethane	2019/07/03		110	%	50 - 140
			1,2,4-trimethylbenzene	2019/07/03		101	%	50 - 140
			1,3,5-trimethylbenzene	2019/07/03		101	%	50 - 140
			Vinyl chloride	2019/07/03		79	%	50 - 140
9490331	QW1	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/07/03		105	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/03		96	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/03		117	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/03		99	%	50 - 140

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B950229
Report Date: 2019/07/04

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Bromodichloromethane	2019/07/03		113	%	60 - 130
			Bromoform	2019/07/03		113	%	60 - 130
			Bromomethane	2019/07/03		118	%	60 - 130
			Carbon tetrachloride	2019/07/03		116	%	60 - 130
			Chlorobenzene	2019/07/03		102	%	60 - 130
			Chlorodibromomethane	2019/07/03		113	%	60 - 130
			Chloroethane	2019/07/03		106	%	60 - 130
			Chloroform	2019/07/03		100	%	60 - 130
			Chloromethane	2019/07/03		72	%	60 - 130
			1,2-dibromoethane	2019/07/03		107	%	60 - 130
			1,2-dichlorobenzene	2019/07/03		102	%	60 - 130
			1,3-dichlorobenzene	2019/07/03		105	%	60 - 130
			1,4-dichlorobenzene	2019/07/03		102	%	60 - 130
			1,1-dichloroethane	2019/07/03		99	%	60 - 130
			1,2-dichloroethane	2019/07/03		113	%	60 - 130
			1,1-dichloroethene	2019/07/03		101	%	60 - 130
			cis-1,2-dichloroethene	2019/07/03		104	%	60 - 130
			trans-1,2-dichloroethene	2019/07/03		102	%	60 - 130
			Dichloromethane	2019/07/03		92	%	60 - 130
			1,2-dichloropropane	2019/07/03		93	%	60 - 130
			cis-1,3-dichloropropene	2019/07/03		97	%	60 - 130
			trans-1,3-dichloropropene	2019/07/03		98	%	60 - 130
			Methyl methacrylate	2019/07/03		99	%	60 - 130
			Methyl-tert-butylether (MTBE)	2019/07/03		99	%	60 - 130
			Styrene	2019/07/03		107	%	60 - 130
			1,1,1,2-tetrachloroethane	2019/07/03		107	%	60 - 130
			1,1,2,2-tetrachloroethane	2019/07/03		92	%	60 - 130
			Tetrachloroethene	2019/07/03		117	%	60 - 130
			1,2,3-trichlorobenzene	2019/07/03		93	%	60 - 130
			1,2,4-trichlorobenzene	2019/07/03		98	%	60 - 130
			1,3,5-trichlorobenzene	2019/07/03		100	%	60 - 130
			1,1,1-trichloroethane	2019/07/03		116	%	60 - 130
			1,1,2-trichloroethane	2019/07/03		103	%	60 - 130
			Trichloroethene	2019/07/03		113	%	60 - 130
			Trichlorofluoromethane	2019/07/03		116	%	60 - 130
			1,2,4-trimethylbenzene	2019/07/03		99	%	60 - 130
			1,3,5-trimethylbenzene	2019/07/03		105	%	60 - 130
			Vinyl chloride	2019/07/03		80	%	60 - 130
9490331	QW1	Method Blank	1,4-Difluorobenzene (sur.)	2019/07/03		101	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/03		92	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/03		99	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/03		112	%	50 - 140
			Bromodichloromethane	2019/07/03	<0.030		mg/kg	
			Bromoform	2019/07/03	<0.050		mg/kg	
			Bromomethane	2019/07/03	<0.020		mg/kg	
			Carbon tetrachloride	2019/07/03	<0.00050		mg/kg	
			Chlorobenzene	2019/07/03	<0.0010		mg/kg	
			Chlorodibromomethane	2019/07/03	<0.020		mg/kg	
			Chloroethane	2019/07/03	<0.020		mg/kg	
			Chloroform	2019/07/03	<0.010		mg/kg	
			Chloromethane	2019/07/03	<0.030		mg/kg	
			1,2-dibromoethane	2019/07/03	<0.0020		mg/kg	
			1,2-dichlorobenzene	2019/07/03	<0.020		mg/kg	

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B950229
Report Date: 2019/07/04

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,3-dichlorobenzene	2019/07/03	<0.020		mg/kg	
			1,4-dichlorobenzene	2019/07/03	<0.020		mg/kg	
			1,1-dichloroethane	2019/07/03	<0.020		mg/kg	
			1,2-dichloroethane	2019/07/03	<0.0020		mg/kg	
			1,1-dichloroethene	2019/07/03	<0.020		mg/kg	
			cis-1,2-dichloroethene	2019/07/03	<0.020		mg/kg	
			trans-1,2-dichloroethene	2019/07/03	<0.020		mg/kg	
			Dichloromethane	2019/07/03	<0.030		mg/kg	
			1,2-dichloropropane	2019/07/03	<0.020		mg/kg	
			cis-1,3-dichloropropene	2019/07/03	<0.020		mg/kg	
			trans-1,3-dichloropropene	2019/07/03	<0.020		mg/kg	
			Methyl methacrylate	2019/07/03	<0.040		mg/kg	
			Methyl-tert-butylether (MTBE)	2019/07/03	<0.030		mg/kg	
			Styrene	2019/07/03	<0.020		mg/kg	
			1,1,1,2-tetrachloroethane	2019/07/03	<0.050		mg/kg	
			1,1,2,2-tetrachloroethane	2019/07/03	<0.050		mg/kg	
			Tetrachloroethene	2019/07/03	<0.010		mg/kg	
			1,2,3-trichlorobenzene	2019/07/03	<0.040		mg/kg	
			1,2,4-trichlorobenzene	2019/07/03	<0.040		mg/kg	
			1,3,5-trichlorobenzene	2019/07/03	<0.040		mg/kg	
			1,1,1-trichloroethane	2019/07/03	<0.020		mg/kg	
			1,1,2-trichloroethane	2019/07/03	<0.020		mg/kg	
			Trichloroethene	2019/07/03	<0.010		mg/kg	
			Trichlorofluoromethane	2019/07/03	<0.020		mg/kg	
			1,2,4-trimethylbenzene	2019/07/03	<0.50		mg/kg	
			1,3,5-trimethylbenzene	2019/07/03	<0.50		mg/kg	
			Vinyl chloride	2019/07/03	<0.00030		mg/kg	
9490331	QW1	RPD [VY7310-02]	Bromodichloromethane	2019/07/04	NC		%	50
			Bromoform	2019/07/04	NC		%	50
			Bromomethane	2019/07/04	NC		%	50
			Carbon tetrachloride	2019/07/04	NC		%	50
			Chlorobenzene	2019/07/04	NC		%	50
			Chlorodibromomethane	2019/07/04	NC		%	50
			Chloroethane	2019/07/04	NC		%	50
			Chloroform	2019/07/04	NC		%	50
			Chloromethane	2019/07/04	NC		%	50
			1,2-dibromoethane	2019/07/04	NC		%	50
			1,2-dichlorobenzene	2019/07/04	NC		%	50
			1,3-dichlorobenzene	2019/07/04	NC		%	50
			1,4-dichlorobenzene	2019/07/04	NC		%	50
			1,1-dichloroethane	2019/07/04	NC		%	50
			1,2-dichloroethane	2019/07/04	2.2		%	50
			1,1-dichloroethene	2019/07/04	NC		%	50
			cis-1,2-dichloroethene	2019/07/04	NC		%	50
			trans-1,2-dichloroethene	2019/07/04	NC		%	50
			Dichloromethane	2019/07/04	NC		%	50
			1,2-dichloropropane	2019/07/04	NC		%	50
			cis-1,3-dichloropropene	2019/07/04	NC		%	50
			trans-1,3-dichloropropene	2019/07/04	NC		%	50
			Methyl methacrylate	2019/07/04	NC		%	50
			Methyl-tert-butylether (MTBE)	2019/07/04	NC		%	50
			Styrene	2019/07/04	NC		%	50
			1,1,1,2-tetrachloroethane	2019/07/04	NC		%	50

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B950229
Report Date: 2019/07/04

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,1,2,2-tetrachloroethane	2019/07/04	NC		%	50
			Tetrachloroethene	2019/07/04	NC		%	50
			1,2,3-trichlorobenzene	2019/07/04	NC		%	50
			1,2,4-trichlorobenzene	2019/07/04	NC		%	50
			1,3,5-trichlorobenzene	2019/07/04	NC		%	50
			1,1,1-trichloroethane	2019/07/04	NC		%	50
			1,1,2-trichloroethane	2019/07/04	NC		%	50
			Trichloroethene	2019/07/04	NC		%	50
			Trichlorofluoromethane	2019/07/04	NC		%	50
			1,2,4-trimethylbenzene	2019/07/04	NC		%	50
			1,3,5-trimethylbenzene	2019/07/04	NC		%	50
			Vinyl chloride	2019/07/04	NC		%	50

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B950229
Report Date: 2019/07/04

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

NOTIFICATION LOG

No Reportable Regulation Exceedences Noted.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B950229
Report Date: 2019/07/04

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Location: CALGARY
Sampler Initials: MJ

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Dennis Ngondu, B.Sc., P.Chem., QP, Supervisor, Organics

Gita Pokhrel, Senior Analyst

Janet Gao, B.Sc., QP, Supervisor, Organics

Jingyuan Song, QP, Organics – Senior Analyst

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

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Edmonton: 9331-48 St. T6B 2R4. Toll Free (800) 386-7247
maxxam.ca

CHAIN OF CUSTODY RECORD

947
M 085257

Page 1 of 1

Invoice Information		Report Information (if differs from invoice)		Project Information		Turnaround Time (TAT) Required
Company:	Clifton	Company:		Quotation #:		☒ 5 - 7 Days Regular (Most analyses)
Contact Name:	Stephen D'Abadie	Contact Name:		P.O. #/ AFE#:		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address:	2222 30 Ave NE Calgary	Address:		Project #:	CG2430.1 - E37	Rush TAT (Surcharges will be applied): ☐ Same Day ☐ 2 Days ☐ 1 Day ☐ 3-4 Days
Phone:	403 263-2556	Phone:		Site Location:	Calgary	
Email:	Stephen_dabadie@clifton.ca	Email:		Site #:		Date Required:
Copies:	1	Copies:		Sampled By:	Matt. J	Rush Confirmation #:

Laboratory Use Only

	YES	NO	Cooler ID			
Seal Present		✓				
Seal Intact		✓	Temp	11	12	14
Cooling Media	✓					
	YES	NO	Cooler ID			
Seal Present						
Seal Intact			Temp			
Cooling Media						
	YES	NO	Cooler ID			
Seal Present						
Seal Intact			Temp			
Cooling Media						

Depot Reception

Analysis Requested

	Sample Identification	Depth (Unit)	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	# of containers	~~BTEX F1-F2~~ ☒ VOC	BTEX F1-F2	BTEX F1-F4	Routine Water	Regulated Metals ☐ Tot ☐ Diss	Mercury ☐ Total ☐ Dissolved	Salinity 4	Sieve (75 micron)	Texture (% Sand, Silt, Clay)	Basic Class II Landfill	PAH	HOLD - DO NOT ANALYZE
1	MJ 007		2019/06/24		Soil	5	X		X								X	
2	MJ 012		↓		↓	5	X		X								X	
3	MJ 020		↓		↓	4	X		X								X	
4	Dup 001		↓		↓	1			X									
5	Trip 001					2												
6																		
7																		
8																		
9																		
10																		

Please indicate Filtered, Preserved or Both (F, P, F/P)

Regulatory Criteria

- ☐ AT1
- ☐ CCME
- ☐ Drinking Water
- ☐ D50 (Drilling Waste)
- ☐ Saskatchewan
- ☐ Other:

Special Instructions

Have a wonderfull Day!

Relinquished by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)	Received by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)
M. Johnson	2019/06/24	17:46	Jordan Bach	2019/06/24	17:47

24-Jun-19 17:47
Linsay Sunderman
B950229
SBZ INS-0150

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Maxxam's standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms which are available for viewing at www.maxx

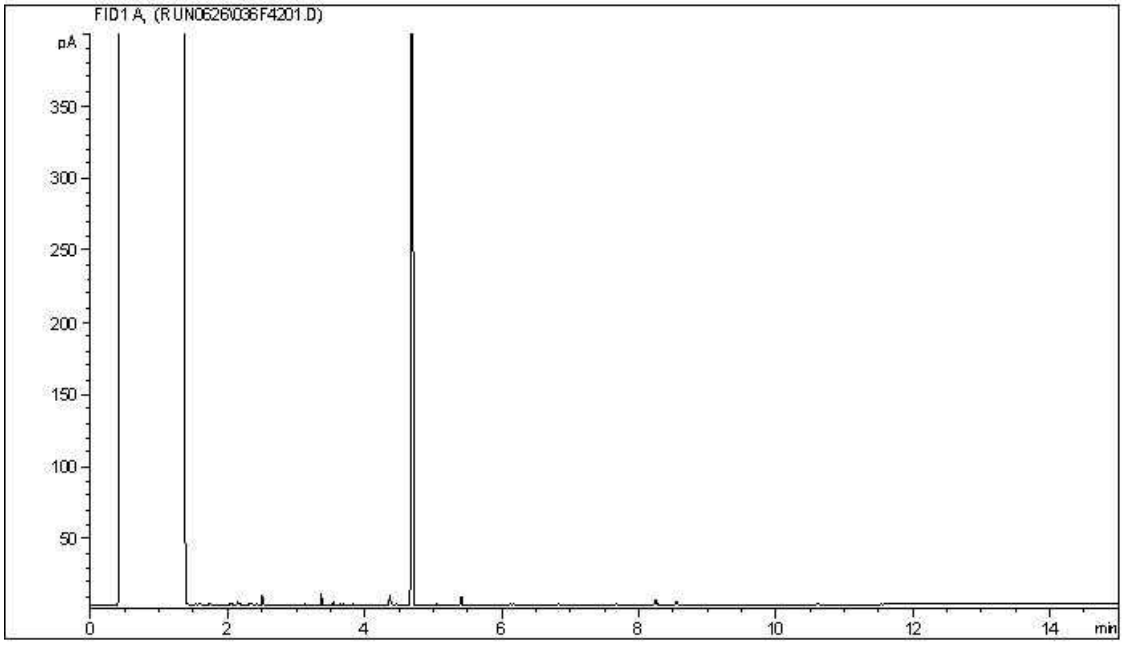
AB FCD-00331/7

BV Labs Job #: B950229
Report Date: 2019/07/04
BV Labs Sample: VY7310

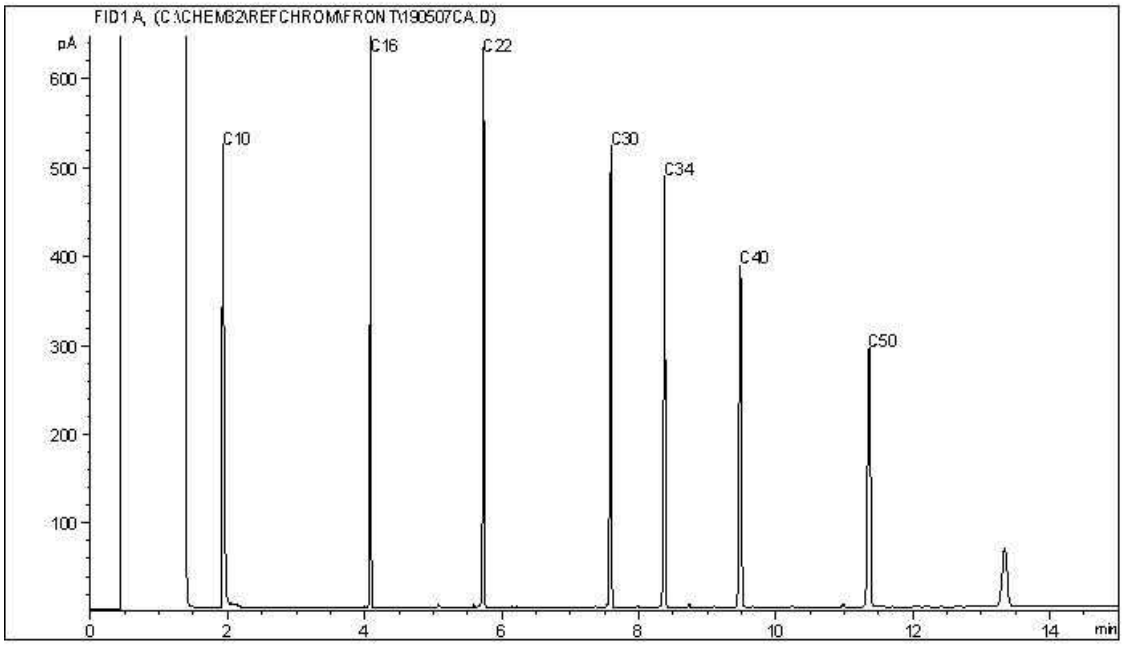
CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Reference: CALGARY
Client ID: MJ 007

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC12



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

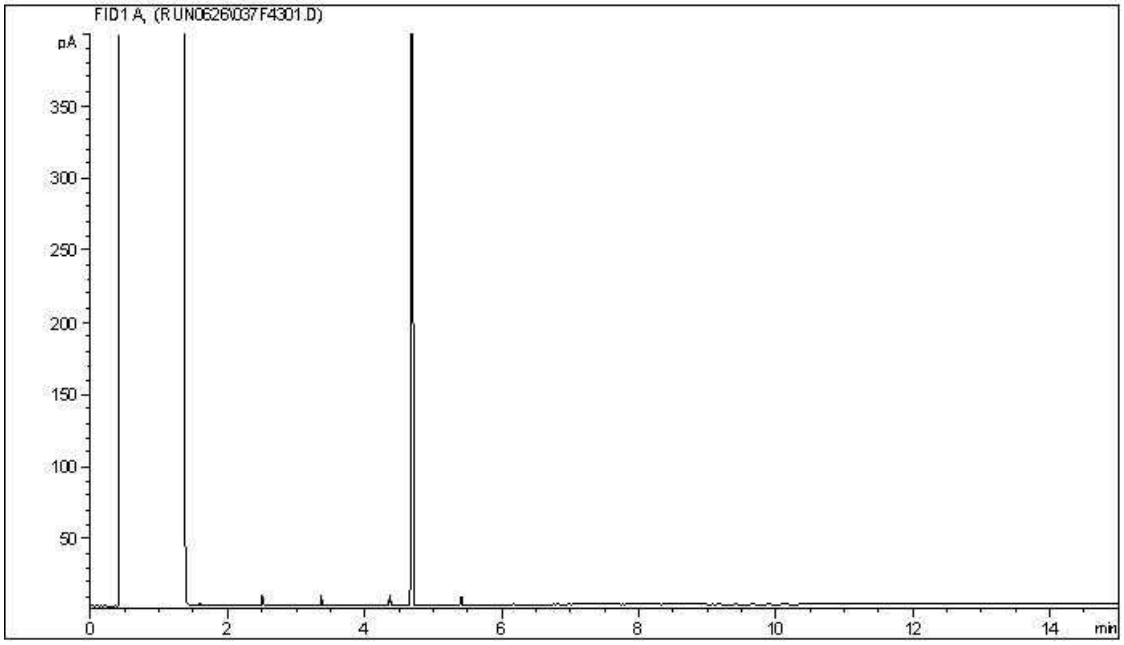
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B950229
Report Date: 2019/07/04
BV Labs Sample: VY7311

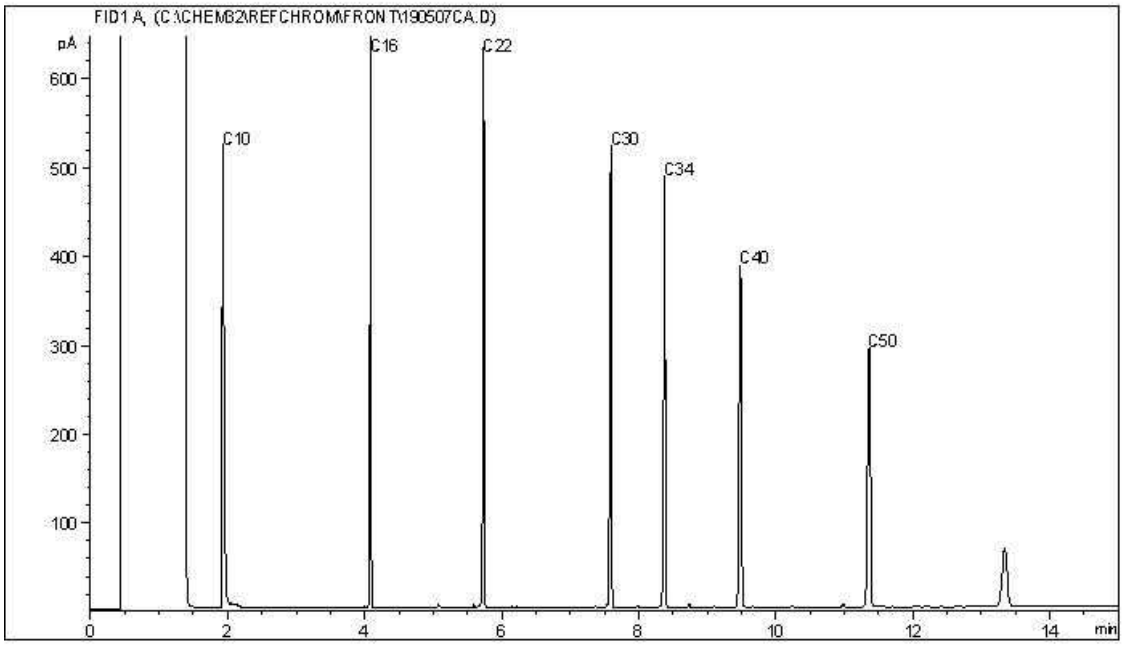
CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Reference: CALGARY
Client ID: MJ 012

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC12



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

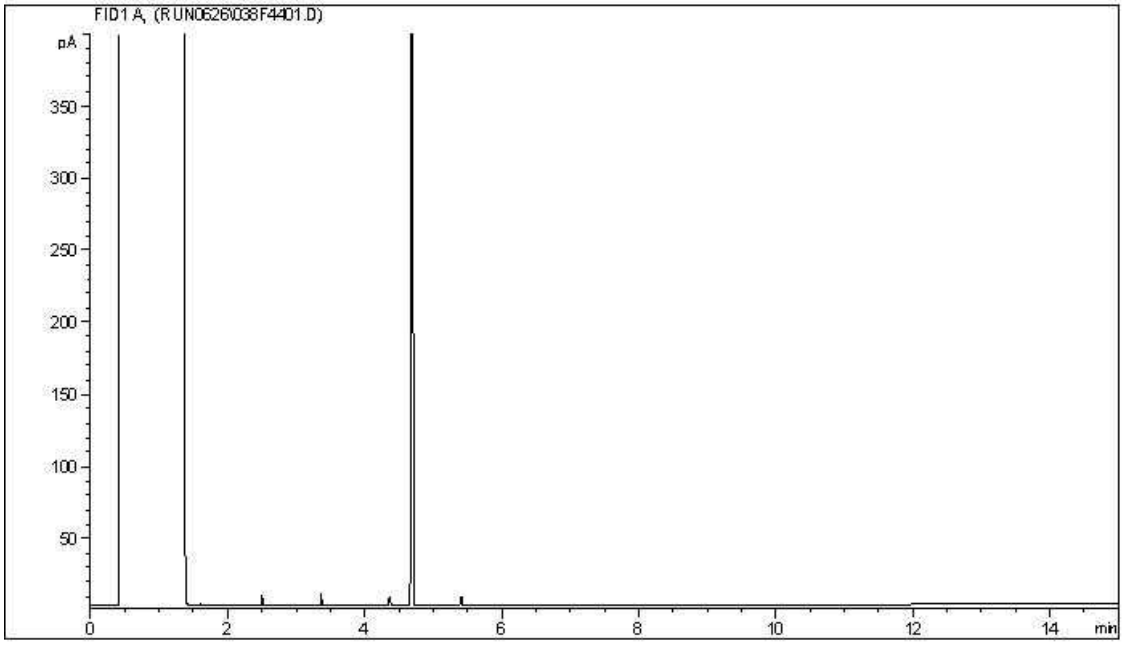
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B950229
Report Date: 2019/07/04
BV Labs Sample: VY7312

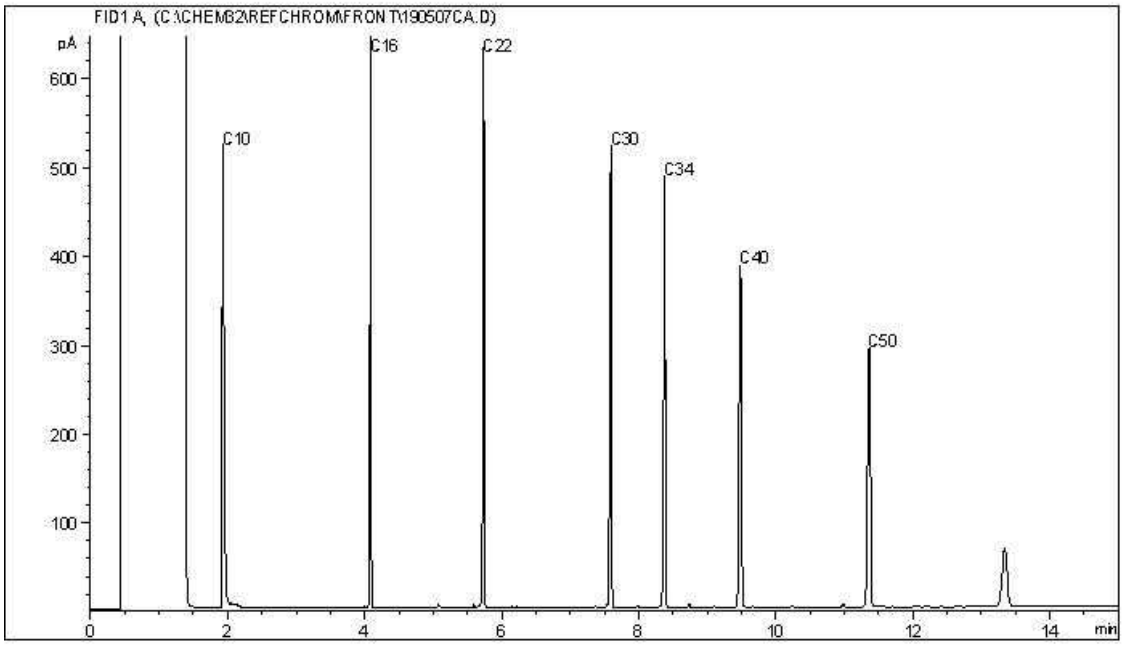
CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Reference: CALGARY
Client ID: MJ 020

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC12



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

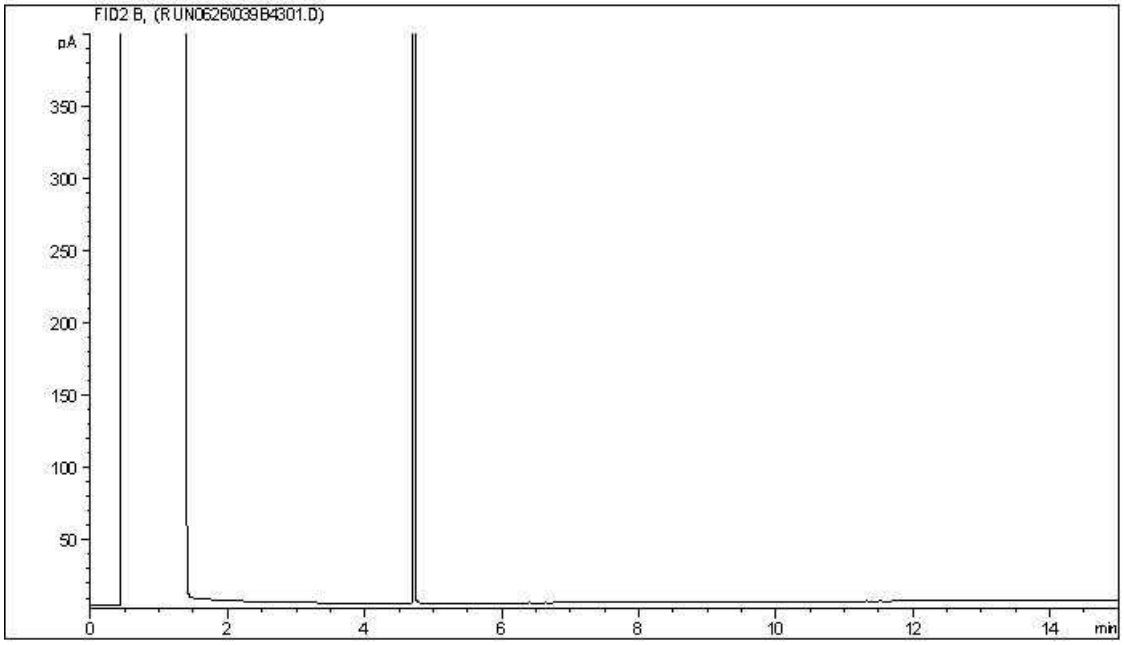
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B950229
Report Date: 2019/07/04
BV Labs Sample: VY7313

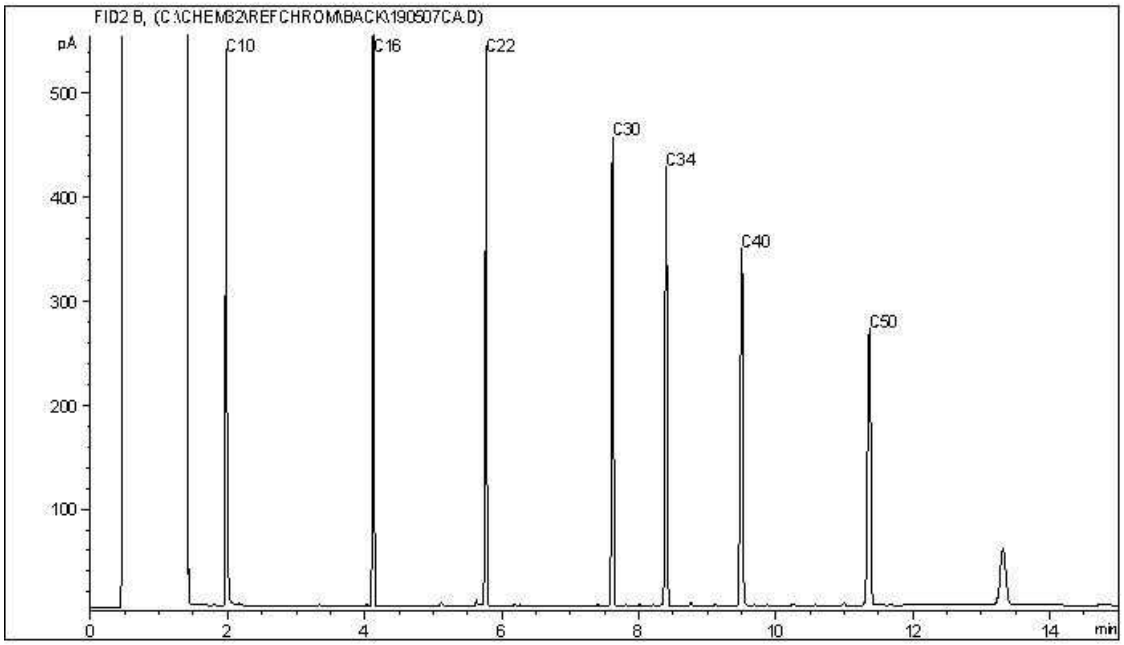
CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 - E37
Site Reference: CALGARY
Client ID: DUP 001

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC12



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: CA2430.1-E37
Site Location: CALGARY
Your C.O.C. #: M082682

Attention: Stephen D'Abadie

CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
CANADA T2E 7K9

Report Date: 2019/07/03
Report #: R2746701
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B950415
Received: 2019/06/25, 18:02

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS/FID (MeOH extract) (1)	3	N/A	2019/06/30	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX	3	N/A	2019/07/02		Auto Calc
CCME Hydrocarbons (F2-F4 in soil) (2)	3	2019/06/26	2019/06/28	AB SOP-00036	CCME PHC-CWS m
Moisture	3	N/A	2019/06/27	AB SOP-00002	CCME PHC-CWS m
Benzo[a]pyrene Equivalency	3	N/A	2019/06/28		Auto Calc
PAH in Soil by GC/MS	3	2019/06/28	2019/06/28	AB SOP-00036 / AB SOP-00003	EPA 3540C/8270E m
VOCs in Soil by HS GC/MS (Std List) (1)	3	N/A	2019/07/02	AB SOP-00056	EPA 5021a/8260d m

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total Trihalomethanes Calculation	1	N/A	2019/06/28		Auto Calc
VOCs in Water by HS GC/MS (Std List)	1	N/A	2019/06/27	AB SOP-00056	EPA 5021a/8260d m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
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Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

Your Project #: CA2430.1-E37
Site Location: CALGARY
Your C.O.C. #: M082682

Attention: Stephen D'Abadie

CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
CANADA T2E 7K9

Report Date: 2019/07/03
Report #: R2746701
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B950415
Received: 2019/06/25, 18:02

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.
(2) All CCME results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods September 2003. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

AUTHORIZED REPORT
RAPPORT AUTORISÉ

Bureau Veritas Laboratories
03 Jul 2019 11:22:57

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Linsay Sunderman, Key Account Specialist
Email: Lsunderman@bvlabs.com
Phone# (403)735-2237 Ext:2237
==========
This report has been generated and distributed using a secure automated process.
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Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B950415
Report Date: 2019/07/03

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		VY8277	VY8277	VY8278	VY8279		
Sampling Date		2019/06/25	2019/06/25	2019/06/25	2019/06/25		
COC Number		M082682	M082682	M082682	M082682		
	UNITS	MJ 032	MJ 032 Lab-Dup	MJ 038	MJ 041	RDL	QC Batch
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	59	N/A	<10	<10	10	9483333
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	N/A	<50	<50	50	9483333
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	N/A	<50	<50	50	9483333
Reached Baseline at C50	mg/kg	Yes	N/A	Yes	Yes	N/A	9483333
Physical Properties							
Moisture	%	14	N/A	18	21	0.30	9483987
Volatiles							
Xylenes (Total)	mg/kg	10	N/A	0.059	<0.045	0.045	9483431
F1 (C6-C10) - BTEX	mg/kg	85	N/A	<10	<10	10	9483431
Field Preserved Volatiles							
Benzene	mg/kg	0.25	0.26	0.73	0.043	0.0050	9486344
Toluene	mg/kg	2.2	2.3	<0.050	<0.050	0.050	9486344
Ethylbenzene	mg/kg	0.91	0.99	<0.010	<0.010	0.010	9486344
m & p-Xylene	mg/kg	7.3	7.8	<0.040	<0.040	0.040	9486344
o-Xylene	mg/kg	3.1	3.3	0.059	0.031	0.020	9486344
F1 (C6-C10)	mg/kg	99	100	<10	<10	10	9486344
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	96	100	99	99	N/A	9486344
4-Bromofluorobenzene (sur.)	%	107	109	97	104	N/A	9486344
D10-o-Xylene (sur.)	%	96	100	108	93	N/A	9486344
D4-1,2-Dichloroethane (sur.)	%	118	109	103	108	N/A	9486344
O-TERPHENYL (sur.)	%	107	N/A	104	101	N/A	9483333

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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BV Labs Job #: B950415
Report Date: 2019/07/03

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		VY8277	VY8278	VY8279		
Sampling Date		2019/06/25	2019/06/25	2019/06/25		
COC Number		M082682	M082682	M082682		
	UNITS	**MJ 032**	**MJ 038**	**MJ 041**	**RDL**	**QC Batch**
Polycyclic Aromatics						
Acenaphthene	mg/kg	0.0081	<0.0050	<0.0050	0.0050	9483302
B[a]P TPE Total Potency Equivalents	mg/kg	<0.0071	<0.0071	<0.0071	0.0071	9483465
Acenaphthylene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483302
Acridine	mg/kg	<0.010	<0.010	<0.010	0.010	9483302
Anthracene	mg/kg	<0.0040	<0.0040	<0.0040	0.0040	9483302
Benzo(a)anthracene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483302
Benzo(b&j)fluoranthene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483302
Benzo(k)fluoranthene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483302
Benzo(g,h,i)perylene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483302
Benzo(c)phenanthrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483302
Benzo(a)pyrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483302
Benzo[e]pyrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483302
Chrysene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483302
Dibenz(a,h)anthracene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483302
Fluoranthene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483302
Fluorene	mg/kg	0.0088 (1)	<0.0050	<0.0050	0.0050	9483302
Indeno(1,2,3-cd)pyrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483302
1-Methylnaphthalene	mg/kg	0.66	<0.0050	<0.0050	0.0050	9483302
2-Methylnaphthalene	mg/kg	1.4	<0.0050	<0.0050	0.0050	9483302
Naphthalene	mg/kg	1.5	0.040	<0.0050	0.0050	9483302
Phenanthrene	mg/kg	0.023	<0.0050	<0.0050	0.0050	9483302
Perylene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9483302
Pyrene	mg/kg	0.0058	<0.0050	<0.0050	0.0050	9483302
Quinoline	mg/kg	<0.010	<0.010	<0.010	0.010	9483302
Surrogate Recovery (%)						
D10-ANTHRACENE (sur.)	%	101	94	89	N/A	9483302
D8-ACENAPHTHYLENE (sur.)	%	106	99	92	N/A	9483302
D8-NAPHTHALENE (sur.)	%	103	91	88	N/A	9483302
TERPHENYL-D14 (sur.)	%	110	99	93	N/A	9483302

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Qualifying ion outside of acceptance criteria. Results are tentatively identified and potentially biased high.

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BV Labs Job #: B950415
Report Date: 2019/07/03

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

VOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		VY8277	VY8277	VY8278	VY8279		
Sampling Date		2019/06/25	2019/06/25	2019/06/25	2019/06/25		
COC Number		M082682	M082682	M082682	M082682		
	UNITS	**MJ 032**	**MJ 032 Lab-Dup**	**MJ 038**	**MJ 041**	**RDL**	**QC Batch**
Field Preserved Volatiles							
Bromodichloromethane	mg/kg	<0.030	<0.030	<0.030	<0.030	0.030	9486343
Bromoform	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	9486343
Bromomethane	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9486343
Carbon tetrachloride	mg/kg	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9486343
Chlorobenzene	mg/kg	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	9486343
Chlorodibromomethane	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9486343
Chloroethane	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9486343
Chloroform	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	9486343
Chloromethane	mg/kg	<0.030	<0.030	<0.030	<0.030	0.030	9486343
1,2-dibromoethane	mg/kg	0.018 (1)	0.015	<0.0020	<0.0020	0.0020	9486343
1,2-dichlorobenzene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9486343
1,3-dichlorobenzene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9486343
1,4-dichlorobenzene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9486343
1,1-dichloroethane	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9486343
1,2-dichloroethane	mg/kg	0.080	0.071	0.040	0.0029	0.0020	9486343
1,1-dichloroethene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9486343
cis-1,2-dichloroethene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9486343
trans-1,2-dichloroethene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9486343
Dichloromethane	mg/kg	<0.030	<0.030	<0.030	<0.030	0.030	9486343
1,2-dichloropropane	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9486343
cis-1,3-dichloropropene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9486343
trans-1,3-dichloropropene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9486343
Methyl methacrylate	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	9486343
Methyl-tert-butylether (MTBE)	mg/kg	<0.030	<0.030	<0.030	<0.030	0.030	9486343
Styrene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9486343
1,1,1,2-tetrachloroethane	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	9486343
1,1,2,2-tetrachloroethane	mg/kg	0.52	0.47	<0.050	<0.050	0.050	9486343
Tetrachloroethene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	9486343
1,2,3-trichlorobenzene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	9486343
1,2,4-trichlorobenzene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	9486343

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
(1) Qualifying ion outside of acceptance criteria. Results are tentatively identified and potentially biased high.

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BV Labs Job #: B950415
Report Date: 2019/07/03

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

VOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		VY8277	VY8277	VY8278	VY8279		
Sampling Date		2019/06/25	2019/06/25	2019/06/25	2019/06/25		
COC Number		M082682	M082682	M082682	M082682		
	UNITS	**MJ 032**	**MJ 032 Lab-Dup**	**MJ 038**	**MJ 041**	**RDL**	**QC Batch**
1,3,5-trichlorobenzene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	9486343
1,1,1-trichloroethane	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9486343
1,1,2-trichloroethane	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9486343
Trichloroethene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	9486343
Trichlorofluoromethane	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9486343
1,2,4-trimethylbenzene	mg/kg	6.8	6.9	<0.50	<0.50	0.50	9486343
1,3,5-trimethylbenzene	mg/kg	2.6	2.7	<0.50	<0.50	0.50	9486343
Vinyl chloride	mg/kg	0.0010	0.00087	<0.00030	<0.00030	0.00030	9486343
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	94	94	96	93	N/A	9486343
4-Bromofluorobenzene (sur.)	%	117	116	98	99	N/A	9486343
D10-o-Xylene (sur.)	%	105	97	110	105	N/A	9486343
D4-1,2-Dichloroethane (sur.)	%	113	103	109	106	N/A	9486343

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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BV Labs Job #: B950415
Report Date: 2019/07/03

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		VY8280		
Sampling Date		2019/06/25		
COC Number		M082682		
	UNITS	**TRIP 002**	**RDL**	**QC Batch**
Volatiles				
Total Trihalomethanes	mg/L	<0.0013	0.0013	9483091
Benzene	mg/L	<0.00040	0.00040	9484633
Bromodichloromethane	mg/L	<0.00050	0.00050	9484633
Bromoform	mg/L	<0.00050	0.00050	9484633
Bromomethane	mg/L	<0.0020	0.0020	9484633
Carbon tetrachloride	mg/L	<0.00050	0.00050	9484633
Chlorobenzene	mg/L	<0.00050	0.00050	9484633
Chlorodibromomethane	mg/L	<0.0010	0.0010	9484633
Chloroethane	mg/L	<0.0010	0.0010	9484633
Chloroform	mg/L	<0.00050	0.00050	9484633
Chloromethane	mg/L	<0.0020	0.0020	9484633
1,2-dibromoethane	mg/L	<0.00020	0.00020	9484633
1,2-dichlorobenzene	mg/L	<0.00050	0.00050	9484633
1,3-dichlorobenzene	mg/L	<0.00050	0.00050	9484633
1,4-dichlorobenzene	mg/L	<0.00050	0.00050	9484633
1,1-dichloroethane	mg/L	<0.00050	0.00050	9484633
1,2-dichloroethane	mg/L	<0.00050	0.00050	9484633
1,1-dichloroethene	mg/L	<0.00050	0.00050	9484633
cis-1,2-dichloroethene	mg/L	<0.00050	0.00050	9484633
trans-1,2-dichloroethene	mg/L	<0.00050	0.00050	9484633
Dichloromethane	mg/L	<0.0020	0.0020	9484633
1,2-dichloropropane	mg/L	<0.00050	0.00050	9484633
cis-1,3-dichloropropene	mg/L	<0.00050	0.00050	9484633
trans-1,3-dichloropropene	mg/L	<0.00050	0.00050	9484633
Ethylbenzene	mg/L	<0.00040	0.00040	9484633
Methyl methacrylate	mg/L	<0.00050	0.00050	9484633
Methyl-tert-butylether (MTBE)	mg/L	<0.00050	0.00050	9484633
Styrene	mg/L	<0.00050	0.00050	9484633
1,1,1,2-tetrachloroethane	mg/L	<0.0010	0.0010	9484633
1,1,2,2-tetrachloroethane	mg/L	<0.0020	0.0020	9484633
Tetrachloroethene	mg/L	<0.00050	0.00050	9484633
Toluene	mg/L	<0.00040	0.00040	9484633
RDL = Reportable Detection Limit				

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CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		VY8280		
Sampling Date		2019/06/25		
COC Number		M082682		
	UNITS	**TRIP 002**	**RDL**	**QC Batch**
1,2,3-trichlorobenzene	mg/L	<0.0010	0.0010	9484633
1,2,4-trichlorobenzene	mg/L	<0.0010	0.0010	9484633
1,3,5-trichlorobenzene	mg/L	<0.00050	0.00050	9484633
1,1,1-trichloroethane	mg/L	<0.00050	0.00050	9484633
1,1,2-trichloroethane	mg/L	<0.00050	0.00050	9484633
Trichloroethene	mg/L	<0.00050	0.00050	9484633
Trichlorofluoromethane	mg/L	<0.00050	0.00050	9484633
1,2,4-trimethylbenzene	mg/L	<0.00050	0.00050	9484633
1,3,5-trimethylbenzene	mg/L	<0.00050	0.00050	9484633
Vinyl chloride	mg/L	<0.00050	0.00050	9484633
Xylenes (Total)	mg/L	<0.00080	0.00080	9484633
m & p-Xylene	mg/L	<0.00080	0.00080	9484633
o-Xylene	mg/L	<0.00040	0.00040	9484633
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	102	N/A	9484633
4-Bromofluorobenzene (sur.)	%	94	N/A	9484633
D4-1,2-Dichloroethane (sur.)	%	110	N/A	9484633

RDL = Reportable Detection Limit
N/A = Not Applicable

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Report Date: 2019/07/03

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	16.0°C

Results relate only to the items tested.

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CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9483302	NK3	Matrix Spike	D10-ANTHRACENE (sur.)	2019/06/27		101	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/06/27		116	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/06/27		105	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/06/27		118	%	50 - 130
			Acenaphthene	2019/06/27		108	%	50 - 130
			Acenaphthylene	2019/06/27		108	%	50 - 130
			Acridine	2019/06/27		87	%	50 - 130
			Anthracene	2019/06/27		106	%	50 - 130
			Benzo(a)anthracene	2019/06/27		127	%	50 - 130
			Benzo(b&j)fluoranthene	2019/06/27		90	%	50 - 130
			Benzo(k)fluoranthene	2019/06/27		125	%	50 - 130
			Benzo(g,h,i)perylene	2019/06/27		102	%	50 - 130
			Benzo(c)phenanthrene	2019/06/27		124	%	50 - 130
			Benzo(a)pyrene	2019/06/27		107	%	50 - 130
			Benzo[e]pyrene	2019/06/27		107	%	50 - 130
			Chrysene	2019/06/27		116	%	50 - 130
			Dibenz(a,h)anthracene	2019/06/27		115	%	50 - 130
			Fluoranthene	2019/06/27		102	%	50 - 130
			Fluorene	2019/06/27		108	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/06/27		109	%	50 - 130
			1-Methylnaphthalene	2019/06/27		108	%	50 - 130
			2-Methylnaphthalene	2019/06/27		106	%	50 - 130
			Naphthalene	2019/06/27		99	%	50 - 130
			Phenanthrene	2019/06/27		103	%	50 - 130
			Perylene	2019/06/27		108	%	50 - 130
			Pyrene	2019/06/27		102	%	50 - 130
			Quinoline	2019/06/27		97	%	50 - 130
9483302	NK3	Spiked Blank	D10-ANTHRACENE (sur.)	2019/06/27		104	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/06/27		118	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/06/27		108	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/06/27		109	%	50 - 130
			Acenaphthene	2019/06/27		107	%	50 - 130
			Acenaphthylene	2019/06/27		108	%	50 - 130
			Acridine	2019/06/27		87	%	50 - 130
			Anthracene	2019/06/27		107	%	50 - 130
			Benzo(a)anthracene	2019/06/27		115	%	50 - 130
			Benzo(b&j)fluoranthene	2019/06/27		85	%	50 - 130
			Benzo(k)fluoranthene	2019/06/27		122	%	50 - 130
			Benzo(g,h,i)perylene	2019/06/27		107	%	50 - 130
			Benzo(c)phenanthrene	2019/06/27		116	%	50 - 130
			Benzo(a)pyrene	2019/06/27		107	%	50 - 130
			Benzo[e]pyrene	2019/06/27		109	%	50 - 130
			Chrysene	2019/06/27		109	%	50 - 130
			Dibenz(a,h)anthracene	2019/06/27		109	%	50 - 130
			Fluoranthene	2019/06/27		102	%	50 - 130
			Fluorene	2019/06/27		108	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/06/27		110	%	50 - 130
			1-Methylnaphthalene	2019/06/27		109	%	50 - 130
			2-Methylnaphthalene	2019/06/27		106	%	50 - 130
			Naphthalene	2019/06/27		100	%	50 - 130
			Phenanthrene	2019/06/27		104	%	50 - 130
			Perylene	2019/06/27		111	%	50 - 130
			Pyrene	2019/06/27		103	%	50 - 130

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CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Quinoline	2019/06/27		97	%	50 - 130
9483302	NK3	Method Blank	D10-ANTHRACENE (sur.)	2019/06/27		107	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/06/27		120	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/06/27		110	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/06/27		115	%	50 - 130
			Acenaphthene	2019/06/27	<0.0050		mg/kg	
			Acenaphthylene	2019/06/27	<0.0050		mg/kg	
			Acridine	2019/06/27	<0.010		mg/kg	
			Anthracene	2019/06/27	<0.0040		mg/kg	
			Benzo(a)anthracene	2019/06/27	<0.0050		mg/kg	
			Benzo(b&j)fluoranthene	2019/06/27	<0.0050		mg/kg	
			Benzo(k)fluoranthene	2019/06/27	<0.0050		mg/kg	
			Benzo(g,h,i)perylene	2019/06/27	<0.0050		mg/kg	
			Benzo(c)phenanthrene	2019/06/27	<0.0050		mg/kg	
			Benzo(a)pyrene	2019/06/27	<0.0050		mg/kg	
			Benzo[e]pyrene	2019/06/27	<0.0050		mg/kg	
			Chrysene	2019/06/27	<0.0050		mg/kg	
			Dibenz(a,h)anthracene	2019/06/27	<0.0050		mg/kg	
			Fluoranthene	2019/06/27	<0.0050		mg/kg	
			Fluorene	2019/06/27	<0.0050		mg/kg	
			Indeno(1,2,3-cd)pyrene	2019/06/27	<0.0050		mg/kg	
			1-Methylnaphthalene	2019/06/27	<0.0050		mg/kg	
			2-Methylnaphthalene	2019/06/27	<0.0050		mg/kg	
			Naphthalene	2019/06/27	<0.0050		mg/kg	
			Phenanthrene	2019/06/27	<0.0050		mg/kg	
			Perylene	2019/06/27	<0.0050		mg/kg	
			Pyrene	2019/06/27	<0.0050		mg/kg	
			Quinoline	2019/06/27	<0.010		mg/kg	
9483302	NK3	RPD	Acenaphthene	2019/06/27	NC		%	50
			Acenaphthylene	2019/06/27	NC		%	50
			Acridine	2019/06/27	NC		%	50
			Anthracene	2019/06/27	NC		%	50
			Benzo(a)anthracene	2019/06/27	NC		%	50
			Benzo(b&j)fluoranthene	2019/06/27	NC		%	50
			Benzo(k)fluoranthene	2019/06/27	NC		%	50
			Benzo(g,h,i)perylene	2019/06/27	NC		%	50
			Benzo(c)phenanthrene	2019/06/27	NC		%	50
			Benzo(a)pyrene	2019/06/27	NC		%	50
			Benzo[e]pyrene	2019/06/27	NC		%	50
			Chrysene	2019/06/27	NC		%	50
			Dibenz(a,h)anthracene	2019/06/27	NC		%	50
			Fluoranthene	2019/06/27	NC		%	50
			Fluorene	2019/06/27	NC		%	50
			Indeno(1,2,3-cd)pyrene	2019/06/27	NC		%	50
			1-Methylnaphthalene	2019/06/27	NC		%	50
			2-Methylnaphthalene	2019/06/27	NC		%	50
			Naphthalene	2019/06/27	NC		%	50
			Phenanthrene	2019/06/27	NC		%	50
			Perylene	2019/06/27	NC		%	50
			Pyrene	2019/06/27	NC		%	50
			Quinoline	2019/06/27	NC		%	50
9483333	LSH	Matrix Spike	O-TERPHENYL (sur.)	2019/06/28		78	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/06/28		109	%	60 - 140

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B950415
Report Date: 2019/07/03

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			F3 (C16-C34 Hydrocarbons)	2019/06/28		116	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2019/06/28		105	%	60 - 140
9483333	LSH	Spiked Blank	O-TERPHENYL (sur.)	2019/06/28		81	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/06/28		108	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2019/06/28		113	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2019/06/28		100	%	60 - 140
9483333	LSH	Method Blank	O-TERPHENYL (sur.)	2019/06/28		112	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/06/28	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2019/06/28	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2019/06/28	<50		mg/kg	
9483333	LSH	RPD	F2 (C10-C16 Hydrocarbons)	2019/06/28	NC		%	40
			F3 (C16-C34 Hydrocarbons)	2019/06/28	4.7		%	40
			F4 (C34-C50 Hydrocarbons)	2019/06/28	4.5		%	40
9483987	SAY	Method Blank	Moisture	2019/06/27	<0.30		%	
9483987	SAY	RPD	Moisture	2019/06/27	2.2		%	20
9484633	MZ	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/06/27		102	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/27		94	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/27		105	%	50 - 140
			Benzene	2019/06/27		103	%	50 - 140
			Bromodichloromethane	2019/06/27		114	%	50 - 140
			Bromoform	2019/06/27		115	%	50 - 140
			Bromomethane	2019/06/27		97	%	50 - 140
			Carbon tetrachloride	2019/06/27		111	%	50 - 140
			Chlorobenzene	2019/06/27		104	%	50 - 140
			Chlorodibromomethane	2019/06/27		112	%	50 - 140
			Chloroethane	2019/06/27		97	%	50 - 140
			Chloroform	2019/06/27		109	%	50 - 140
			Chloromethane	2019/06/27		90	%	50 - 140
			1,2-dibromoethane	2019/06/27		110	%	50 - 140
			1,2-dichlorobenzene	2019/06/27		102	%	50 - 140
			1,3-dichlorobenzene	2019/06/27		103	%	50 - 140
			1,4-dichlorobenzene	2019/06/27		101	%	50 - 140
			1,1-dichloroethane	2019/06/27		104	%	50 - 140
			1,2-dichloroethane	2019/06/27		117	%	50 - 140
			1,1-dichloroethene	2019/06/27		99	%	50 - 140
			cis-1,2-dichloroethene	2019/06/27		108	%	50 - 140
			trans-1,2-dichloroethene	2019/06/27		104	%	50 - 140
			Dichloromethane	2019/06/27		98	%	50 - 140
			1,2-dichloropropane	2019/06/27		104	%	50 - 140
			cis-1,3-dichloropropene	2019/06/27		122	%	50 - 140
			trans-1,3-dichloropropene	2019/06/27		127	%	50 - 140
			Ethylbenzene	2019/06/27		103	%	50 - 140
			Methyl methacrylate	2019/06/27		117	%	50 - 140
			Methyl-tert-butylether (MTBE)	2019/06/27		106	%	50 - 140
			Styrene	2019/06/27		107	%	50 - 140
			1,1,1,2-tetrachloroethane	2019/06/27		106	%	50 - 140
			1,1,2,2-tetrachloroethane	2019/06/27		107	%	50 - 140
			Tetrachloroethene	2019/06/27		100	%	50 - 140
			Toluene	2019/06/27		99	%	50 - 140
			1,2,3-trichlorobenzene	2019/06/27		101	%	50 - 140
			1,2,4-trichlorobenzene	2019/06/27		101	%	50 - 140
			1,3,5-trichlorobenzene	2019/06/27		100	%	50 - 140
			1,1,1-trichloroethane	2019/06/27		110	%	50 - 140

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B950415
Report Date: 2019/07/03

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,1,2-trichloroethane	2019/06/27		111	%	50 - 140
			Trichloroethene	2019/06/27		109	%	50 - 140
			Trichlorofluoromethane	2019/06/27		103	%	50 - 140
			1,2,4-trimethylbenzene	2019/06/27		97	%	50 - 140
			1,3,5-trimethylbenzene	2019/06/27		97	%	50 - 140
			Vinyl chloride	2019/06/27		92	%	50 - 140
			m & p-Xylene	2019/06/27		102	%	50 - 140
			o-Xylene	2019/06/27		101	%	50 - 140
9484633	MZ	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/06/27		101	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/27		96	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/27		100	%	50 - 140
			Benzene	2019/06/27		98	%	60 - 130
			Bromodichloromethane	2019/06/27		106	%	60 - 130
			Bromoform	2019/06/27		107	%	60 - 130
			Bromomethane	2019/06/27		99	%	60 - 130
			Carbon tetrachloride	2019/06/27		107	%	60 - 130
			Chlorobenzene	2019/06/27		100	%	60 - 130
			Chlorodibromomethane	2019/06/27		104	%	60 - 130
			Chloroethane	2019/06/27		95	%	60 - 130
			Chloroform	2019/06/27		103	%	60 - 130
			Chloromethane	2019/06/27		90	%	60 - 130
			1,2-dibromoethane	2019/06/27		101	%	60 - 130
			1,2-dichlorobenzene	2019/06/27		98	%	60 - 130
			1,3-dichlorobenzene	2019/06/27		98	%	60 - 130
			1,4-dichlorobenzene	2019/06/27		95	%	60 - 130
			1,1-dichloroethane	2019/06/27		99	%	60 - 130
			1,2-dichloroethane	2019/06/27		105	%	60 - 130
			1,1-dichloroethene	2019/06/27		97	%	60 - 130
			cis-1,2-dichloroethene	2019/06/27		103	%	60 - 130
			trans-1,2-dichloroethene	2019/06/27		99	%	60 - 130
			Dichloromethane	2019/06/27		93	%	60 - 130
			1,2-dichloropropane	2019/06/27		98	%	60 - 130
			cis-1,3-dichloropropene	2019/06/27		116	%	60 - 130
			trans-1,3-dichloropropene	2019/06/27		121	%	60 - 130
			Ethylbenzene	2019/06/27		100	%	60 - 130
			Methyl methacrylate	2019/06/27		106	%	60 - 130
			Methyl-tert-butylether (MTBE)	2019/06/27		100	%	60 - 130
			Styrene	2019/06/27		104	%	60 - 130
			1,1,1,2-tetrachloroethane	2019/06/27		101	%	60 - 130
			1,1,2,2-tetrachloroethane	2019/06/27		98	%	60 - 130
			Tetrachloroethene	2019/06/27		100	%	60 - 130
			Toluene	2019/06/27		97	%	60 - 130
			1,2,3-trichlorobenzene	2019/06/27		97	%	60 - 130
			1,2,4-trichlorobenzene	2019/06/27		97	%	60 - 130
			1,3,5-trichlorobenzene	2019/06/27		98	%	60 - 130
			1,1,1-trichloroethane	2019/06/27		106	%	60 - 130
			1,1,2-trichloroethane	2019/06/27		104	%	60 - 130
			Trichloroethene	2019/06/27		106	%	60 - 130
			Trichlorofluoromethane	2019/06/27		100	%	60 - 130
			1,2,4-trimethylbenzene	2019/06/27		94	%	60 - 130
			1,3,5-trimethylbenzene	2019/06/27		95	%	60 - 130
			Vinyl chloride	2019/06/27		93	%	60 - 130
			m & p-Xylene	2019/06/27		101	%	60 - 130

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B950415
Report Date: 2019/07/03

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			o-Xylene	2019/06/27		98	%	60 - 130
9484633	MZ	Method Blank	1,4-Difluorobenzene (sur.)	2019/06/27		102	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/27		93	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/27		111	%	50 - 140
			Benzene	2019/06/27	<0.00040		mg/L	
			Bromodichloromethane	2019/06/27	<0.00050		mg/L	
			Bromoform	2019/06/27	<0.00050		mg/L	
			Bromomethane	2019/06/27	<0.0020		mg/L	
			Carbon tetrachloride	2019/06/27	<0.00050		mg/L	
			Chlorobenzene	2019/06/27	<0.00050		mg/L	
			Chlorodibromomethane	2019/06/27	<0.0010		mg/L	
			Chloroethane	2019/06/27	<0.0010		mg/L	
			Chloroform	2019/06/27	<0.00050		mg/L	
			Chloromethane	2019/06/27	<0.0020		mg/L	
			1,2-dibromoethane	2019/06/27	<0.00020		mg/L	
			1,2-dichlorobenzene	2019/06/27	<0.00050		mg/L	
			1,3-dichlorobenzene	2019/06/27	<0.00050		mg/L	
			1,4-dichlorobenzene	2019/06/27	<0.00050		mg/L	
			1,1-dichloroethane	2019/06/27	<0.00050		mg/L	
			1,2-dichloroethane	2019/06/27	<0.00050		mg/L	
			1,1-dichloroethene	2019/06/27	<0.00050		mg/L	
			cis-1,2-dichloroethene	2019/06/27	<0.00050		mg/L	
			trans-1,2-dichloroethene	2019/06/27	<0.00050		mg/L	
			Dichloromethane	2019/06/27	<0.0020		mg/L	
			1,2-dichloropropane	2019/06/27	<0.00050		mg/L	
			cis-1,3-dichloropropene	2019/06/27	<0.00050		mg/L	
			trans-1,3-dichloropropene	2019/06/27	<0.00050		mg/L	
			Ethylbenzene	2019/06/27	<0.00040		mg/L	
			Methyl methacrylate	2019/06/27	<0.00050		mg/L	
			Methyl-tert-butylether (MTBE)	2019/06/27	<0.00050		mg/L	
			Styrene	2019/06/27	<0.00050		mg/L	
			1,1,1,2-tetrachloroethane	2019/06/27	<0.0010		mg/L	
			1,1,2,2-tetrachloroethane	2019/06/27	<0.0020		mg/L	
			Tetrachloroethene	2019/06/27	<0.00050		mg/L	
			Toluene	2019/06/27	<0.00040		mg/L	
			1,2,3-trichlorobenzene	2019/06/27	<0.0010		mg/L	
			1,2,4-trichlorobenzene	2019/06/27	<0.0010		mg/L	
			1,3,5-trichlorobenzene	2019/06/27	<0.00050		mg/L	
			1,1,1-trichloroethane	2019/06/27	<0.00050		mg/L	
			1,1,2-trichloroethane	2019/06/27	<0.00050		mg/L	
			Trichloroethene	2019/06/27	<0.00050		mg/L	
			Trichlorofluoromethane	2019/06/27	<0.00050		mg/L	
			1,2,4-trimethylbenzene	2019/06/27	<0.00050		mg/L	
			1,3,5-trimethylbenzene	2019/06/27	<0.00050		mg/L	
			Vinyl chloride	2019/06/27	<0.00050		mg/L	
			Xylenes (Total)	2019/06/27	<0.00080		mg/L	
			m & p-Xylene	2019/06/27	<0.00080		mg/L	
			o-Xylene	2019/06/27	<0.00040		mg/L	
9484633	MZ	RPD	Benzene	2019/06/27	NC		%	30
			Bromodichloromethane	2019/06/27	NC		%	30
			Bromoform	2019/06/27	NC		%	30
			Bromomethane	2019/06/27	NC		%	30
			Carbon tetrachloride	2019/06/27	NC		%	30

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B950415
Report Date: 2019/07/03

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Chlorobenzene	2019/06/27	NC		%	30
			Chlorodibromomethane	2019/06/27	NC		%	30
			Chloroethane	2019/06/27	NC		%	30
			Chloroform	2019/06/27	NC		%	30
			Chloromethane	2019/06/27	NC		%	30
			1,2-dibromoethane	2019/06/27	NC		%	30
			1,2-dichlorobenzene	2019/06/27	NC		%	30
			1,3-dichlorobenzene	2019/06/27	NC		%	30
			1,4-dichlorobenzene	2019/06/27	NC		%	30
			1,1-dichloroethane	2019/06/27	NC		%	30
			1,2-dichloroethane	2019/06/27	NC		%	30
			1,1-dichloroethene	2019/06/27	NC		%	30
			cis-1,2-dichloroethene	2019/06/27	NC		%	30
			trans-1,2-dichloroethene	2019/06/27	NC		%	30
			Dichloromethane	2019/06/27	NC		%	30
			1,2-dichloropropane	2019/06/27	NC		%	30
			cis-1,3-dichloropropene	2019/06/27	NC		%	30
			trans-1,3-dichloropropene	2019/06/27	NC		%	30
			Ethylbenzene	2019/06/27	NC		%	30
			Methyl methacrylate	2019/06/27	NC		%	30
			Methyl-tert-butylether (MTBE)	2019/06/27	NC		%	30
			Styrene	2019/06/27	NC		%	30
			1,1,1,2-tetrachloroethane	2019/06/27	NC		%	30
			1,1,2,2-tetrachloroethane	2019/06/27	NC		%	30
			Tetrachloroethene	2019/06/27	4.7		%	30
			Toluene	2019/06/27	NC		%	30
			1,2,3-trichlorobenzene	2019/06/27	NC		%	30
			1,2,4-trichlorobenzene	2019/06/27	NC		%	30
			1,3,5-trichlorobenzene	2019/06/27	NC		%	30
			1,1,1-trichloroethane	2019/06/27	NC		%	30
			1,1,2-trichloroethane	2019/06/27	NC		%	30
			Trichloroethene	2019/06/27	NC		%	30
			Trichlorofluoromethane	2019/06/27	NC		%	30
			1,2,4-trimethylbenzene	2019/06/27	NC		%	30
			1,3,5-trimethylbenzene	2019/06/27	NC		%	30
			Vinyl chloride	2019/06/27	NC		%	30
			Xylenes (Total)	2019/06/27	NC		%	30
			m & p-Xylene	2019/06/27	NC		%	30
			o-Xylene	2019/06/27	NC		%	30
9486343	QW1	Matrix Spike [VY8277-02]	1,4-Difluorobenzene (sur.)	2019/07/02		101	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/02		132	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/02		90	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/02		120	%	50 - 140
			Bromodichloromethane	2019/07/02		133	%	50 - 140
			Bromoform	2019/07/02		141 (1)	%	50 - 140
			Bromomethane	2019/07/02		80	%	50 - 140
			Carbon tetrachloride	2019/07/02		91	%	50 - 140
			Chlorobenzene	2019/07/02		80	%	50 - 140
			Chlorodibromomethane	2019/07/02		119	%	50 - 140
			Chloroethane	2019/07/02		75	%	50 - 140
			Chloroform	2019/07/02		99	%	50 - 140
			Chloromethane	2019/07/02		87	%	50 - 140
			1,2-dibromoethane	2019/07/02		105	%	50 - 140

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B950415
Report Date: 2019/07/03

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,2-dichlorobenzene	2019/07/02		111	%	50 - 140
			1,3-dichlorobenzene	2019/07/02		106	%	50 - 140
			1,4-dichlorobenzene	2019/07/02		111	%	50 - 140
			1,1-dichloroethane	2019/07/02		101	%	50 - 140
			1,2-dichloroethane	2019/07/02		125	%	50 - 140
			1,1-dichloroethene	2019/07/02		86	%	50 - 140
			cis-1,2-dichloroethene	2019/07/02		109	%	50 - 140
			trans-1,2-dichloroethene	2019/07/02		83	%	50 - 140
			Dichloromethane	2019/07/02		104	%	50 - 140
			1,2-dichloropropane	2019/07/02		121	%	50 - 140
			cis-1,3-dichloropropene	2019/07/02		83	%	50 - 140
			trans-1,3-dichloropropene	2019/07/02		87	%	50 - 140
			Methyl methacrylate	2019/07/02		148 (1)	%	50 - 140
			Methyl-tert-butylether (MTBE)	2019/07/02		104	%	50 - 140
			Styrene	2019/07/02		101	%	50 - 140
			1,1,1,2-tetrachloroethane	2019/07/02		95	%	50 - 140
			1,1,2,2-tetrachloroethane	2019/07/02		123	%	50 - 140
			Tetrachloroethene	2019/07/02		71	%	50 - 140
			1,2,3-trichlorobenzene	2019/07/02		111	%	50 - 140
			1,2,4-trichlorobenzene	2019/07/02		109	%	50 - 140
			1,3,5-trichlorobenzene	2019/07/02		104	%	50 - 140
			1,1,1-trichloroethane	2019/07/02		100	%	50 - 140
			1,1,2-trichloroethane	2019/07/02		138	%	50 - 140
			Trichloroethene	2019/07/02		103	%	50 - 140
			Trichlorofluoromethane	2019/07/02		82	%	50 - 140
			1,2,4-trimethylbenzene	2019/07/02		64	%	50 - 140
			1,3,5-trimethylbenzene	2019/07/02		75	%	50 - 140
			Vinyl chloride	2019/07/02		76	%	50 - 140
9486343	QW1	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/07/02		105	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/02		115	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/02		106	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/02		91	%	50 - 140
			Bromodichloromethane	2019/07/02		116	%	60 - 130
			Bromoform	2019/07/02		116	%	60 - 130
			Bromomethane	2019/07/02		78	%	60 - 130
			Carbon tetrachloride	2019/07/02		105	%	60 - 130
			Chlorobenzene	2019/07/02		92	%	60 - 130
			Chlorodibromomethane	2019/07/02		116	%	60 - 130
			Chloroethane	2019/07/02		117	%	60 - 130
			Chloroform	2019/07/02		93	%	60 - 130
			Chloromethane	2019/07/02		86	%	60 - 130
			1,2-dibromoethane	2019/07/02		96	%	60 - 130
			1,2-dichlorobenzene	2019/07/02		115	%	60 - 130
			1,3-dichlorobenzene	2019/07/02		109	%	60 - 130
			1,4-dichlorobenzene	2019/07/02		109	%	60 - 130
			1,1-dichloroethane	2019/07/02		99	%	60 - 130
			1,2-dichloroethane	2019/07/02		98	%	60 - 130
			1,1-dichloroethene	2019/07/02		101	%	60 - 130
			cis-1,2-dichloroethene	2019/07/02		100	%	60 - 130
			trans-1,2-dichloroethene	2019/07/02		89	%	60 - 130
			Dichloromethane	2019/07/02		90	%	60 - 130
			1,2-dichloropropane	2019/07/02		107	%	60 - 130
			cis-1,3-dichloropropene	2019/07/02		82	%	60 - 130

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BV Labs Job #: B950415
Report Date: 2019/07/03

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			trans-1,3-dichloropropene	2019/07/02		78	%	60 - 130
			Methyl methacrylate	2019/07/02		108	%	60 - 130
			Methyl-tert-butylether (MTBE)	2019/07/02		87	%	60 - 130
			Styrene	2019/07/02		110	%	60 - 130
			1,1,1,2-tetrachloroethane	2019/07/02		104	%	60 - 130
			1,1,2,2-tetrachloroethane	2019/07/02		106	%	60 - 130
			Tetrachloroethene	2019/07/02		99	%	60 - 130
			1,2,3-trichlorobenzene	2019/07/02		100	%	60 - 130
			1,2,4-trichlorobenzene	2019/07/02		100	%	60 - 130
			1,3,5-trichlorobenzene	2019/07/02		103	%	60 - 130
			1,1,1-trichloroethane	2019/07/02		110	%	60 - 130
			1,1,2-trichloroethane	2019/07/02		99	%	60 - 130
			Trichloroethene	2019/07/02		109	%	60 - 130
			Trichlorofluoromethane	2019/07/02		98	%	60 - 130
			1,2,4-trimethylbenzene	2019/07/02		115	%	60 - 130
			1,3,5-trimethylbenzene	2019/07/02		118	%	60 - 130
			Vinyl chloride	2019/07/02		85	%	60 - 130
9486343	QW1	Method Blank	1,4-Difluorobenzene (sur.)	2019/07/02		91	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/02		95	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/02		97	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/02		107	%	50 - 140
			Bromodichloromethane	2019/07/02	<0.030		mg/kg	
			Bromoform	2019/07/02	<0.050		mg/kg	
			Bromomethane	2019/07/02	<0.020		mg/kg	
			Carbon tetrachloride	2019/07/02	<0.00050		mg/kg	
			Chlorobenzene	2019/07/02	<0.0010		mg/kg	
			Chlorodibromomethane	2019/07/02	<0.020		mg/kg	
			Chloroethane	2019/07/02	<0.020		mg/kg	
			Chloroform	2019/07/02	<0.010		mg/kg	
			Chloromethane	2019/07/02	<0.030		mg/kg	
			1,2-dibromoethane	2019/07/02	<0.0020		mg/kg	
			1,2-dichlorobenzene	2019/07/02	<0.020		mg/kg	
			1,3-dichlorobenzene	2019/07/02	<0.020		mg/kg	
			1,4-dichlorobenzene	2019/07/02	<0.020		mg/kg	
			1,1-dichloroethane	2019/07/02	<0.020		mg/kg	
			1,2-dichloroethane	2019/07/02	<0.0020		mg/kg	
			1,1-dichloroethene	2019/07/02	<0.020		mg/kg	
			cis-1,2-dichloroethene	2019/07/02	<0.020		mg/kg	
			trans-1,2-dichloroethene	2019/07/02	<0.020		mg/kg	
			Dichloromethane	2019/07/02	<0.030		mg/kg	
			1,2-dichloropropane	2019/07/02	<0.020		mg/kg	
			cis-1,3-dichloropropene	2019/07/02	<0.020		mg/kg	
			trans-1,3-dichloropropene	2019/07/02	<0.020		mg/kg	
			Methyl methacrylate	2019/07/02	<0.040		mg/kg	
			Methyl-tert-butylether (MTBE)	2019/07/02	<0.030		mg/kg	
			Styrene	2019/07/02	<0.020		mg/kg	
			1,1,1,2-tetrachloroethane	2019/07/02	<0.050		mg/kg	
			1,1,2,2-tetrachloroethane	2019/07/02	<0.050		mg/kg	
			Tetrachloroethene	2019/07/02	<0.010		mg/kg	
			1,2,3-trichlorobenzene	2019/07/02	<0.040		mg/kg	
			1,2,4-trichlorobenzene	2019/07/02	<0.040		mg/kg	
			1,3,5-trichlorobenzene	2019/07/02	<0.040		mg/kg	
			1,1,1-trichloroethane	2019/07/02	<0.020		mg/kg	

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B950415
Report Date: 2019/07/03

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,1,2-trichloroethane	2019/07/02	<0.020		mg/kg	
			Trichloroethene	2019/07/02	<0.010		mg/kg	
			Trichlorofluoromethane	2019/07/02	<0.020		mg/kg	
			1,2,4-trimethylbenzene	2019/07/02	<0.50		mg/kg	
			1,3,5-trimethylbenzene	2019/07/02	<0.50		mg/kg	
			Vinyl chloride	2019/07/02	<0.00030		mg/kg	
9486343	QW1	RPD [VY8277-02]	Bromodichloromethane	2019/07/02	NC		%	50
			Bromoform	2019/07/02	NC		%	50
			Bromomethane	2019/07/02	NC		%	50
			Carbon tetrachloride	2019/07/02	NC		%	50
			Chlorobenzene	2019/07/02	NC		%	50
			Chlorodibromomethane	2019/07/02	NC		%	50
			Chloroethane	2019/07/02	NC		%	50
			Chloroform	2019/07/02	NC		%	50
			Chloromethane	2019/07/02	NC		%	50
			1,2-dibromoethane	2019/07/02	19		%	50
			1,2-dichlorobenzene	2019/07/02	NC		%	50
			1,3-dichlorobenzene	2019/07/02	NC		%	50
			1,4-dichlorobenzene	2019/07/02	NC		%	50
			1,1-dichloroethane	2019/07/02	NC		%	50
			1,2-dichloroethane	2019/07/02	11		%	50
			1,1-dichloroethene	2019/07/02	NC		%	50
			cis-1,2-dichloroethene	2019/07/02	NC		%	50
			trans-1,2-dichloroethene	2019/07/02	NC		%	50
			Dichloromethane	2019/07/02	NC		%	50
			1,2-dichloropropane	2019/07/02	NC		%	50
			cis-1,3-dichloropropene	2019/07/02	NC		%	50
			trans-1,3-dichloropropene	2019/07/02	NC		%	50
			Methyl methacrylate	2019/07/02	NC		%	50
			Methyl-tert-butylether (MTBE)	2019/07/02	NC		%	50
			Styrene	2019/07/02	NC		%	50
			1,1,1,2-tetrachloroethane	2019/07/02	NC		%	50
			1,1,2,2-tetrachloroethane	2019/07/02	12		%	50
			Tetrachloroethene	2019/07/02	NC		%	50
			1,2,3-trichlorobenzene	2019/07/02	NC		%	50
			1,2,4-trichlorobenzene	2019/07/02	NC		%	50
			1,3,5-trichlorobenzene	2019/07/02	NC		%	50
			1,1,1-trichloroethane	2019/07/02	NC		%	50
			1,1,2-trichloroethane	2019/07/02	NC		%	50
			Trichloroethene	2019/07/02	NC		%	50
			Trichlorofluoromethane	2019/07/02	NC		%	50
			1,2,4-trimethylbenzene	2019/07/02	1.8		%	50
			1,3,5-trimethylbenzene	2019/07/02	2.3		%	50
			Vinyl chloride	2019/07/02	14		%	50
9486344	MWB	Matrix Spike [VY8277-02]	1,4-Difluorobenzene (sur.)	2019/06/30		97	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/30		100	%	50 - 140
			D10-o-Xylene (sur.)	2019/06/30		103	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/30		107	%	50 - 140
			Benzene	2019/06/30		85	%	50 - 140
			Toluene	2019/06/30		85	%	50 - 140
			Ethylbenzene	2019/06/30		83	%	50 - 140
			m & p-Xylene	2019/06/30		86	%	50 - 140
			o-Xylene	2019/06/30		92	%	50 - 140

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B950415
Report Date: 2019/07/03

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			F1 (C6-C10)	2019/06/30		104	%	60 - 140
9486344	MWB	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/06/30		99	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/30		101	%	50 - 140
			D10-o-Xylene (sur.)	2019/06/30		95	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/30		108	%	50 - 140
			Benzene	2019/06/30		83	%	60 - 130
			Toluene	2019/06/30		81	%	60 - 130
			Ethylbenzene	2019/06/30		81	%	60 - 130
			m & p-Xylene	2019/06/30		83	%	60 - 130
			o-Xylene	2019/06/30		86	%	60 - 130
			F1 (C6-C10)	2019/06/30		88	%	60 - 140
9486344	MWB	Method Blank	1,4-Difluorobenzene (sur.)	2019/06/30		101	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/30		101	%	50 - 140
			D10-o-Xylene (sur.)	2019/06/30		96	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/30		102	%	50 - 140
			Benzene	2019/06/30	<0.0050		mg/kg	
			Toluene	2019/06/30	<0.050		mg/kg	
			Ethylbenzene	2019/06/30	<0.010		mg/kg	
			m & p-Xylene	2019/06/30	<0.040		mg/kg	
			o-Xylene	2019/06/30	<0.020		mg/kg	
			F1 (C6-C10)	2019/06/30	<10		mg/kg	
9486344	MWB	RPD [VY8277-02]	Benzene	2019/06/30	3.9		%	50
			Toluene	2019/06/30	3.9		%	50
			Ethylbenzene	2019/06/30	8.8		%	50
			m & p-Xylene	2019/06/30	5.6		%	50
			o-Xylene	2019/06/30	5.1		%	50
			F1 (C6-C10)	2019/06/30	3.5		%	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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BV Labs Job #: B950415
Report Date: 2019/07/03

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

NOTIFICATION LOG

No Reportable Regulation Exceedences Noted.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B950415
Report Date: 2019/07/03

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Gita Pokhrel, Senior Analyst

Jared Wiseman, B.Sc., P.Chem., QP, Senior Analyst, Organics

Jingyuan Song, QP, Organics – Senior Analyst

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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A Bureau Veritas Group Company

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Edmonton: 9331-48 St. T6B 2R4. Toll Free (800) 386-7247
maxxam.ca

1000

CHAIN OF CUSTODY RECORD

M 082682

Page 1 of 1

Invoice Information		Report Information (if differs from invoice)		Project Information		Turnaround Time (TAT) Required
Company:	Clifton	Company:		Quotation #:		☑ 5 - 7 Days Regular (Most analyses)
Contact Name:	Stephen Dabadie	Contact Name:		P.O. #/ AFE#:		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address:	2222 30th Ave NE Calgary	Address:		Project #:	CC243011-E37	Rush TAT (Surcharges will be applied): ☐ Same Day ☐ 2 Days ☐ 1 Day ☐ 3-4 Days
Phone:	403-263-2556	Phone:		Site Location:	Calgary	
Email:	stephen-dabadie@clifton	Email:		Site #:		Date Required:
Copies:	one	Copies:		Sampled By:	Matt J	Rush Confirmation #:

Laboratory Use Only

	YES	NO	Cooler ID			
Seal Present		✓	Temp	15	16	17
Seal Intact		✓				
Cooling Media	✓					
	YES	NO	Cooler ID			
Seal Present			Temp			
Seal Intact						
Cooling Media						
	YES	NO	Cooler ID			
Seal Present			Temp			
Seal Intact						
Cooling Media						

Depot Reception

Analysis Requested

	Sample Identification	Depth (Unit)	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	# of containers	BTEX F1 ☐ VOC ☑	BTEX F1-F2	BTEX F1-F4	Routine Water	Regulated Metals Tot ☐ Diss ☐	Mercury Total ☐ Dissolved ☐	Salinity 4	Sieve (75 micron)	Texture (% Sand, Silt, Clay)	Basic Class II Landfill	PAH	HOLD - DO NOT ANALYZE
1	MJ032		2019/06/25		Soil	5	X		X								X	
2	MJ038		↓		↓	5	X		X								X	
3	MJ091		↓		↓	5	X		X								X	
4	Trip002					2	X											
5																		
6																		
7																		
8																		
9																		
10																		

Please indicate Filtered, Preserved or Both (F, P, F/P)

Regulatory Criteria

- ☐ AT1
- ☐ CCME
- ☐ Drinking Water
- ☐ D50 (Drilling Waste)
- ☐ Saskatchewan
- ☐ Other:

Special Instructions

Relinquished by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)	Received by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)
Matt J	2019/06/25		Craig Chaquette	2019/06/25	18:02

25-Jun-19 18:02
Linsay Sunderman
B950415
SBZ INS-0248

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Maxxam's standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms which are available for viewing at www.max

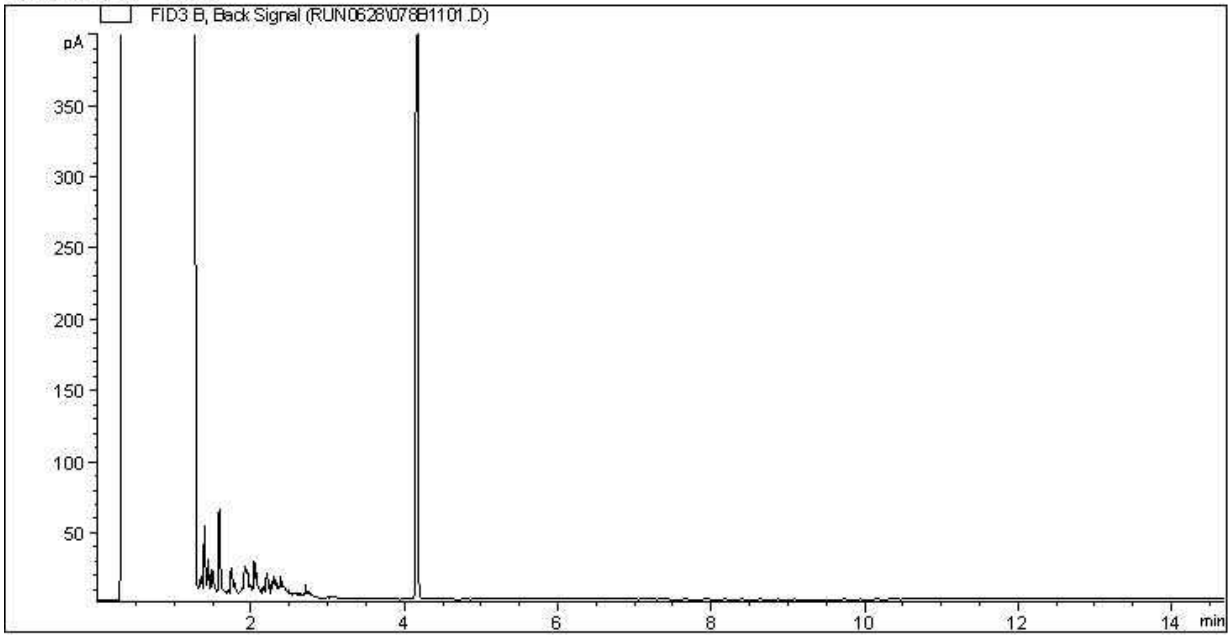
AB FCD-00331/7

BV Labs Job #: B950415
Report Date: 2019/07/03
BV Labs Sample: VY8277

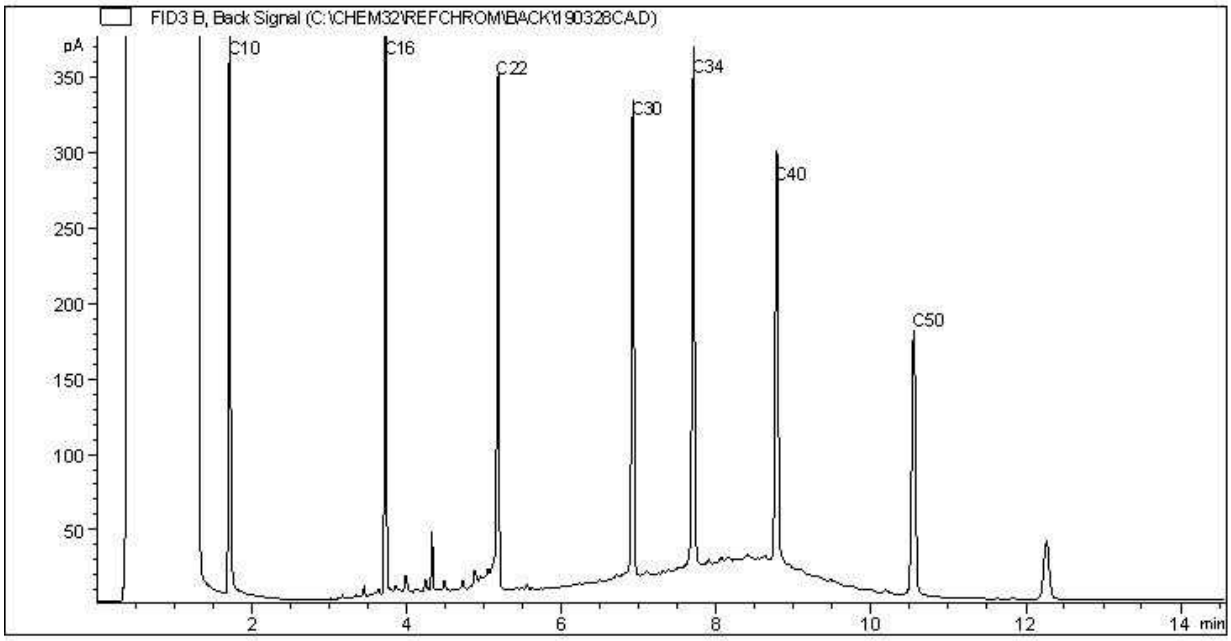
CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Reference: CALGARY
Client ID: MJ 032

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC15



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

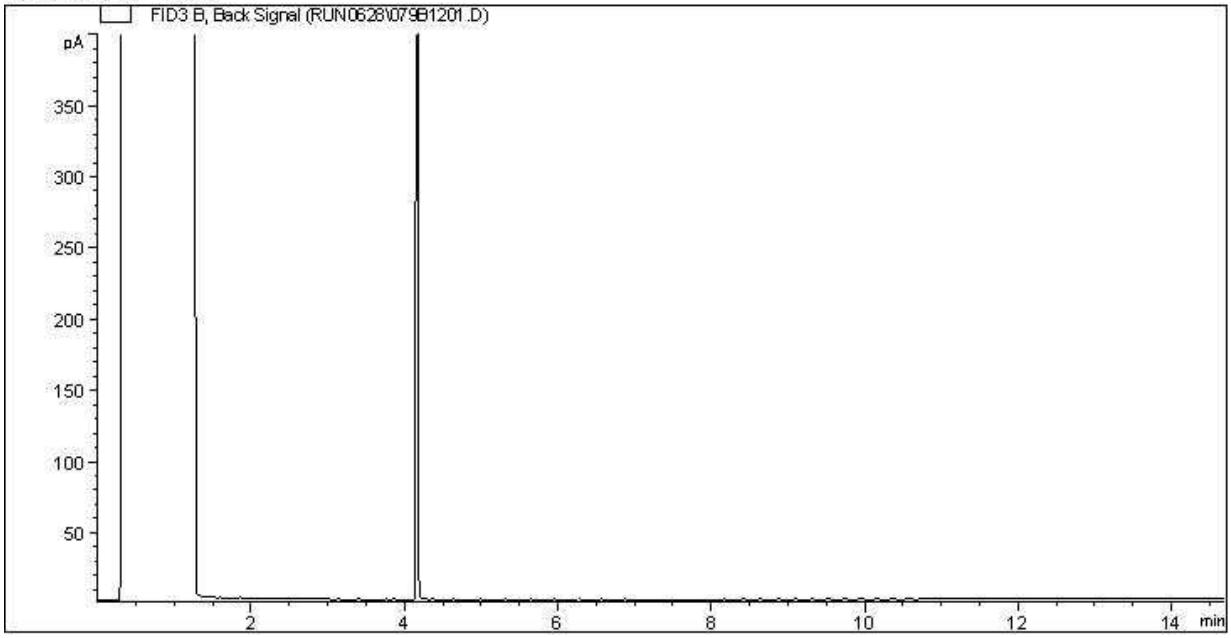
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B950415
Report Date: 2019/07/03
BV Labs Sample: VY8278

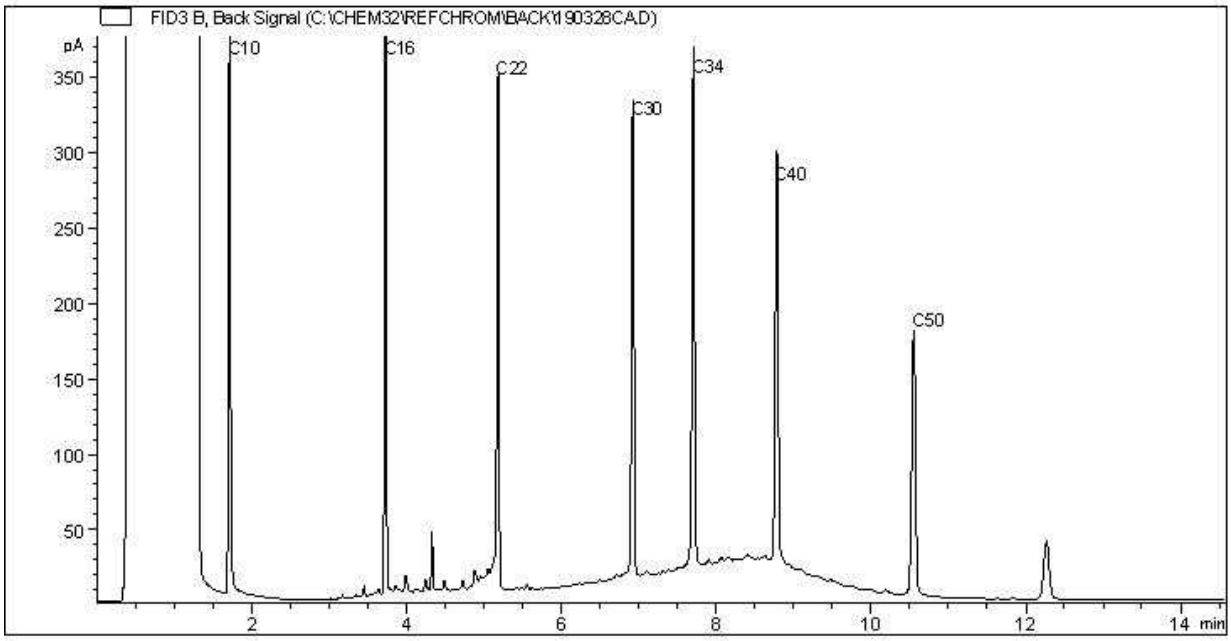
CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Reference: CALGARY
Client ID: MJ 038

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC15



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

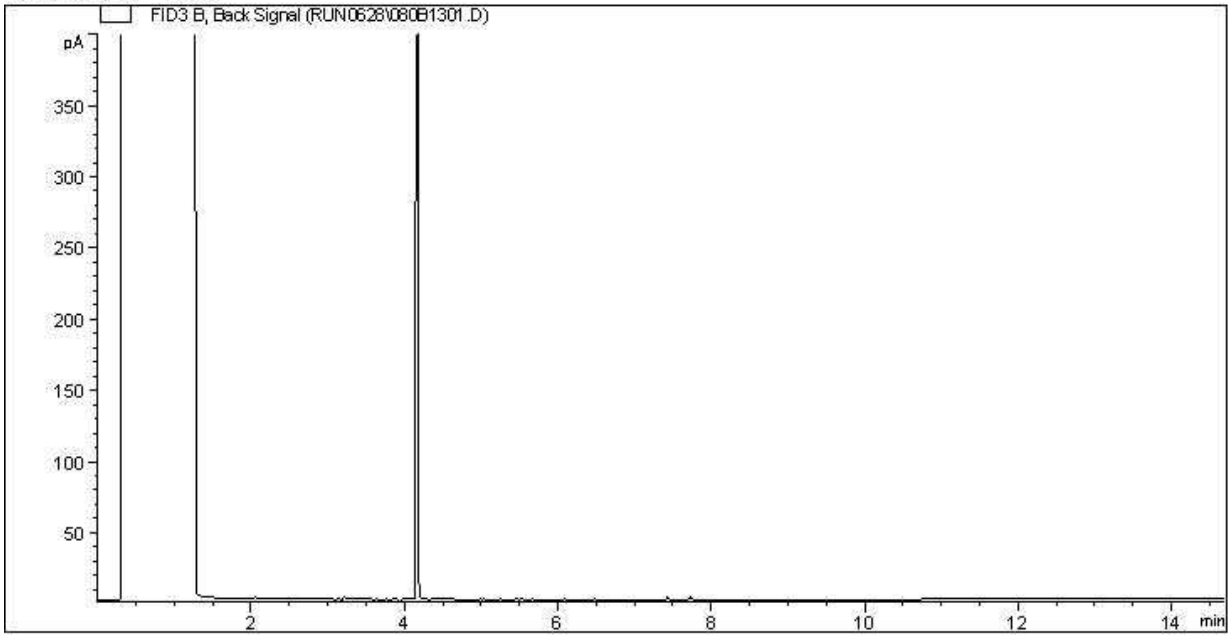
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B950415
Report Date: 2019/07/03
BV Labs Sample: VY8279

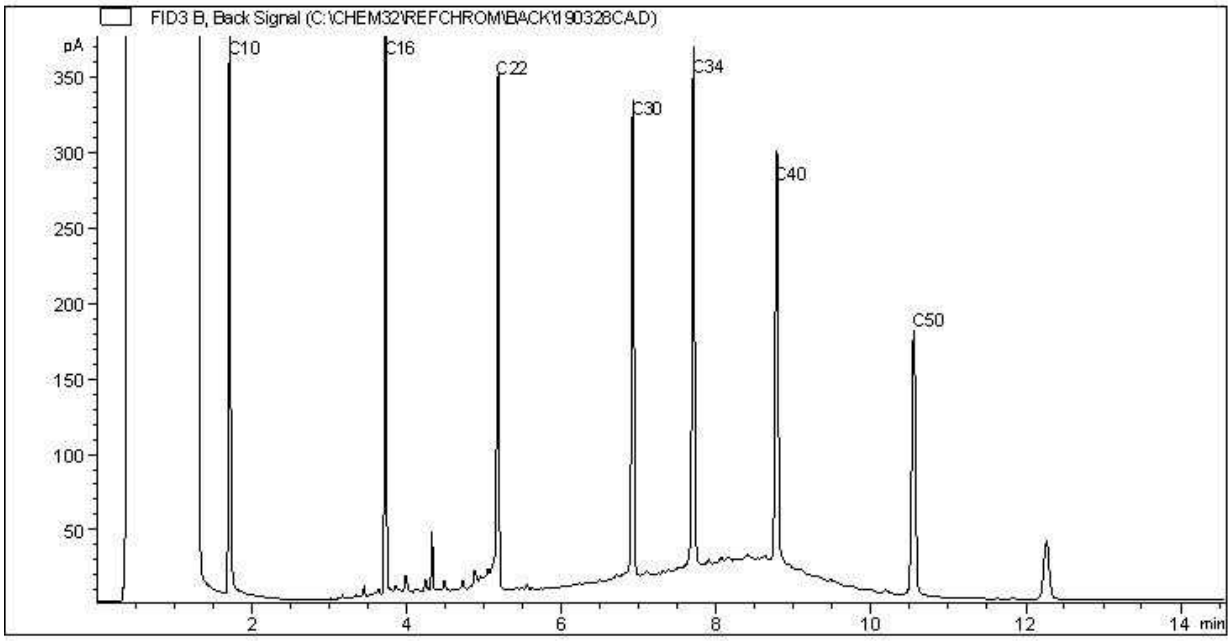
CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Reference: CALGARY
Client ID: MJ 041

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC15



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: CA2430.1-E37
Site Location: CALGARY
Your C.O.C. #: m082684

Attention: Stephen D'Abadie

CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
CANADA T2E 7K9

Report Date: 2019/07/05
Report #: R2747994
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B951324
Received: 2019/06/26, 18:31

Sample Matrix: Soil
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS/FID (MeOH extract) (1)	5	N/A	2019/06/30	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX	5	N/A	2019/07/02		Auto Calc
CCME Hydrocarbons (F2-F4 in soil) (2)	5	2019/06/28	2019/06/29	AB SOP-00036	CCME PHC-CWS m
Moisture	5	N/A	2019/06/28	AB SOP-00002	CCME PHC-CWS m
Benzo[a]pyrene Equivalency	5	N/A	2019/07/03		Auto Calc
PAH in Soil by GC/MS	5	2019/06/28	2019/06/29	AB SOP-00036 / AB SOP-00003	EPA 3540C/8270E m
VOCs in Soil by HS GC/MS (Std List) (1)	5	N/A	2019/07/03	AB SOP-00056	EPA 5021a/8260d m

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total Trihalomethanes Calculation	1	N/A	2019/07/03		Auto Calc
VOCs in Water by HS GC/MS (Std List)	1	N/A	2019/07/03	AB SOP-00056	EPA 5021a/8260d m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
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Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

Your Project #: CA2430.1-E37
Site Location: CALGARY
Your C.O.C. #: m082684

Attention: Stephen D'Abadie

CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
CANADA T2E 7K9

Report Date: 2019/07/05
Report #: R2747994
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B951324
Received: 2019/06/26, 18:31

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.
(2) All CCME results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods September 2003. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

AUTHORIZED REPORT
RAPPORT AUTORISÉ

Bureau Veritas Laboratories
05 Jul 2019 12:27:38

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Linsay Sunderman, Key Account Specialist
Email: Lsunderman@bvlabs.com
Phone# (403)735-2237 Ext:2237
==========
This report has been generated and distributed using a secure automated process.
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B951324
Report Date: 2019/07/05

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		VZ2728	VZ2729	VZ2730	VZ2731	VZ2732		
Sampling Date		2019/06/26	2019/06/26	2019/06/26	2019/06/26	2019/06/26		
COC Number		m082684	m082684	m082684	m082684	m082684		
	UNITS	**MJ052**	**MJ059**	**MJ070**	**MJ077**	**MJ082**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	<10	<10	10	9486673
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	<50	<50	<50	50	9486673
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	<50	<50	50	9486673
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	N/A	9486673
Physical Properties								
Moisture	%	17	21	23	20	20	0.30	9486185
Volatiles								
Xylenes (Total)	mg/kg	<0.045	<0.045	<0.045	9.0	<0.045	0.045	9485220
F1 (C6-C10) - BTEX	mg/kg	<10	<10	<10	13	<10	10	9485220
Field Preserved Volatiles								
Benzene	mg/kg	0.014	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	9486406
Toluene	mg/kg	<0.050	<0.050	<0.050	0.19	<0.050	0.050	9486406
Ethylbenzene	mg/kg	0.010	<0.010	<0.010	0.064	<0.010	0.010	9486406
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	7.0	<0.040	0.040	9486406
o-Xylene	mg/kg	<0.020	<0.020	<0.020	2.0	<0.020	0.020	9486406
F1 (C6-C10)	mg/kg	<10	<10	<10	22	<10	10	9486406
Surrogate Recovery (%)								
1,4-Difluorobenzene (sur.)	%	97	101	101	101	100	N/A	9486406
4-Bromofluorobenzene (sur.)	%	98	97	98	104	101	N/A	9486406
D10-o-Xylene (sur.)	%	97	104	97	109	91	N/A	9486406
D4-1,2-Dichloroethane (sur.)	%	114	101	101	107	102	N/A	9486406
O-TERPHENYL (sur.)	%	100	104	102	101	98	N/A	9486673

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B951324
Report Date: 2019/07/05

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		VZ2728	VZ2729	VZ2730	VZ2731	VZ2732		
Sampling Date		2019/06/26	2019/06/26	2019/06/26	2019/06/26	2019/06/26		
COC Number		m082684	m082684	m082684	m082684	m082684		
	UNITS	**MJ052**	**MJ059**	**MJ070**	**MJ077**	**MJ082**	**RDL**	**QC Batch**
Polycyclic Aromatics								
Acenaphthene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	9486694
B[a]P TPE Total Potency Equivalents	mg/kg	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	0.0071	9484111
Acenaphthylene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	9486694
Acridine	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	9486694
Anthracene	mg/kg	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	0.0040	9486694
Benzo(a)anthracene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	9486694
Benzo(b&j)fluoranthene	mg/kg	<0.0050	0.0095	<0.0050	<0.0050	0.0078	0.0050	9486694
Benzo(k)fluoranthene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	9486694
Benzo(g,h,i)perylene	mg/kg	<0.0050	0.013	<0.0050	<0.0050	0.011	0.0050	9486694
Benzo(c)phenanthrene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	9486694
Benzo(a)pyrene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	9486694
Benzo[e]pyrene	mg/kg	<0.0050	0.0082	<0.0050	<0.0050	0.0078	0.0050	9486694
Chrysene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	9486694
Dibenz(a,h)anthracene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	9486694
Fluoranthene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	9486694
Fluorene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	9486694
Indeno(1,2,3-cd)pyrene	mg/kg	<0.0050	0.0068	<0.0050	<0.0050	<0.0050	0.0050	9486694
1-Methylnaphthalene	mg/kg	<0.0050	0.0079	<0.0050	0.037	0.0063	0.0050	9486694
2-Methylnaphthalene	mg/kg	<0.0050	0.0067	<0.0050	0.043	<0.0050	0.0050	9486694
Naphthalene	mg/kg	<0.0050	<0.0050	<0.0050	0.47	<0.0050	0.0050	9486694
Phenanthrene	mg/kg	<0.0050	0.0078	<0.0050	<0.0050	0.0073	0.0050	9486694
Perylene	mg/kg	<0.0050	0.034	<0.0050	<0.0050	0.044	0.0050	9486694
Pyrene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0090	0.0050	9486694
Quinoline	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	9486694
Surrogate Recovery (%)								
D10-ANTHRACENE (sur.)	%	106	97	107	101	90	N/A	9486694
D8-ACENAPHTHYLENE (sur.)	%	103	96	104	99	89	N/A	9486694
D8-NAPHTHALENE (sur.)	%	97	91	100	94	84	N/A	9486694
TERPHENYL-D14 (sur.)	%	111	103	113	107	96	N/A	9486694

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B951324
Report Date: 2019/07/05

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

VOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		VZ2728	VZ2729	VZ2730	VZ2731		VZ2732		
Sampling Date		2019/06/26	2019/06/26	2019/06/26	2019/06/26		2019/06/26		
COC Number		m082684	m082684	m082684	m082684		m082684		
	UNITS	**MJ052**	**MJ059**	**MJ070**	**MJ077**	**QC Batch**	**MJ082**	**RDL**	**QC Batch**
Field Preserved Volatiles									
Bromodichloromethane	mg/kg	<0.030	<0.030	<0.030	<0.030	9487323	<0.030	0.030	9486343
Bromoform	mg/kg	<0.050	<0.050	<0.050	<0.050	9487323	<0.050	0.050	9486343
Bromomethane	mg/kg	<0.020	<0.020	<0.020	<0.020	9487323	<0.020	0.020	9486343
Carbon tetrachloride	mg/kg	<0.00050	<0.00050	<0.00050	<0.00050	9487323	<0.00050	0.00050	9486343
Chlorobenzene	mg/kg	<0.0010	<0.0010	<0.0010	<0.0010	9487323	<0.0010	0.0010	9486343
Chlorodibromomethane	mg/kg	<0.020	<0.020	<0.020	<0.020	9487323	<0.020	0.020	9486343
Chloroethane	mg/kg	<0.020	<0.020	<0.020	<0.020	9487323	<0.020	0.020	9486343
Chloroform	mg/kg	<0.010	<0.010	<0.010	<0.010	9487323	<0.010	0.010	9486343
Chloromethane	mg/kg	<0.030	<0.030	<0.030	<0.030	9487323	<0.030	0.030	9486343
1,2-dibromoethane	mg/kg	<0.0020	<0.0020	<0.0020	<0.0020	9487323	<0.0020	0.0020	9486343
1,2-dichlorobenzene	mg/kg	<0.020	<0.020	<0.020	<0.020	9487323	<0.020	0.020	9486343
1,3-dichlorobenzene	mg/kg	<0.020	<0.020	<0.020	<0.020	9487323	<0.020	0.020	9486343
1,4-dichlorobenzene	mg/kg	<0.020	<0.020	<0.020	<0.020	9487323	<0.020	0.020	9486343
1,1-dichloroethane	mg/kg	<0.020	<0.020	<0.020	<0.020	9487323	<0.020	0.020	9486343
1,2-dichloroethane	mg/kg	<0.0020	<0.0020	<0.0020	<0.0020	9487323	<0.0020	0.0020	9486343
1,1-dichloroethene	mg/kg	<0.020	<0.020	<0.020	<0.020	9487323	<0.020	0.020	9486343
cis-1,2-dichloroethene	mg/kg	<0.020	<0.020	<0.020	<0.020	9487323	<0.020	0.020	9486343
trans-1,2-dichloroethene	mg/kg	<0.020	<0.020	<0.020	<0.020	9487323	<0.020	0.020	9486343
Dichloromethane	mg/kg	<0.030	<0.030	<0.030	<0.030	9487323	<0.030	0.030	9486343
1,2-dichloropropane	mg/kg	<0.020	<0.020	<0.020	<0.020	9487323	<0.020	0.020	9486343
cis-1,3-dichloropropene	mg/kg	<0.020	<0.020	<0.020	<0.020	9487323	<0.020	0.020	9486343
trans-1,3-dichloropropene	mg/kg	<0.020	<0.020	<0.020	<0.020	9487323	<0.020	0.020	9486343
Methyl methacrylate	mg/kg	<0.040	<0.040	<0.040	<0.040	9487323	<0.040	0.040	9486343
Methyl-tert-butylether (MTBE)	mg/kg	<0.030	<0.030	<0.030	<0.030	9487323	<0.030	0.030	9486343
Styrene	mg/kg	<0.020	<0.020	<0.020	<0.020	9487323	<0.020	0.020	9486343
1,1,1,2-tetrachloroethane	mg/kg	<0.050	<0.050	<0.050	<0.050	9487323	<0.050	0.050	9486343
1,1,2,2-tetrachloroethane	mg/kg	<0.050	<0.050	<0.050	<0.050	9487323	<0.050	0.050	9486343
Tetrachloroethene	mg/kg	<0.010	<0.010	<0.010	<0.010	9487323	<0.010	0.010	9486343
1,2,3-trichlorobenzene	mg/kg	<0.040	<0.040	<0.040	<0.040	9487323	<0.040	0.040	9486343
1,2,4-trichlorobenzene	mg/kg	<0.040	<0.040	<0.040	<0.040	9487323	<0.040	0.040	9486343
1,3,5-trichlorobenzene	mg/kg	<0.040	<0.040	<0.040	<0.040	9487323	<0.040	0.040	9486343
1,1,1-trichloroethane	mg/kg	<0.020	<0.020	<0.020	<0.020	9487323	<0.020	0.020	9486343

RDL = Reportable Detection Limit

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B951324
Report Date: 2019/07/05

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

VOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		VZ2728	VZ2729	VZ2730	VZ2731		VZ2732		
Sampling Date		2019/06/26	2019/06/26	2019/06/26	2019/06/26		2019/06/26		
COC Number		m082684	m082684	m082684	m082684		m082684		
	UNITS	**MJ052**	**MJ059**	**MJ070**	**MJ077**	**QC Batch**	**MJ082**	**RDL**	**QC Batch**
1,1,2-trichloroethane	mg/kg	<0.020	<0.020	<0.020	<0.020	9487323	<0.020	0.020	9486343
Trichloroethene	mg/kg	<0.010	<0.010	<0.010	<0.010	9487323	<0.010	0.010	9486343
Trichlorofluoromethane	mg/kg	<0.020	<0.020	<0.020	<0.020	9487323	<0.020	0.020	9486343
1,2,4-trimethylbenzene	mg/kg	<0.50	<0.50	<0.50	2.3	9487323	<0.50	0.50	9486343
1,3,5-trimethylbenzene	mg/kg	<0.50	<0.50	<0.50	0.74	9487323	<0.50	0.50	9486343
Vinyl chloride	mg/kg	<0.00030	<0.00030	<0.00030	<0.00030	9487323	<0.00030	0.00030	9486343
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	92	90	91	94	9487323	102	N/A	9486343
4-Bromofluorobenzene (sur.)	%	102	100	98	108	9487323	90	N/A	9486343
D10-o-Xylene (sur.)	%	103	101	104	97	9487323	116	N/A	9486343
D4-1,2-Dichloroethane (sur.)	%	112	111	109	106	9487323	112	N/A	9486343

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B951324
Report Date: 2019/07/05

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		VZ2733		
Sampling Date		2019/06/19		
COC Number		m082684		
	UNITS	**TRIP003**	**RDL**	**QC Batch**
Volatiles				
Total Trihalomethanes	mg/L	<0.0013	0.0013	9484640
Benzene	mg/L	<0.00040	0.00040	9488276
Bromodichloromethane	mg/L	<0.00050	0.00050	9488276
Bromoform	mg/L	<0.00050	0.00050	9488276
Bromomethane	mg/L	<0.0020	0.0020	9488276
Carbon tetrachloride	mg/L	<0.00050	0.00050	9488276
Chlorobenzene	mg/L	<0.00050	0.00050	9488276
Chlorodibromomethane	mg/L	<0.0010	0.0010	9488276
Chloroethane	mg/L	<0.0010	0.0010	9488276
Chloroform	mg/L	<0.00050	0.00050	9488276
Chloromethane	mg/L	<0.0020	0.0020	9488276
1,2-dibromoethane	mg/L	<0.00020	0.00020	9488276
1,2-dichlorobenzene	mg/L	<0.00050	0.00050	9488276
1,3-dichlorobenzene	mg/L	<0.00050	0.00050	9488276
1,4-dichlorobenzene	mg/L	<0.00050	0.00050	9488276
1,1-dichloroethane	mg/L	<0.00050	0.00050	9488276
1,2-dichloroethane	mg/L	<0.00050	0.00050	9488276
1,1-dichloroethene	mg/L	<0.00050	0.00050	9488276
cis-1,2-dichloroethene	mg/L	<0.00050	0.00050	9488276
trans-1,2-dichloroethene	mg/L	<0.00050	0.00050	9488276
Dichloromethane	mg/L	<0.0020	0.0020	9488276
1,2-dichloropropane	mg/L	<0.00050	0.00050	9488276
cis-1,3-dichloropropene	mg/L	<0.00050	0.00050	9488276
trans-1,3-dichloropropene	mg/L	<0.00050	0.00050	9488276
Ethylbenzene	mg/L	<0.00040	0.00040	9488276
Methyl methacrylate	mg/L	<0.00050	0.00050	9488276
Methyl-tert-butylether (MTBE)	mg/L	<0.00050	0.00050	9488276
Styrene	mg/L	<0.00050	0.00050	9488276
1,1,1,2-tetrachloroethane	mg/L	<0.0010	0.0010	9488276
1,1,2,2-tetrachloroethane	mg/L	<0.0020	0.0020	9488276
Tetrachloroethene	mg/L	<0.00050	0.00050	9488276
Toluene	mg/L	<0.00040	0.00040	9488276
RDL = Reportable Detection Limit				

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BV Labs Job #: B951324
Report Date: 2019/07/05

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		VZ2733		
Sampling Date		2019/06/19		
COC Number		m082684		
	UNITS	**TRIP003**	**RDL**	**QC Batch**
1,2,3-trichlorobenzene	mg/L	<0.0010	0.0010	9488276
1,2,4-trichlorobenzene	mg/L	<0.0010	0.0010	9488276
1,3,5-trichlorobenzene	mg/L	<0.00050	0.00050	9488276
1,1,1-trichloroethane	mg/L	<0.00050	0.00050	9488276
1,1,2-trichloroethane	mg/L	<0.00050	0.00050	9488276
Trichloroethene	mg/L	<0.00050	0.00050	9488276
Trichlorofluoromethane	mg/L	<0.00050	0.00050	9488276
1,2,4-trimethylbenzene	mg/L	<0.00050	0.00050	9488276
1,3,5-trimethylbenzene	mg/L	<0.00050	0.00050	9488276
Vinyl chloride	mg/L	<0.00050	0.00050	9488276
Xylenes (Total)	mg/L	<0.00080	0.00080	9488276
m & p-Xylene	mg/L	<0.00080	0.00080	9488276
o-Xylene	mg/L	<0.00040	0.00040	9488276
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	106	N/A	9488276
4-Bromofluorobenzene (sur.)	%	91	N/A	9488276
D4-1,2-Dichloroethane (sur.)	%	108	N/A	9488276

RDL = Reportable Detection Limit
N/A = Not Applicable

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BV Labs Job #: B951324
Report Date: 2019/07/05

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	9.7°C

Results relate only to the items tested.

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BV Labs Job #: B951324
Report Date: 2019/07/05

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9486185	TL0	Method Blank	Moisture	2019/06/28	<0.30		%	
9486185	TL0	RPD	Moisture	2019/06/28	0.55		%	20
9486343	QW1	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/07/02		101	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/02		132	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/02		90	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/02		120	%	50 - 140
			Bromodichloromethane	2019/07/02		133	%	50 - 140
			Bromoform	2019/07/02		141 (1)	%	50 - 140
			Bromomethane	2019/07/02		80	%	50 - 140
			Carbon tetrachloride	2019/07/02		91	%	50 - 140
			Chlorobenzene	2019/07/02		80	%	50 - 140
			Chlorodibromomethane	2019/07/02		119	%	50 - 140
			Chloroethane	2019/07/02		75	%	50 - 140
			Chloroform	2019/07/02		99	%	50 - 140
			Chloromethane	2019/07/02		87	%	50 - 140
			1,2-dibromoethane	2019/07/02		105	%	50 - 140
			1,2-dichlorobenzene	2019/07/02		111	%	50 - 140
			1,3-dichlorobenzene	2019/07/02		106	%	50 - 140
			1,4-dichlorobenzene	2019/07/02		111	%	50 - 140
			1,1-dichloroethane	2019/07/02		101	%	50 - 140
			1,2-dichloroethane	2019/07/02		125	%	50 - 140
			1,1-dichloroethene	2019/07/02		86	%	50 - 140
			cis-1,2-dichloroethene	2019/07/02		109	%	50 - 140
			trans-1,2-dichloroethene	2019/07/02		83	%	50 - 140
			Dichloromethane	2019/07/02		104	%	50 - 140
			1,2-dichloropropane	2019/07/02		121	%	50 - 140
			cis-1,3-dichloropropene	2019/07/02		83	%	50 - 140
			trans-1,3-dichloropropene	2019/07/02		87	%	50 - 140
			Methyl methacrylate	2019/07/02		148 (1)	%	50 - 140
			Methyl-tert-butylether (MTBE)	2019/07/02		104	%	50 - 140
			Styrene	2019/07/02		101	%	50 - 140
			1,1,1,2-tetrachloroethane	2019/07/02		95	%	50 - 140
			1,1,2,2-tetrachloroethane	2019/07/02		123	%	50 - 140
			Tetrachloroethene	2019/07/02		71	%	50 - 140
			1,2,3-trichlorobenzene	2019/07/02		111	%	50 - 140
			1,2,4-trichlorobenzene	2019/07/02		109	%	50 - 140
			1,3,5-trichlorobenzene	2019/07/02		104	%	50 - 140
			1,1,1-trichloroethane	2019/07/02		100	%	50 - 140
			1,1,2-trichloroethane	2019/07/02		138	%	50 - 140
			Trichloroethene	2019/07/02		103	%	50 - 140
			Trichlorofluoromethane	2019/07/02		82	%	50 - 140
			1,2,4-trimethylbenzene	2019/07/02		64	%	50 - 140
			1,3,5-trimethylbenzene	2019/07/02		75	%	50 - 140
			Vinyl chloride	2019/07/02		76	%	50 - 140
9486343	QW1	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/07/02		105	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/02		115	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/02		106	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/02		91	%	50 - 140
			Bromodichloromethane	2019/07/02		116	%	60 - 130
			Bromoform	2019/07/02		116	%	60 - 130
			Bromomethane	2019/07/02		78	%	60 - 130
			Carbon tetrachloride	2019/07/02		105	%	60 - 130
			Chlorobenzene	2019/07/02		92	%	60 - 130

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BV Labs Job #: B951324
Report Date: 2019/07/05

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Chlorodibromomethane	2019/07/02		116	%	60 - 130
			Chloroethane	2019/07/02		117	%	60 - 130
			Chloroform	2019/07/02		93	%	60 - 130
			Chloromethane	2019/07/02		86	%	60 - 130
			1,2-dibromoethane	2019/07/02		96	%	60 - 130
			1,2-dichlorobenzene	2019/07/02		115	%	60 - 130
			1,3-dichlorobenzene	2019/07/02		109	%	60 - 130
			1,4-dichlorobenzene	2019/07/02		109	%	60 - 130
			1,1-dichloroethane	2019/07/02		99	%	60 - 130
			1,2-dichloroethane	2019/07/02		98	%	60 - 130
			1,1-dichloroethene	2019/07/02		101	%	60 - 130
			cis-1,2-dichloroethene	2019/07/02		100	%	60 - 130
			trans-1,2-dichloroethene	2019/07/02		89	%	60 - 130
			Dichloromethane	2019/07/02		90	%	60 - 130
			1,2-dichloropropane	2019/07/02		107	%	60 - 130
			cis-1,3-dichloropropene	2019/07/02		82	%	60 - 130
			trans-1,3-dichloropropene	2019/07/02		78	%	60 - 130
			Methyl methacrylate	2019/07/02		108	%	60 - 130
			Methyl-tert-butylether (MTBE)	2019/07/02		87	%	60 - 130
			Styrene	2019/07/02		110	%	60 - 130
			1,1,1,2-tetrachloroethane	2019/07/02		104	%	60 - 130
			1,1,2,2-tetrachloroethane	2019/07/02		106	%	60 - 130
			Tetrachloroethene	2019/07/02		99	%	60 - 130
			1,2,3-trichlorobenzene	2019/07/02		100	%	60 - 130
			1,2,4-trichlorobenzene	2019/07/02		100	%	60 - 130
			1,3,5-trichlorobenzene	2019/07/02		103	%	60 - 130
			1,1,1-trichloroethane	2019/07/02		110	%	60 - 130
			1,1,2-trichloroethane	2019/07/02		99	%	60 - 130
			Trichloroethene	2019/07/02		109	%	60 - 130
			Trichlorofluoromethane	2019/07/02		98	%	60 - 130
			1,2,4-trimethylbenzene	2019/07/02		115	%	60 - 130
			1,3,5-trimethylbenzene	2019/07/02		118	%	60 - 130
			Vinyl chloride	2019/07/02		85	%	60 - 130
9486343	QW1	Method Blank	1,4-Difluorobenzene (sur.)	2019/07/02		91	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/02		95	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/02		97	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/02		107	%	50 - 140
			Bromodichloromethane	2019/07/02	<0.030		mg/kg	
			Bromoform	2019/07/02	<0.050		mg/kg	
			Bromomethane	2019/07/02	<0.020		mg/kg	
			Carbon tetrachloride	2019/07/02	<0.00050		mg/kg	
			Chlorobenzene	2019/07/02	<0.0010		mg/kg	
			Chlorodibromomethane	2019/07/02	<0.020		mg/kg	
			Chloroethane	2019/07/02	<0.020		mg/kg	
			Chloroform	2019/07/02	<0.010		mg/kg	
			Chloromethane	2019/07/02	<0.030		mg/kg	
			1,2-dibromoethane	2019/07/02	<0.0020		mg/kg	
			1,2-dichlorobenzene	2019/07/02	<0.020		mg/kg	
			1,3-dichlorobenzene	2019/07/02	<0.020		mg/kg	
			1,4-dichlorobenzene	2019/07/02	<0.020		mg/kg	
			1,1-dichloroethane	2019/07/02	<0.020		mg/kg	
			1,2-dichloroethane	2019/07/02	<0.0020		mg/kg	
			1,1-dichloroethene	2019/07/02	<0.020		mg/kg	

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BV Labs Job #: B951324
Report Date: 2019/07/05

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			cis-1,2-dichloroethene	2019/07/02	<0.020		mg/kg	
			trans-1,2-dichloroethene	2019/07/02	<0.020		mg/kg	
			Dichloromethane	2019/07/02	<0.030		mg/kg	
			1,2-dichloropropane	2019/07/02	<0.020		mg/kg	
			cis-1,3-dichloropropene	2019/07/02	<0.020		mg/kg	
			trans-1,3-dichloropropene	2019/07/02	<0.020		mg/kg	
			Methyl methacrylate	2019/07/02	<0.040		mg/kg	
			Methyl-tert-butylether (MTBE)	2019/07/02	<0.030		mg/kg	
			Styrene	2019/07/02	<0.020		mg/kg	
			1,1,1,2-tetrachloroethane	2019/07/02	<0.050		mg/kg	
			1,1,2,2-tetrachloroethane	2019/07/02	<0.050		mg/kg	
			Tetrachloroethene	2019/07/02	<0.010		mg/kg	
			1,2,3-trichlorobenzene	2019/07/02	<0.040		mg/kg	
			1,2,4-trichlorobenzene	2019/07/02	<0.040		mg/kg	
			1,3,5-trichlorobenzene	2019/07/02	<0.040		mg/kg	
			1,1,1-trichloroethane	2019/07/02	<0.020		mg/kg	
			1,1,2-trichloroethane	2019/07/02	<0.020		mg/kg	
			Trichloroethene	2019/07/02	<0.010		mg/kg	
			Trichlorofluoromethane	2019/07/02	<0.020		mg/kg	
			1,2,4-trimethylbenzene	2019/07/02	<0.50		mg/kg	
			1,3,5-trimethylbenzene	2019/07/02	<0.50		mg/kg	
			Vinyl chloride	2019/07/02	<0.00030		mg/kg	
9486343	QW1	RPD	Bromodichloromethane	2019/07/02	NC		%	50
			Bromoform	2019/07/02	NC		%	50
			Bromomethane	2019/07/02	NC		%	50
			Carbon tetrachloride	2019/07/02	NC		%	50
			Chlorobenzene	2019/07/02	NC		%	50
			Chlorodibromomethane	2019/07/02	NC		%	50
			Chloroethane	2019/07/02	NC		%	50
			Chloroform	2019/07/02	NC		%	50
			Chloromethane	2019/07/02	NC		%	50
			1,2-dibromoethane	2019/07/02	19		%	50
			1,2-dichlorobenzene	2019/07/02	NC		%	50
			1,3-dichlorobenzene	2019/07/02	NC		%	50
			1,4-dichlorobenzene	2019/07/02	NC		%	50
			1,1-dichloroethane	2019/07/02	NC		%	50
			1,2-dichloroethane	2019/07/02	11		%	50
			1,1-dichloroethene	2019/07/02	NC		%	50
			cis-1,2-dichloroethene	2019/07/02	NC		%	50
			trans-1,2-dichloroethene	2019/07/02	NC		%	50
			Dichloromethane	2019/07/02	NC		%	50
			1,2-dichloropropane	2019/07/02	NC		%	50
			cis-1,3-dichloropropene	2019/07/02	NC		%	50
			trans-1,3-dichloropropene	2019/07/02	NC		%	50
			Methyl methacrylate	2019/07/02	NC		%	50
			Methyl-tert-butylether (MTBE)	2019/07/02	NC		%	50
			Styrene	2019/07/02	NC		%	50
			1,1,1,2-tetrachloroethane	2019/07/02	NC		%	50
			1,1,2,2-tetrachloroethane	2019/07/02	12		%	50
			Tetrachloroethene	2019/07/02	NC		%	50
			1,2,3-trichlorobenzene	2019/07/02	NC		%	50
			1,2,4-trichlorobenzene	2019/07/02	NC		%	50
			1,3,5-trichlorobenzene	2019/07/02	NC		%	50

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BV Labs Job #: B951324
Report Date: 2019/07/05

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,1,1-trichloroethane	2019/07/02	NC		%	50
			1,1,2-trichloroethane	2019/07/02	NC		%	50
			Trichloroethene	2019/07/02	NC		%	50
			Trichlorofluoromethane	2019/07/02	NC		%	50
			1,2,4-trimethylbenzene	2019/07/02	1.8		%	50
			1,3,5-trimethylbenzene	2019/07/02	2.3		%	50
			Vinyl chloride	2019/07/02	14		%	50
9486406	MWB	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/06/30		100	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/30		95	%	50 - 140
			D10-o-Xylene (sur.)	2019/06/30		107	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/30		98	%	50 - 140
			Benzene	2019/06/30		91	%	50 - 140
			Toluene	2019/06/30		91	%	50 - 140
			Ethylbenzene	2019/06/30		92	%	50 - 140
			m & p-Xylene	2019/06/30		93	%	50 - 140
			o-Xylene	2019/06/30		96	%	50 - 140
			F1 (C6-C10)	2019/06/30		80	%	60 - 140
9486406	MWB	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/06/30		99	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/30		105	%	50 - 140
			D10-o-Xylene (sur.)	2019/06/30		95	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/30		112	%	50 - 140
			Benzene	2019/06/30		86	%	60 - 130
			Toluene	2019/06/30		83	%	60 - 130
			Ethylbenzene	2019/06/30		82	%	60 - 130
			m & p-Xylene	2019/06/30		85	%	60 - 130
			o-Xylene	2019/06/30		90	%	60 - 130
			F1 (C6-C10)	2019/06/30		84	%	60 - 140
9486406	MWB	Method Blank	1,4-Difluorobenzene (sur.)	2019/06/30		98	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/06/30		97	%	50 - 140
			D10-o-Xylene (sur.)	2019/06/30		97	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/06/30		102	%	50 - 140
			Benzene	2019/06/30	<0.0050		mg/kg	
			Toluene	2019/06/30	<0.050		mg/kg	
			Ethylbenzene	2019/06/30	<0.010		mg/kg	
			m & p-Xylene	2019/06/30	<0.040		mg/kg	
			o-Xylene	2019/06/30	<0.020		mg/kg	
			F1 (C6-C10)	2019/06/30	<10		mg/kg	
9486406	MWB	RPD	Benzene	2019/06/30	NC		%	50
			Toluene	2019/06/30	NC		%	50
			Ethylbenzene	2019/06/30	NC		%	50
			m & p-Xylene	2019/06/30	NC		%	50
			o-Xylene	2019/06/30	NC		%	50
			F1 (C6-C10)	2019/06/30	NC		%	30
9486673	LSH	Matrix Spike	O-TERPHENYL (sur.)	2019/06/28		88	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/06/28		NC	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2019/06/28		NC	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2019/06/28		NC	%	60 - 140
9486673	LSH	Spiked Blank	O-TERPHENYL (sur.)	2019/06/28		100	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/06/28		105	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2019/06/28		99	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2019/06/28		98	%	60 - 140
9486673	LSH	Method Blank	O-TERPHENYL (sur.)	2019/06/28		108	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/06/28	<10		mg/kg	

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BV Labs Job #: B951324
Report Date: 2019/07/05

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			F3 (C16-C34 Hydrocarbons)	2019/06/28	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2019/06/28	<50		mg/kg	
9486673	LSH	RPD	F2 (C10-C16 Hydrocarbons)	2019/06/28	5.2		%	40
			F3 (C16-C34 Hydrocarbons)	2019/06/28	6.5		%	40
			F4 (C34-C50 Hydrocarbons)	2019/06/28	8.0		%	40
9486694	LZ3	Matrix Spike	D10-ANTHRACENE (sur.)	2019/06/29		94	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/06/29		92	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/06/29		86	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/06/29		96	%	50 - 130
			Acenaphthene	2019/06/29		85	%	50 - 130
			Acenaphthylene	2019/06/29		87	%	50 - 130
			Acridine	2019/06/29		83	%	50 - 130
			Anthracene	2019/06/29		81	%	50 - 130
			Benzo(a)anthracene	2019/06/29		76	%	50 - 130
			Benzo(b&j)fluoranthene	2019/06/29		60	%	50 - 130
			Benzo(k)fluoranthene	2019/06/29		118	%	50 - 130
			Benzo(g,h,i)perylene	2019/06/29		77	%	50 - 130
			Benzo(c)phenanthrene	2019/06/29		86	%	50 - 130
			Benzo(a)pyrene	2019/06/29		89	%	50 - 130
			Benzo[e]pyrene	2019/06/29		83	%	50 - 130
			Chrysene	2019/06/29		74	%	50 - 130
			Dibenz(a,h)anthracene	2019/06/29		83	%	50 - 130
			Fluoranthene	2019/06/29		81	%	50 - 130
			Fluorene	2019/06/29		86	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/06/29		104	%	50 - 130
			1-Methylnaphthalene	2019/06/29		86	%	50 - 130
			2-Methylnaphthalene	2019/06/29		81	%	50 - 130
			Naphthalene	2019/06/29		78	%	50 - 130
			Phenanthrene	2019/06/29		80	%	50 - 130
			Perylene	2019/06/29		81	%	50 - 130
			Pyrene	2019/06/29		80	%	50 - 130
			Quinoline	2019/06/29		83	%	50 - 130
9486694	LZ3	Spiked Blank	D10-ANTHRACENE (sur.)	2019/06/29		107	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/06/29		105	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/06/29		98	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/06/29		112	%	50 - 130
			Acenaphthene	2019/06/29		94	%	50 - 130
			Acenaphthylene	2019/06/29		95	%	50 - 130
			Acridine	2019/06/29		71	%	50 - 130
			Anthracene	2019/06/29		92	%	50 - 130
			Benzo(a)anthracene	2019/06/29		98	%	50 - 130
			Benzo(b&j)fluoranthene	2019/06/29		90	%	50 - 130
			Benzo(k)fluoranthene	2019/06/29		91	%	50 - 130
			Benzo(g,h,i)perylene	2019/06/29		89	%	50 - 130
			Benzo(c)phenanthrene	2019/06/29		103	%	50 - 130
			Benzo(a)pyrene	2019/06/29		95	%	50 - 130
			Benzo[e]pyrene	2019/06/29		95	%	50 - 130
			Chrysene	2019/06/29		96	%	50 - 130
			Dibenz(a,h)anthracene	2019/06/29		89	%	50 - 130
			Fluoranthene	2019/06/29		95	%	50 - 130
			Fluorene	2019/06/29		94	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/06/29		93	%	50 - 130
			1-Methylnaphthalene	2019/06/29		98	%	50 - 130

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B951324
Report Date: 2019/07/05

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			2-Methylnaphthalene	2019/06/29		93	%	50 - 130
			Naphthalene	2019/06/29		89	%	50 - 130
			Phenanthrene	2019/06/29		89	%	50 - 130
			Perylene	2019/06/29		91	%	50 - 130
			Pyrene	2019/06/29		95	%	50 - 130
			Quinoline	2019/06/29		93	%	50 - 130
9486694	LZ3	Method Blank	D10-ANTHRACENE (sur.)	2019/06/29		106	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/06/29		104	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/06/29		98	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/06/29		114	%	50 - 130
			Acenaphthene	2019/06/29	<0.0050		mg/kg	
			Acenaphthylene	2019/06/29	<0.0050		mg/kg	
			Acridine	2019/06/29	<0.010		mg/kg	
			Anthracene	2019/06/29	<0.0040		mg/kg	
			Benzo(a)anthracene	2019/06/29	<0.0050		mg/kg	
			Benzo(b&j)fluoranthene	2019/06/29	<0.0050		mg/kg	
			Benzo(k)fluoranthene	2019/06/29	<0.0050		mg/kg	
			Benzo(g,h,i)perylene	2019/06/29	<0.0050		mg/kg	
			Benzo(c)phenanthrene	2019/06/29	<0.0050		mg/kg	
			Benzo(a)pyrene	2019/06/29	<0.0050		mg/kg	
			Benzo[e]pyrene	2019/06/29	<0.0050		mg/kg	
			Chrysene	2019/06/29	<0.0050		mg/kg	
			Dibenz(a,h)anthracene	2019/06/29	<0.0050		mg/kg	
			Fluoranthene	2019/06/29	<0.0050		mg/kg	
			Fluorene	2019/06/29	<0.0050		mg/kg	
			Indeno(1,2,3-cd)pyrene	2019/06/29	<0.0050		mg/kg	
			1-Methylnaphthalene	2019/06/29	<0.0050		mg/kg	
			2-Methylnaphthalene	2019/06/29	<0.0050		mg/kg	
			Naphthalene	2019/06/29	<0.0050		mg/kg	
			Phenanthrene	2019/06/29	<0.0050		mg/kg	
			Perylene	2019/06/29	<0.0050		mg/kg	
			Pyrene	2019/06/29	<0.0050		mg/kg	
			Quinoline	2019/06/29	<0.010		mg/kg	
9486694	LZ3	RPD	Acenaphthene	2019/06/29	34		%	50
			Acenaphthylene	2019/06/29	7.7		%	50
			Acridine	2019/06/29	NC		%	50
			Anthracene	2019/06/29	6.5		%	50
			Benzo(a)anthracene	2019/06/29	0		%	50
			Benzo(b&j)fluoranthene	2019/06/29	39		%	50
			Benzo(k)fluoranthene	2019/06/29	NC		%	50
			Benzo(g,h,i)perylene	2019/06/29	15		%	50
			Benzo(c)phenanthrene	2019/06/29	NC		%	50
			Benzo(a)pyrene	2019/06/29	NC		%	50
			Benzo[e]pyrene	2019/06/29	13		%	50
			Chrysene	2019/06/29	12		%	50
			Dibenz(a,h)anthracene	2019/06/29	NC		%	50
			Fluoranthene	2019/06/29	6.2		%	50
			Fluorene	2019/06/29	1.3		%	50
			Indeno(1,2,3-cd)pyrene	2019/06/29	NC		%	50
			1-Methylnaphthalene	2019/06/29	6.0		%	50
			2-Methylnaphthalene	2019/06/29	5.5		%	50
			Naphthalene	2019/06/29	NC		%	50
			Phenanthrene	2019/06/29	5.5		%	50

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B951324
Report Date: 2019/07/05

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Perylene	2019/06/29	9.4		%	50
			Pyrene	2019/06/29	10		%	50
			Quinoline	2019/06/29	NC		%	50
9487323	QW1	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/07/02		103	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/02		116	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/02		126	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/02		108	%	50 - 140
			Bromodichloromethane	2019/07/02		116	%	50 - 140
			Bromoform	2019/07/02		115	%	50 - 140
			Bromomethane	2019/07/02		81	%	50 - 140
			Carbon tetrachloride	2019/07/02		101	%	50 - 140
			Chlorobenzene	2019/07/02		93	%	50 - 140
			Chlorodibromomethane	2019/07/02		115	%	50 - 140
			Chloroethane	2019/07/02		150 (1)	%	50 - 140
			Chloroform	2019/07/02		92	%	50 - 140
			Chloromethane	2019/07/02		88	%	50 - 140
			1,2-dibromoethane	2019/07/02		96	%	50 - 140
			1,2-dichlorobenzene	2019/07/02		115	%	50 - 140
			1,3-dichlorobenzene	2019/07/02		114	%	50 - 140
			1,4-dichlorobenzene	2019/07/02		114	%	50 - 140
			1,1-dichloroethane	2019/07/02		96	%	50 - 140
			1,2-dichloroethane	2019/07/02		98	%	50 - 140
			1,1-dichloroethene	2019/07/02		98	%	50 - 140
			cis-1,2-dichloroethene	2019/07/02		100	%	50 - 140
			trans-1,2-dichloroethene	2019/07/02		88	%	50 - 140
			Dichloromethane	2019/07/02		89	%	50 - 140
			1,2-dichloropropane	2019/07/02		105	%	50 - 140
			cis-1,3-dichloropropene	2019/07/02		84	%	50 - 140
			trans-1,3-dichloropropene	2019/07/02		86	%	50 - 140
			Methyl methacrylate	2019/07/02		109	%	50 - 140
			Methyl-tert-butylether (MTBE)	2019/07/02		88	%	50 - 140
			Styrene	2019/07/02		110	%	50 - 140
			1,1,1,2-tetrachloroethane	2019/07/02		103	%	50 - 140
			1,1,2,2-tetrachloroethane	2019/07/02		101	%	50 - 140
			Tetrachloroethene	2019/07/02		97	%	50 - 140
			1,2,3-trichlorobenzene	2019/07/02		96	%	50 - 140
			1,2,4-trichlorobenzene	2019/07/02		98	%	50 - 140
			1,3,5-trichlorobenzene	2019/07/02		105	%	50 - 140
			1,1,1-trichloroethane	2019/07/02		106	%	50 - 140
			1,1,2-trichloroethane	2019/07/02		100	%	50 - 140
			Trichloroethene	2019/07/02		109	%	50 - 140
			Trichlorofluoromethane	2019/07/02		94	%	50 - 140
			1,2,4-trimethylbenzene	2019/07/02		115	%	50 - 140
			1,3,5-trimethylbenzene	2019/07/02		118	%	50 - 140
			Vinyl chloride	2019/07/02		84	%	50 - 140
9487323	QW1	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/07/02		104	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/02		118	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/02		107	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/02		95	%	50 - 140
			Bromodichloromethane	2019/07/02		121	%	60 - 130
			Bromoform	2019/07/02		117	%	60 - 130
			Bromomethane	2019/07/02		87	%	60 - 130
			Carbon tetrachloride	2019/07/02		103	%	60 - 130

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B951324
Report Date: 2019/07/05

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Chlorobenzene	2019/07/02		91	%	60 - 130
			Chlorodibromomethane	2019/07/02		118	%	60 - 130
			Chloroethane	2019/07/02		140 (1)	%	60 - 130
			Chloroform	2019/07/02		95	%	60 - 130
			Chloromethane	2019/07/02		89	%	60 - 130
			1,2-dibromoethane	2019/07/02		101	%	60 - 130
			1,2-dichlorobenzene	2019/07/02		112	%	60 - 130
			1,3-dichlorobenzene	2019/07/02		109	%	60 - 130
			1,4-dichlorobenzene	2019/07/02		108	%	60 - 130
			1,1-dichloroethane	2019/07/02		102	%	60 - 130
			1,2-dichloroethane	2019/07/02		104	%	60 - 130
			1,1-dichloroethene	2019/07/02		100	%	60 - 130
			cis-1,2-dichloroethene	2019/07/02		102	%	60 - 130
			trans-1,2-dichloroethene	2019/07/02		86	%	60 - 130
			Dichloromethane	2019/07/02		94	%	60 - 130
			1,2-dichloropropane	2019/07/02		112	%	60 - 130
			cis-1,3-dichloropropene	2019/07/02		88	%	60 - 130
			trans-1,3-dichloropropene	2019/07/02		87	%	60 - 130
			Methyl methacrylate	2019/07/02		117	%	60 - 130
			Methyl-tert-butylether (MTBE)	2019/07/02		93	%	60 - 130
			Styrene	2019/07/02		110	%	60 - 130
			1,1,1,2-tetrachloroethane	2019/07/02		105	%	60 - 130
			1,1,2,2-tetrachloroethane	2019/07/02		105	%	60 - 130
			Tetrachloroethene	2019/07/02		92	%	60 - 130
			1,2,3-trichlorobenzene	2019/07/02		95	%	60 - 130
			1,2,4-trichlorobenzene	2019/07/02		94	%	60 - 130
			1,3,5-trichlorobenzene	2019/07/02		99	%	60 - 130
			1,1,1-trichloroethane	2019/07/02		110	%	60 - 130
			1,1,2-trichloroethane	2019/07/02		105	%	60 - 130
			Trichloroethene	2019/07/02		107	%	60 - 130
			Trichlorofluoromethane	2019/07/02		96	%	60 - 130
			1,2,4-trimethylbenzene	2019/07/02		116	%	60 - 130
			1,3,5-trimethylbenzene	2019/07/02		119	%	60 - 130
			Vinyl chloride	2019/07/02		85	%	60 - 130
9487323	QW1	Method Blank	1,4-Difluorobenzene (sur.)	2019/07/02		90	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/02		104	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/02		85	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/02		107	%	50 - 140
			Bromodichloromethane	2019/07/02	<0.030		mg/kg	
			Bromoform	2019/07/02	<0.050		mg/kg	
			Bromomethane	2019/07/02	<0.020		mg/kg	
			Carbon tetrachloride	2019/07/02	<0.00050		mg/kg	
			Chlorobenzene	2019/07/02	<0.0010		mg/kg	
			Chlorodibromomethane	2019/07/02	<0.020		mg/kg	
			Chloroethane	2019/07/02	<0.020		mg/kg	
			Chloroform	2019/07/02	<0.010		mg/kg	
			Chloromethane	2019/07/02	<0.030		mg/kg	
			1,2-dibromoethane	2019/07/02	<0.0020		mg/kg	
			1,2-dichlorobenzene	2019/07/02	<0.020		mg/kg	
			1,3-dichlorobenzene	2019/07/02	<0.020		mg/kg	
			1,4-dichlorobenzene	2019/07/02	<0.020		mg/kg	
			1,1-dichloroethane	2019/07/02	<0.020		mg/kg	
			1,2-dichloroethane	2019/07/02	<0.0020		mg/kg	

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B951324
Report Date: 2019/07/05

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,1-dichloroethene	2019/07/02	<0.020		mg/kg	
			cis-1,2-dichloroethene	2019/07/02	<0.020		mg/kg	
			trans-1,2-dichloroethene	2019/07/02	<0.020		mg/kg	
			Dichloromethane	2019/07/02	<0.030		mg/kg	
			1,2-dichloropropane	2019/07/02	<0.020		mg/kg	
			cis-1,3-dichloropropene	2019/07/02	<0.020		mg/kg	
			trans-1,3-dichloropropene	2019/07/02	<0.020		mg/kg	
			Methyl methacrylate	2019/07/02	<0.040		mg/kg	
			Methyl-tert-butylether (MTBE)	2019/07/02	<0.030		mg/kg	
			Styrene	2019/07/02	<0.020		mg/kg	
			1,1,1,2-tetrachloroethane	2019/07/02	<0.050		mg/kg	
			1,1,2,2-tetrachloroethane	2019/07/02	<0.050		mg/kg	
			Tetrachloroethene	2019/07/02	<0.010		mg/kg	
			1,2,3-trichlorobenzene	2019/07/02	<0.040		mg/kg	
			1,2,4-trichlorobenzene	2019/07/02	<0.040		mg/kg	
			1,3,5-trichlorobenzene	2019/07/02	<0.040		mg/kg	
			1,1,1-trichloroethane	2019/07/02	<0.020		mg/kg	
			1,1,2-trichloroethane	2019/07/02	<0.020		mg/kg	
			Trichloroethene	2019/07/02	<0.010		mg/kg	
			Trichlorofluoromethane	2019/07/02	<0.020		mg/kg	
			1,2,4-trimethylbenzene	2019/07/02	<0.50		mg/kg	
			1,3,5-trimethylbenzene	2019/07/02	<0.50		mg/kg	
			Vinyl chloride	2019/07/02	<0.00030		mg/kg	
9487323	QW1	RPD	Bromodichloromethane	2019/07/02	NC		%	50
			Bromoform	2019/07/02	NC		%	50
			Bromomethane	2019/07/02	NC		%	50
			Carbon tetrachloride	2019/07/02	NC		%	50
			Chlorobenzene	2019/07/02	NC		%	50
			Chlorodibromomethane	2019/07/02	NC		%	50
			Chloroethane	2019/07/02	NC		%	50
			Chloroform	2019/07/02	NC		%	50
			Chloromethane	2019/07/02	NC		%	50
			1,2-dibromoethane	2019/07/02	NC		%	50
			1,2-dichlorobenzene	2019/07/02	NC		%	50
			1,3-dichlorobenzene	2019/07/02	NC		%	50
			1,4-dichlorobenzene	2019/07/02	NC		%	50
			1,1-dichloroethane	2019/07/02	NC		%	50
			1,2-dichloroethane	2019/07/02	NC		%	50
			1,1-dichloroethene	2019/07/02	NC		%	50
			cis-1,2-dichloroethene	2019/07/02	NC		%	50
			trans-1,2-dichloroethene	2019/07/02	NC		%	50
			Dichloromethane	2019/07/02	NC		%	50
			1,2-dichloropropane	2019/07/02	NC		%	50
			cis-1,3-dichloropropene	2019/07/02	NC		%	50
			trans-1,3-dichloropropene	2019/07/02	NC		%	50
			Methyl methacrylate	2019/07/02	NC		%	50
			Methyl-tert-butylether (MTBE)	2019/07/02	NC		%	50
			Styrene	2019/07/02	NC		%	50
			1,1,1,2-tetrachloroethane	2019/07/02	NC		%	50
			1,1,2,2-tetrachloroethane	2019/07/02	NC		%	50
			Tetrachloroethene	2019/07/02	NC		%	50
			1,2,3-trichlorobenzene	2019/07/02	NC		%	50
			1,2,4-trichlorobenzene	2019/07/02	NC		%	50

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B951324
Report Date: 2019/07/05

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,3,5-trichlorobenzene	2019/07/02	NC		%	50
			1,1,1-trichloroethane	2019/07/02	NC		%	50
			1,1,2-trichloroethane	2019/07/02	NC		%	50
			Trichloroethene	2019/07/02	NC		%	50
			Trichlorofluoromethane	2019/07/02	NC		%	50
			1,2,4-trimethylbenzene	2019/07/02	NC		%	50
			1,3,5-trimethylbenzene	2019/07/02	NC		%	50
			Vinyl chloride	2019/07/02	NC		%	50
9488276	QW1	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/07/03		104	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/03		91	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/03		105	%	50 - 140
			Benzene	2019/07/03		100	%	50 - 140
			Bromodichloromethane	2019/07/03		115	%	50 - 140
			Bromoform	2019/07/03		121	%	50 - 140
			Bromomethane	2019/07/03		91	%	50 - 140
			Carbon tetrachloride	2019/07/03		115	%	50 - 140
			Chlorobenzene	2019/07/03		108	%	50 - 140
			Chlorodibromomethane	2019/07/03		115	%	50 - 140
			Chloroethane	2019/07/03		90	%	50 - 140
			Chloroform	2019/07/03		110	%	50 - 140
			Chloromethane	2019/07/03		76	%	50 - 140
			1,2-dibromoethane	2019/07/03		112	%	50 - 140
			1,2-dichlorobenzene	2019/07/03		104	%	50 - 140
			1,3-dichlorobenzene	2019/07/03		102	%	50 - 140
			1,4-dichlorobenzene	2019/07/03		100	%	50 - 140
			1,1-dichloroethane	2019/07/03		99	%	50 - 140
			1,2-dichloroethane	2019/07/03		117	%	50 - 140
			1,1-dichloroethene	2019/07/03		98	%	50 - 140
			cis-1,2-dichloroethene	2019/07/03		107	%	50 - 140
			trans-1,2-dichloroethene	2019/07/03		102	%	50 - 140
			Dichloromethane	2019/07/03		96	%	50 - 140
			1,2-dichloropropane	2019/07/03		99	%	50 - 140
			cis-1,3-dichloropropene	2019/07/03		102	%	50 - 140
			trans-1,3-dichloropropene	2019/07/03		104	%	50 - 140
			Ethylbenzene	2019/07/03		104	%	50 - 140
			Methyl methacrylate	2019/07/03		112	%	50 - 140
			Methyl-tert-butylether (MTBE)	2019/07/03		105	%	50 - 140
			Styrene	2019/07/03		107	%	50 - 140
			1,1,1,2-tetrachloroethane	2019/07/03		112	%	50 - 140
			1,1,2,2-tetrachloroethane	2019/07/03		108	%	50 - 140
			Tetrachloroethene	2019/07/03		106	%	50 - 140
			Toluene	2019/07/03		100	%	50 - 140
			1,2,3-trichlorobenzene	2019/07/03		105	%	50 - 140
			1,2,4-trichlorobenzene	2019/07/03		103	%	50 - 140
			1,3,5-trichlorobenzene	2019/07/03		101	%	50 - 140
			1,1,1-trichloroethane	2019/07/03		113	%	50 - 140
			1,1,2-trichloroethane	2019/07/03		117	%	50 - 140
			Trichloroethene	2019/07/03		112	%	50 - 140
			Trichlorofluoromethane	2019/07/03		107	%	50 - 140
			1,2,4-trimethylbenzene	2019/07/03		96	%	50 - 140
			1,3,5-trimethylbenzene	2019/07/03		96	%	50 - 140
			Vinyl chloride	2019/07/03		85	%	50 - 140
			m & p-Xylene	2019/07/03		105	%	50 - 140

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BV Labs Job #: B951324
Report Date: 2019/07/05

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			o-Xylene	2019/07/03		104	%	50 - 140
9488276	QW1	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/07/03		105	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/03		95	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/03		106	%	50 - 140
			Benzene	2019/07/03		101	%	60 - 130
			Bromodichloromethane	2019/07/03		117	%	60 - 130
			Bromoform	2019/07/03		126	%	60 - 130
			Bromomethane	2019/07/03		92	%	60 - 130
			Carbon tetrachloride	2019/07/03		118	%	60 - 130
			Chlorobenzene	2019/07/03		110	%	60 - 130
			Chlorodibromomethane	2019/07/03		119	%	60 - 130
			Chloroethane	2019/07/03		92	%	60 - 130
			Chloroform	2019/07/03		111	%	60 - 130
			Chloromethane	2019/07/03		78	%	60 - 130
			1,2-dibromoethane	2019/07/03		113	%	60 - 130
			1,2-dichlorobenzene	2019/07/03		109	%	60 - 130
			1,3-dichlorobenzene	2019/07/03		108	%	60 - 130
			1,4-dichlorobenzene	2019/07/03		105	%	60 - 130
			1,1-dichloroethane	2019/07/03		101	%	60 - 130
			1,2-dichloroethane	2019/07/03		118	%	60 - 130
			1,1-dichloroethene	2019/07/03		100	%	60 - 130
			cis-1,2-dichloroethene	2019/07/03		108	%	60 - 130
			trans-1,2-dichloroethene	2019/07/03		104	%	60 - 130
			Dichloromethane	2019/07/03		97	%	60 - 130
			1,2-dichloropropane	2019/07/03		101	%	60 - 130
			cis-1,3-dichloropropene	2019/07/03		98	%	60 - 130
			trans-1,3-dichloropropene	2019/07/03		104	%	60 - 130
			Ethylbenzene	2019/07/03		106	%	60 - 130
			Methyl methacrylate	2019/07/03		115	%	60 - 130
			Methyl-tert-butylether (MTBE)	2019/07/03		106	%	60 - 130
			Styrene	2019/07/03		112	%	60 - 130
			1,1,1,2-tetrachloroethane	2019/07/03		114	%	60 - 130
			1,1,2,2-tetrachloroethane	2019/07/03		109	%	60 - 130
			Tetrachloroethene	2019/07/03		109	%	60 - 130
			Toluene	2019/07/03		101	%	60 - 130
			1,2,3-trichlorobenzene	2019/07/03		109	%	60 - 130
			1,2,4-trichlorobenzene	2019/07/03		109	%	60 - 130
			1,3,5-trichlorobenzene	2019/07/03		107	%	60 - 130
			1,1,1-trichloroethane	2019/07/03		115	%	60 - 130
			1,1,2-trichloroethane	2019/07/03		115	%	60 - 130
			Trichloroethene	2019/07/03		115	%	60 - 130
			Trichlorofluoromethane	2019/07/03		109	%	60 - 130
			1,2,4-trimethylbenzene	2019/07/03		101	%	60 - 130
			1,3,5-trimethylbenzene	2019/07/03		100	%	60 - 130
			Vinyl chloride	2019/07/03		87	%	60 - 130
			m & p-Xylene	2019/07/03		107	%	60 - 130
			o-Xylene	2019/07/03		106	%	60 - 130
9488276	QW1	Method Blank	1,4-Difluorobenzene (sur.)	2019/07/03		103	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/03		92	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/03		108	%	50 - 140
			Benzene	2019/07/03	<0.00040		mg/L	
			Bromodichloromethane	2019/07/03	<0.00050		mg/L	
			Bromoform	2019/07/03	<0.00050		mg/L	

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BV Labs Job #: B951324
Report Date: 2019/07/05

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Bromomethane	2019/07/03	<0.0020		mg/L	
			Carbon tetrachloride	2019/07/03	<0.00050		mg/L	
			Chlorobenzene	2019/07/03	<0.00050		mg/L	
			Chlorodibromomethane	2019/07/03	<0.0010		mg/L	
			Chloroethane	2019/07/03	<0.0010		mg/L	
			Chloroform	2019/07/03	<0.00050		mg/L	
			Chloromethane	2019/07/03	<0.0020		mg/L	
			1,2-dibromoethane	2019/07/03	<0.00020		mg/L	
			1,2-dichlorobenzene	2019/07/03	<0.00050		mg/L	
			1,3-dichlorobenzene	2019/07/03	<0.00050		mg/L	
			1,4-dichlorobenzene	2019/07/03	<0.00050		mg/L	
			1,1-dichloroethane	2019/07/03	<0.00050		mg/L	
			1,2-dichloroethane	2019/07/03	<0.00050		mg/L	
			1,1-dichloroethene	2019/07/03	<0.00050		mg/L	
			cis-1,2-dichloroethene	2019/07/03	<0.00050		mg/L	
			trans-1,2-dichloroethene	2019/07/03	<0.00050		mg/L	
			Dichloromethane	2019/07/03	<0.0020		mg/L	
			1,2-dichloropropane	2019/07/03	<0.00050		mg/L	
			cis-1,3-dichloropropene	2019/07/03	<0.00050		mg/L	
			trans-1,3-dichloropropene	2019/07/03	<0.00050		mg/L	
			Ethylbenzene	2019/07/03	<0.00040		mg/L	
			Methyl methacrylate	2019/07/03	<0.00050		mg/L	
			Methyl-tert-butylether (MTBE)	2019/07/03	<0.00050		mg/L	
			Styrene	2019/07/03	<0.00050		mg/L	
			1,1,1,2-tetrachloroethane	2019/07/03	<0.0010		mg/L	
			1,1,2,2-tetrachloroethane	2019/07/03	<0.0020		mg/L	
			Tetrachloroethene	2019/07/03	<0.00050		mg/L	
			Toluene	2019/07/03	<0.00040		mg/L	
			1,2,3-trichlorobenzene	2019/07/03	<0.0010		mg/L	
			1,2,4-trichlorobenzene	2019/07/03	<0.0010		mg/L	
			1,3,5-trichlorobenzene	2019/07/03	<0.00050		mg/L	
			1,1,1-trichloroethane	2019/07/03	<0.00050		mg/L	
			1,1,2-trichloroethane	2019/07/03	<0.00050		mg/L	
			Trichloroethene	2019/07/03	<0.00050		mg/L	
			Trichlorofluoromethane	2019/07/03	<0.00050		mg/L	
			1,2,4-trimethylbenzene	2019/07/03	<0.00050		mg/L	
			1,3,5-trimethylbenzene	2019/07/03	<0.00050		mg/L	
			Vinyl chloride	2019/07/03	<0.00050		mg/L	
			Xylenes (Total)	2019/07/03	<0.00080		mg/L	
			m & p-Xylene	2019/07/03	<0.00080		mg/L	
			o-Xylene	2019/07/03	<0.00040		mg/L	
9488276	QW1	RPD	Bromodichloromethane	2019/07/03	NC		%	30
			Bromoform	2019/07/03	NC		%	30
			Bromomethane	2019/07/03	NC		%	30
			Carbon tetrachloride	2019/07/03	NC		%	30
			Chlorobenzene	2019/07/03	NC		%	30
			Chlorodibromomethane	2019/07/03	NC		%	30
			Chloroethane	2019/07/03	NC		%	30
			Chloroform	2019/07/03	NC		%	30
			Chloromethane	2019/07/03	NC		%	30
			1,2-dibromoethane	2019/07/03	NC		%	30
			1,2-dichlorobenzene	2019/07/03	NC		%	30
			1,3-dichlorobenzene	2019/07/03	NC		%	30

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BV Labs Job #: B951324
Report Date: 2019/07/05

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,4-dichlorobenzene	2019/07/03	NC		%	30
			1,1-dichloroethane	2019/07/03	NC		%	30
			1,2-dichloroethane	2019/07/03	0.27		%	30
			1,1-dichloroethene	2019/07/03	NC		%	30
			cis-1,2-dichloroethene	2019/07/03	NC		%	30
			trans-1,2-dichloroethene	2019/07/03	NC		%	30
			Dichloromethane	2019/07/03	NC		%	30
			1,2-dichloropropane	2019/07/03	NC		%	30
			cis-1,3-dichloropropene	2019/07/03	NC		%	30
			trans-1,3-dichloropropene	2019/07/03	NC		%	30
			Methyl methacrylate	2019/07/03	NC		%	30
			Methyl-tert-butylether (MTBE)	2019/07/03	NC		%	30
			Styrene	2019/07/03	NC		%	30
			1,1,1,2-tetrachloroethane	2019/07/03	NC		%	30
			1,1,2,2-tetrachloroethane	2019/07/03	NC		%	30
			Tetrachloroethene	2019/07/03	NC		%	30
			1,2,3-trichlorobenzene	2019/07/03	NC		%	30
			1,2,4-trichlorobenzene	2019/07/03	NC		%	30
			1,3,5-trichlorobenzene	2019/07/03	NC		%	30
			1,1,1-trichloroethane	2019/07/03	NC		%	30
			1,1,2-trichloroethane	2019/07/03	NC		%	30
			Trichloroethene	2019/07/03	NC		%	30
			Trichlorofluoromethane	2019/07/03	NC		%	30
			1,2,4-trimethylbenzene	2019/07/03	NC		%	30
			1,3,5-trimethylbenzene	2019/07/03	NC		%	30
			Vinyl chloride	2019/07/03	NC		%	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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NOTIFICATION LOG

No Reportable Regulation Exceedences Noted.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B951324
Report Date: 2019/07/05

CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Location: CALGARY
Sampler Initials: MJ

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Gita Pokhrel, Senior Analyst

Janet Gao, B.Sc., QP, Supervisor, Organics

Jared Wiseman, B.Sc., P.Chem., QP, Senior Analyst, Organics

Luba Shymushovska, B.Sc., QP, Senior Analyst, Organics

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Edmonton: 9331-48 St. T6B 2R4. Toll Free (800) 386-7247
maxxam.ca

1059

CHAIN OF CUSTODY RECORD

M 082684

Invoice Information		Report Information (if differs from invoice)		Project Information		Turnaround Time (TAT) Required
Company:	Clifton	Company:		Quotation #:		☑ 5 - 7 Days Regular (Most analyses)
Contact Name:	Stephen D'Abadie	Contact Name:		P.O. #/ AFE#:		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address:	2222 30th Ave NE Calgary	Address:		Project #:	CA2930.1-E37	Rush TAT (Surcharges will be applied): ☐ Same Day ☐ 2 Days ☐ 1 Day ☐ 3-4 Days
Phone:	403-263-2556	Phone:		Site Location:	Calgary	
Email:	stephen.dabadie@cliftonic	Email:		Site #:		Date Required:
Copies:	One	Copies:		Sampled By:	Matt J	Rush Confirmation #:

Laboratory Use Only

	YES	NO	Cooler ID			
Seal Present		✓	Temp	11	10	8
Seal Intact		✓				
Cooling Media	✓					
	YES	NO	Cooler ID			
Seal Present			Temp			
Seal Intact						
Cooling Media						
	YES	NO	Cooler ID			
Seal Present			Temp			
Seal Intact						
Cooling Media						

Depot Reception

Analysis Requested

	Sample Identification	Depth (Unit)	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	# of containers	BTEX F1 ☐ VOC ☑	BTEX F1-F2	BTEX F1-F4	Routine Water	Regulated Metals Tot ☐ Diss ☐	Mercury Total ☐ Dissolved ☐	Salinity 4	Sieve (75 micron)	Texture (% Sand, Silt, Clay)	Basic Class II Landfill	PAH	HOLD - DO NOT ANALYZE
1	MJ052		2019/06/26		Soil	5	X		X								X	
2	MJ059		↓		↓	5	X		X								X	
3	MJ070					5	X		X								X	
4	MJ077					5	X		X								X	
5	MJ082					5	X		X								X	
6	Trip003				water	2	X											
7																		
8																		
9																		
10																		

Please indicate Filtered, Preserved or Both (F, P, F/P)

Regulatory Criteria

☐ AT1
☐ CCME
☐ Drinking Water
☐ D50 (Drilling Waste)
☐ Saskatchewan
☐ Other:

Special Instructions

Relinquished by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)	Received by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)
Matthew Johnson	2019/06/26	18:30	Sara Bischoff	2019/06/26	18:31

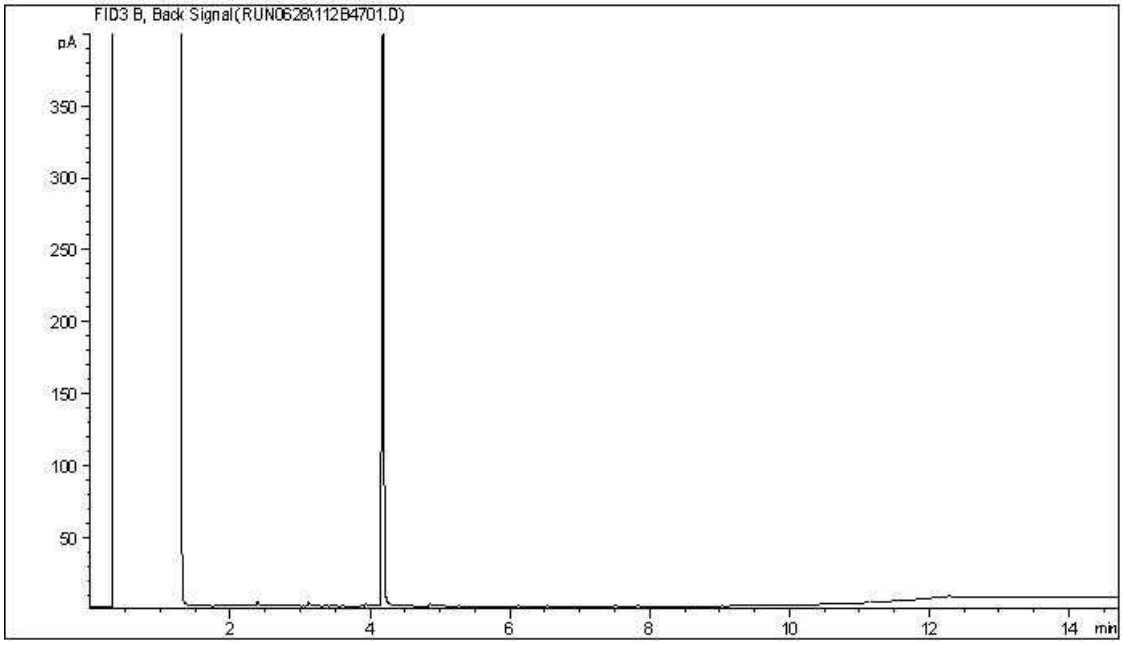
26-Jun-19 18:31
Linsay Sunderman
B951324
JK4 INS-0233

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Maxxam's standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms which are available for viewing at www.max

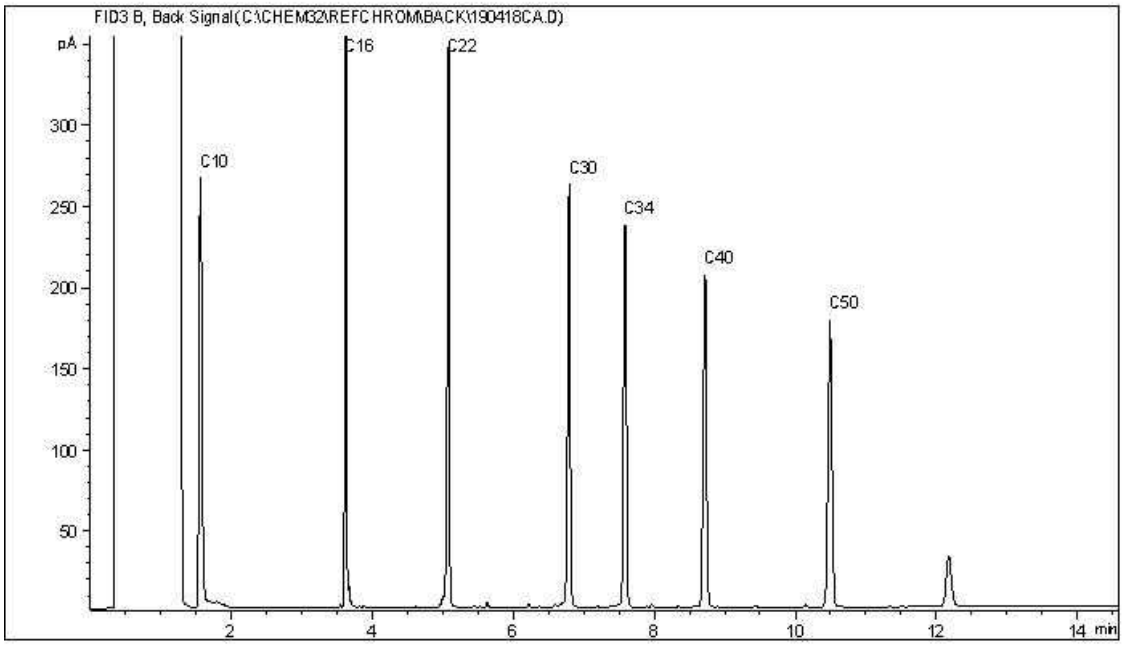
AB FCD-00331/7

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC13



Carbon Range Distribution - Reference Chromatogram



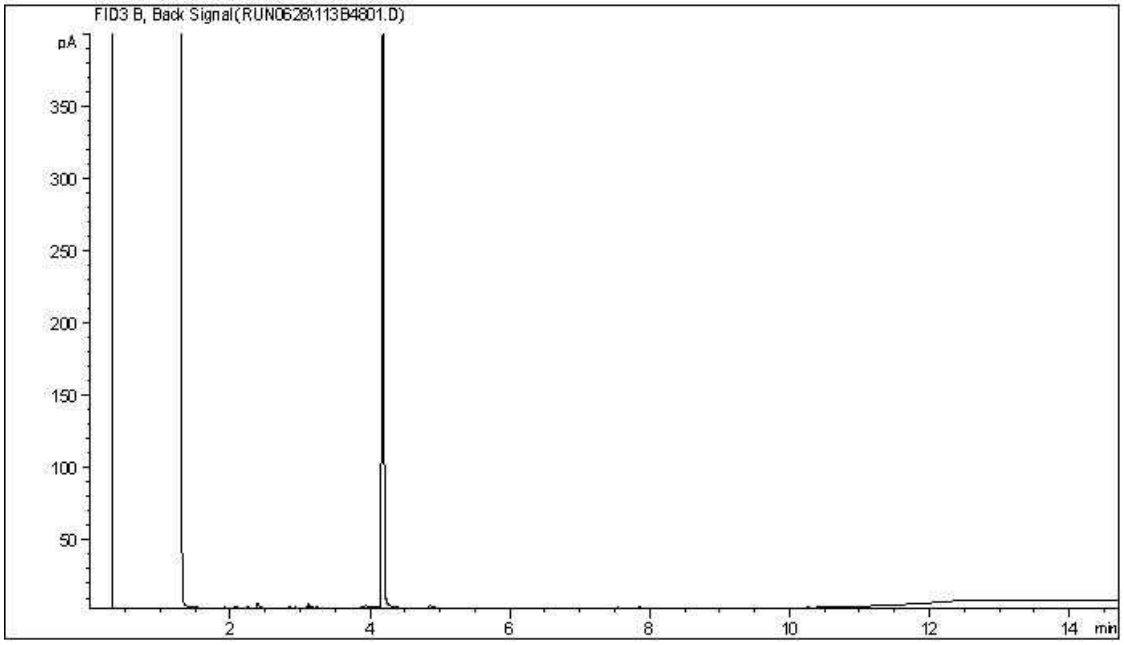
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

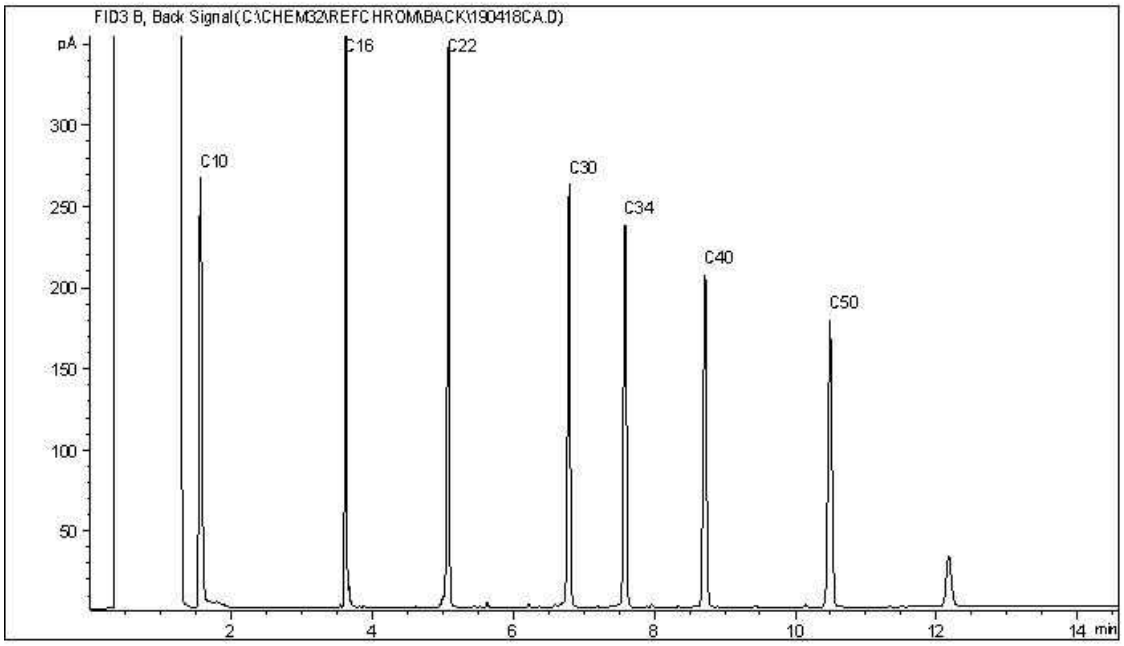
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC13



Carbon Range Distribution - Reference Chromatogram



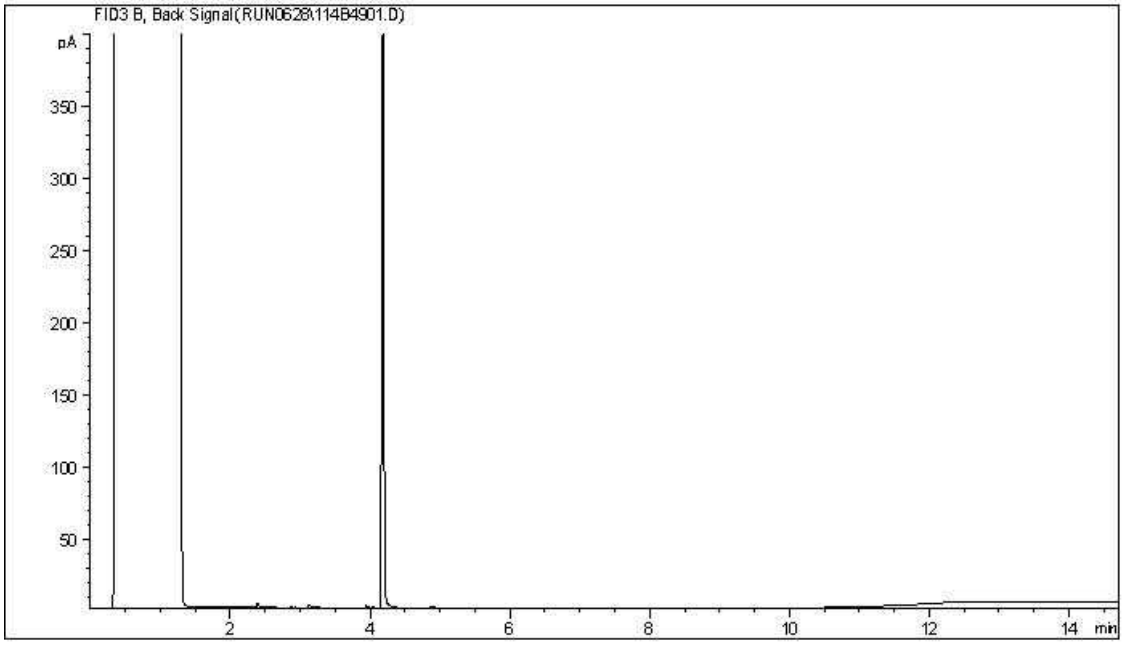
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

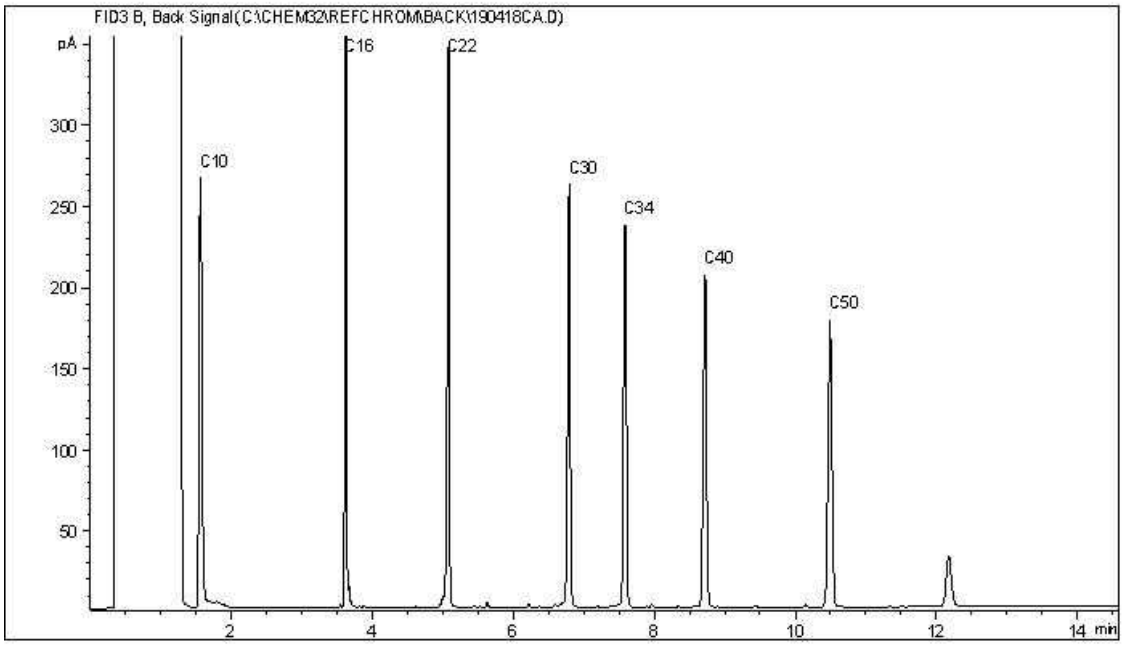
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC13



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

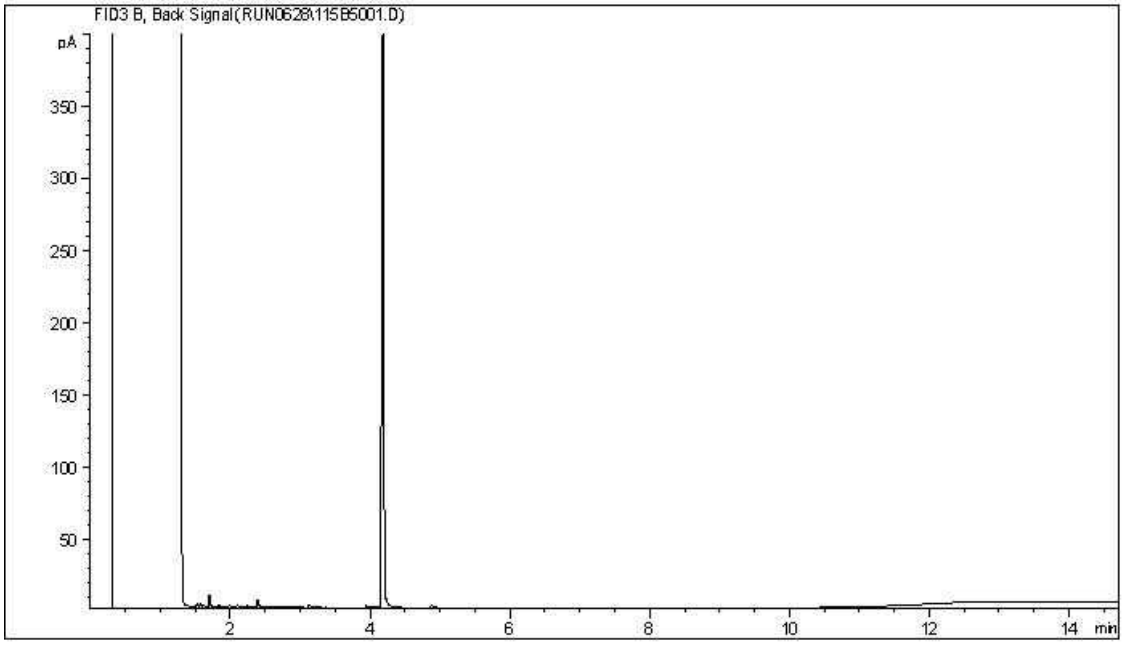
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B951324
Report Date: 2019/07/05
BV Labs Sample: VZ2731

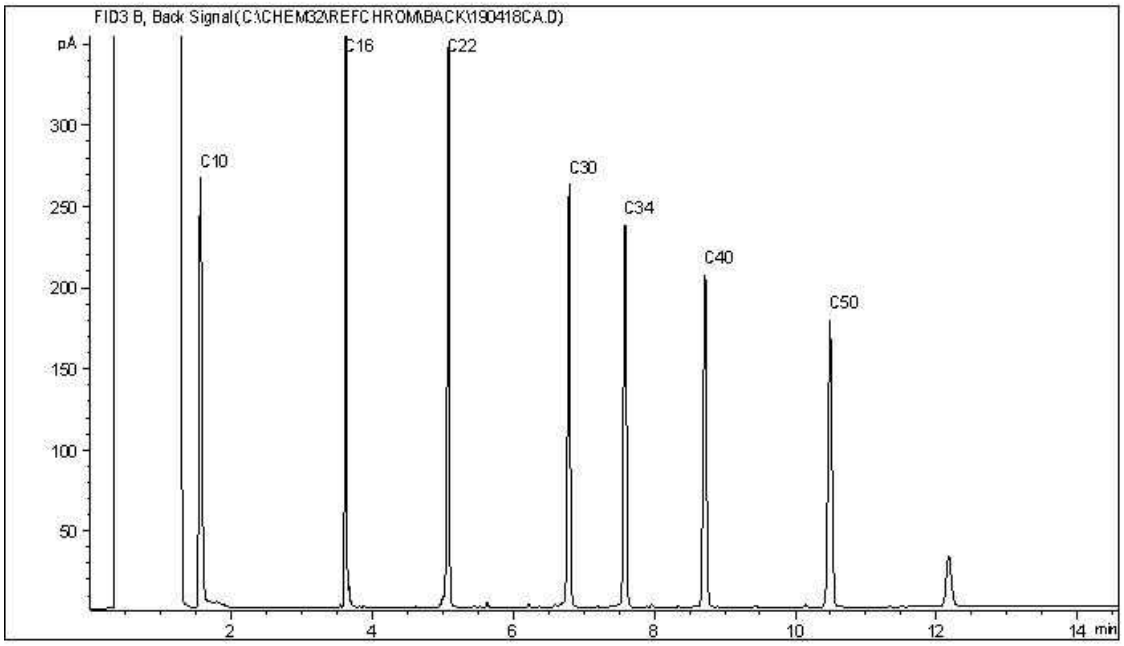
CLIFTON ASSOCIATES LTD.
Client Project #: CA2430.1-E37
Site Reference: CALGARY
Client ID: MJ077

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC13



Carbon Range Distribution - Reference Chromatogram



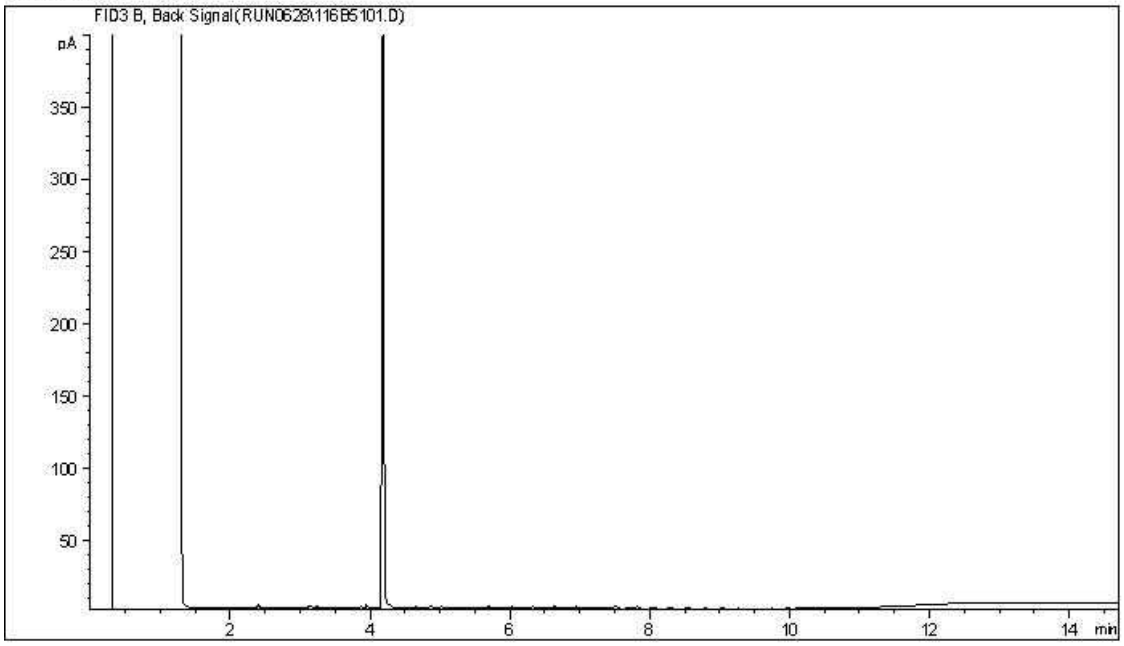
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

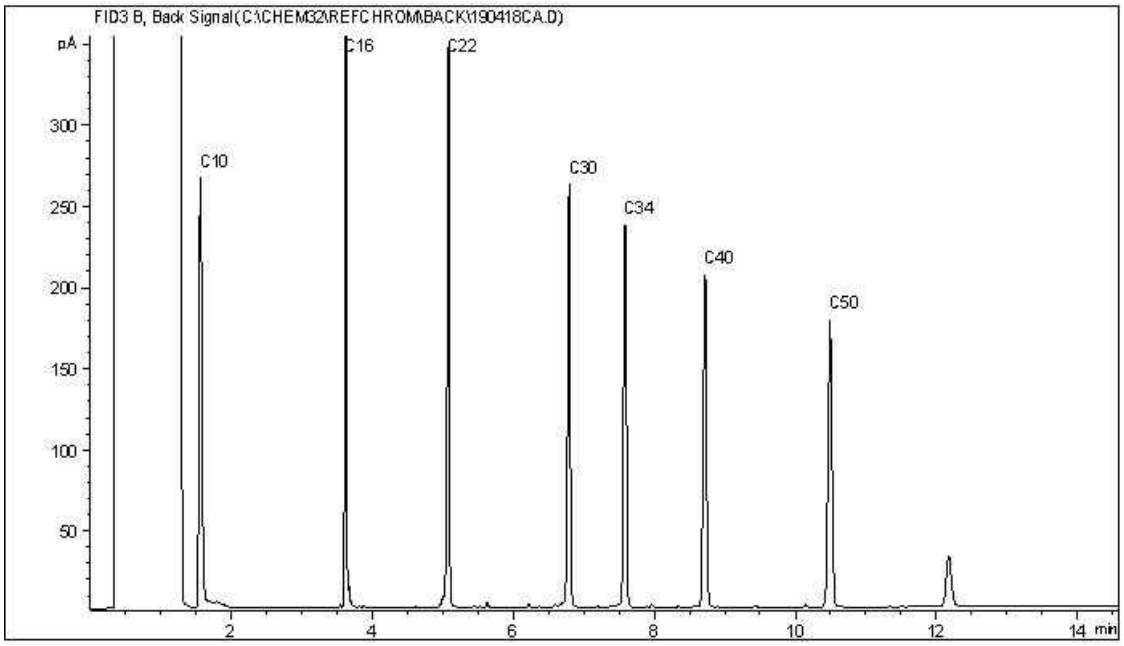
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC13



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: CG2430.1-E37
Your C.O.C. #: M082710

Attention: STEPHEN D'ABADIE

CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
CANADA T2E 7K9

Report Date: 2019/07/06
Report #: R2748451
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B952107
Received: 2019/06/27, 17:57

Sample Matrix: Soil
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS/FID (MeOH extract) (1)	4	N/A	2019/07/03	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX	4	N/A	2019/07/04		Auto Calc
CCME Hydrocarbons (F2-F4 in soil) (2)	1	2019/07/02	2019/07/03	AB SOP-00036	CCME PHC-CWS m
CCME Hydrocarbons (F2-F4 in soil) (2)	3	2019/07/02	2019/07/04	AB SOP-00036	CCME PHC-CWS m
Moisture	4	N/A	2019/07/04	AB SOP-00002	CCME PHC-CWS m
Benzo[a]pyrene Equivalency	3	N/A	2019/07/05		Auto Calc
PAH in Soil by GC/MS	3	2019/07/02	2019/07/04	AB SOP-00036 / AB SOP-00003	EPA 3540C/8270E m
VOCs in Soil by HS GC/MS (Std List) (1)	3	N/A	2019/07/03	AB SOP-00056	EPA 5021a/8260d m

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total Trihalomethanes Calculation	1	N/A	2019/07/05		Auto Calc
VOCs in Water by HS GC/MS (Std List)	1	N/A	2019/07/04	AB SOP-00056	EPA 5021a/8260d m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

Your Project #: CG2430.1-E37
Your C.O.C. #: M082710

Attention: STEPHEN D'ABADIE

CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
CANADA T2E 7K9

Report Date: 2019/07/06
Report #: R2748451
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B952107
Received: 2019/06/27, 17:57

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.

(2) All CCME results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods September 2003. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

AUTHORIZED REPORT
RAPPORT AUTORISÉ

Bureau Veritas Laboratories
06 Jul 2019 09:21:51

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Linsay Sunderman, Key Account Specialist
Email: Lsunderman@bvlabs.com
Phone# (403)735-2237 Ext:2237

==========

This report has been generated and distributed using a secure automated process.
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B952107
Report Date: 2019/07/06

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1-E37

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		VZ7270	VZ7271	VZ7272		VZ7273		
Sampling Date		2019/06/27	2019/06/27	2019/06/27		2019/06/27		
COC Number		M082710	M082710	M082710		M082710		
	UNITS	**MS 092**	**MS 098**	**MS 102**	**QC Batch**	**DUP 002**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	9489748	<10	10	9489714
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	<50	9489748	<50	50	9489714
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	9489748	<50	50	9489714
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	9489748	Yes	N/A	9489714
Physical Properties								
Moisture	%	11	18	18	9490557	19	0.30	9490557
Volatiles								
Xylenes (Total)	mg/kg	<0.045	0.92	<0.045	9488610	0.99	0.045	9488610
F1 (C6-C10) - BTEX	mg/kg	<10	<10	<10	9488610	<10	10	9488610
Field Preserved Volatiles								
Benzene	mg/kg	0.021	0.90	<0.0050	9489744	0.88	0.0050	9489744
Toluene	mg/kg	<0.050	<0.050	<0.050	9489744	<0.050	0.050	9489744
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	9489744	<0.010	0.010	9489744
m & p-Xylene	mg/kg	<0.040	0.079	<0.040	9489744	0.071	0.040	9489744
o-Xylene	mg/kg	<0.020	0.84	<0.020	9489744	0.92	0.020	9489744
F1 (C6-C10)	mg/kg	<10	<10	<10	9489744	<10	10	9489744
Surrogate Recovery (%)								
1,4-Difluorobenzene (sur.)	%	97	97	96	9489744	96	N/A	9489744
4-Bromofluorobenzene (sur.)	%	110	110	110	9489744	110	N/A	9489744
D10-o-Xylene (sur.)	%	103	99	108	9489744	103	N/A	9489744
D4-1,2-Dichloroethane (sur.)	%	101	102	100	9489744	99	N/A	9489744
O-TERPHENYL (sur.)	%	97	103	100	9489748	104	N/A	9489714

RDL = Reportable Detection Limit
N/A = Not Applicable

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SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		VZ7270	VZ7271	VZ7272		
Sampling Date		2019/06/27	2019/06/27	2019/06/27		
COC Number		M082710	M082710	M082710		
	UNITS	MS 092	MS 098	MS 102	RDL	QC Batch
Polycyclic Aromatics						
Acenaphthene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9489762
B[a]P TPE Total Potency Equivalents	mg/kg	<0.0071	<0.0071	<0.0071	0.0071	9488709
Acenaphthylene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9489762
Acridine	mg/kg	<0.010	<0.010	<0.010	0.010	9489762
Anthracene	mg/kg	<0.0040	<0.0040	<0.0040	0.0040	9489762
Benzo(a)anthracene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9489762
Benzo(b&j)fluoranthene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9489762
Benzo(k)fluoranthene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9489762
Benzo(g,h,i)perylene	mg/kg	0.0057	<0.0050	<0.0050	0.0050	9489762
Benzo(c)phenanthrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9489762
Benzo(a)pyrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9489762
Benzo[e]pyrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9489762
Chrysene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9489762
Dibenz(a,h)anthracene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9489762
Fluoranthene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9489762
Fluorene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9489762
Indeno(1,2,3-cd)pyrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9489762
1-Methylnaphthalene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9489762
2-Methylnaphthalene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9489762
Naphthalene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9489762
Phenanthrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9489762
Perylene	mg/kg	<0.0050	<0.0050	0.0062	0.0050	9489762
Pyrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	9489762
Quinoline	mg/kg	<0.010	<0.010	<0.010	0.010	9489762
Surrogate Recovery (%)						
D10-ANTHRACENE (sur.)	%	101	95	100	N/A	9489762
D8-ACENAPHTHYLENE (sur.)	%	104	100	102	N/A	9489762
D8-NAPHTHALENE (sur.)	%	97	97	95	N/A	9489762
TERPHENYL-D14 (sur.)	%	99	94	102	N/A	9489762

RDL = Reportable Detection Limit
N/A = Not Applicable

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VOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		VZ7270	VZ7271	VZ7272		
Sampling Date		2019/06/27	2019/06/27	2019/06/27		
COC Number		M082710	M082710	M082710		
	UNITS	**MS 092**	**MS 098**	**MS 102**	**RDL**	**QC Batch**
Field Preserved Volatiles						
Bromodichloromethane	mg/kg	<0.030	<0.030	<0.030	0.030	9490331
Bromoform	mg/kg	<0.050	<0.050	<0.050	0.050	9490331
Bromomethane	mg/kg	<0.020	<0.020	<0.020	0.020	9490331
Carbon tetrachloride	mg/kg	<0.00050	<0.00050	<0.00050	0.00050	9490331
Chlorobenzene	mg/kg	<0.0010	<0.0010	<0.0010	0.0010	9490331
Chlorodibromomethane	mg/kg	<0.020	<0.020	<0.020	0.020	9490331
Chloroethane	mg/kg	<0.020	<0.020	<0.020	0.020	9490331
Chloroform	mg/kg	<0.010	<0.010	<0.010	0.010	9490331
Chloromethane	mg/kg	<0.030	<0.030	<0.030	0.030	9490331
1,2-dibromoethane	mg/kg	<0.0020	<0.0020	<0.0020	0.0020	9490331
1,2-dichlorobenzene	mg/kg	<0.020	<0.020	<0.020	0.020	9490331
1,3-dichlorobenzene	mg/kg	<0.020	<0.020	<0.020	0.020	9490331
1,4-dichlorobenzene	mg/kg	<0.020	<0.020	<0.020	0.020	9490331
1,1-dichloroethane	mg/kg	<0.020	<0.020	<0.020	0.020	9490331
1,2-dichloroethane	mg/kg	0.058	<0.0020	0.071	0.0020	9490331
1,1-dichloroethene	mg/kg	<0.020	<0.020	<0.020	0.020	9490331
cis-1,2-dichloroethene	mg/kg	<0.020	<0.020	<0.020	0.020	9490331
trans-1,2-dichloroethene	mg/kg	<0.020	<0.020	<0.020	0.020	9490331
Dichloromethane	mg/kg	<0.030	<0.030	<0.030	0.030	9490331
1,2-dichloropropane	mg/kg	<0.020	<0.020	<0.020	0.020	9490331
cis-1,3-dichloropropene	mg/kg	<0.020	<0.020	<0.020	0.020	9490331
trans-1,3-dichloropropene	mg/kg	<0.020	<0.020	<0.020	0.020	9490331
Methyl methacrylate	mg/kg	<0.040	<0.040	<0.040	0.040	9490331
Methyl-tert-butylether (MTBE)	mg/kg	<0.030	<0.030	<0.030	0.030	9490331
Styrene	mg/kg	<0.020	<0.020	<0.020	0.020	9490331
1,1,1,2-tetrachloroethane	mg/kg	<0.050	<0.050	<0.050	0.050	9490331
1,1,2,2-tetrachloroethane	mg/kg	<0.050	<0.050	<0.050	0.050	9490331
Tetrachloroethene	mg/kg	<0.010	<0.010	<0.010	0.010	9490331
1,2,3-trichlorobenzene	mg/kg	<0.040	<0.040	<0.040	0.040	9490331
1,2,4-trichlorobenzene	mg/kg	<0.040	<0.040	<0.040	0.040	9490331
1,3,5-trichlorobenzene	mg/kg	<0.040	<0.040	<0.040	0.040	9490331
1,1,1-trichloroethane	mg/kg	<0.020	<0.020	<0.020	0.020	9490331
1,1,2-trichloroethane	mg/kg	<0.020	<0.020	<0.020	0.020	9490331
Trichloroethene	mg/kg	<0.010	<0.010	<0.010	0.010	9490331
RDL = Reportable Detection Limit						

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VOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		VZ7270	VZ7271	VZ7272		
Sampling Date		2019/06/27	2019/06/27	2019/06/27		
COC Number		M082710	M082710	M082710		
	UNITS	**MS 092**	**MS 098**	**MS 102**	**RDL**	**QC Batch**
Trichlorofluoromethane	mg/kg	<0.020	<0.020	<0.020	0.020	9490331
1,2,4-trimethylbenzene	mg/kg	<0.50	<0.50	<0.50	0.50	9490331
1,3,5-trimethylbenzene	mg/kg	<0.50	<0.50	<0.50	0.50	9490331
Vinyl chloride	mg/kg	<0.00030	<0.00030	<0.00030	0.00030	9490331
Surrogate Recovery (%)						
1,4-Difluorobenzene (sur.)	%	103	102	102	N/A	9490331
4-Bromofluorobenzene (sur.)	%	91	93	93	N/A	9490331
D10-o-Xylene (sur.)	%	112	125	117	N/A	9490331
D4-1,2-Dichloroethane (sur.)	%	111	110	111	N/A	9490331

RDL = Reportable Detection Limit
N/A = Not Applicable

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VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		VZ7274	VZ7274		
Sampling Date		2019/06/27	2019/06/27		
COC Number		M082710	M082710		
	UNITS	**TRIP 004**	**TRIP 004 Lab-Dup**	**RDL**	**QC Batch**
Volatiles					
Total Trihalomethanes	mg/L	<0.0013	N/A	0.0013	9488328
Benzene	mg/L	<0.00040	0.00066	0.00040	9491118
Bromodichloromethane	mg/L	<0.00050	<0.00050	0.00050	9491118
Bromoform	mg/L	<0.00050	<0.00050	0.00050	9491118
Bromomethane	mg/L	<0.0020	<0.0020	0.0020	9491118
Carbon tetrachloride	mg/L	<0.00050	<0.00050	0.00050	9491118
Chlorobenzene	mg/L	<0.00050	<0.00050	0.00050	9491118
Chlorodibromomethane	mg/L	<0.0010	<0.0010	0.0010	9491118
Chloroethane	mg/L	<0.0010	<0.0010	0.0010	9491118
Chloroform	mg/L	<0.00050	<0.00050	0.00050	9491118
Chloromethane	mg/L	<0.0020	<0.0020	0.0020	9491118
1,2-dibromoethane	mg/L	<0.00020	<0.00020	0.00020	9491118
1,2-dichlorobenzene	mg/L	<0.00050	<0.00050	0.00050	9491118
1,3-dichlorobenzene	mg/L	<0.00050	<0.00050	0.00050	9491118
1,4-dichlorobenzene	mg/L	<0.00050	<0.00050	0.00050	9491118
1,1-dichloroethane	mg/L	<0.00050	<0.00050	0.00050	9491118
1,2-dichloroethane	mg/L	<0.00050	<0.00050	0.00050	9491118
1,1-dichloroethene	mg/L	<0.00050	<0.00050	0.00050	9491118
cis-1,2-dichloroethene	mg/L	<0.00050	<0.00050	0.00050	9491118
trans-1,2-dichloroethene	mg/L	<0.00050	<0.00050	0.00050	9491118
Dichloromethane	mg/L	<0.0020	<0.0020	0.0020	9491118
1,2-dichloropropane	mg/L	<0.00050	<0.00050	0.00050	9491118
cis-1,3-dichloropropene	mg/L	<0.00050	<0.00050	0.00050	9491118
trans-1,3-dichloropropene	mg/L	<0.00050	<0.00050	0.00050	9491118
Ethylbenzene	mg/L	<0.00040	<0.00040	0.00040	9491118
Methyl methacrylate	mg/L	<0.00050	<0.00050	0.00050	9491118
Methyl-tert-butylether (MTBE)	mg/L	<0.00050	<0.00050	0.00050	9491118
Styrene	mg/L	<0.00050	<0.00050	0.00050	9491118
1,1,1,2-tetrachloroethane	mg/L	<0.0010	<0.0010	0.0010	9491118
1,1,2,2-tetrachloroethane	mg/L	<0.0020	<0.0020	0.0020	9491118
Tetrachloroethene	mg/L	<0.00050	<0.00050	0.00050	9491118

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		VZ7274	VZ7274		
Sampling Date		2019/06/27	2019/06/27		
COC Number		M082710	M082710		
	UNITS	**TRIP 004**	**TRIP 004 Lab-Dup**	**RDL**	**QC Batch**
Toluene	mg/L	<0.00040	<0.00040	0.00040	9491118
1,2,3-trichlorobenzene	mg/L	<0.0010	<0.0010	0.0010	9491118
1,2,4-trichlorobenzene	mg/L	<0.0010	<0.0010	0.0010	9491118
1,3,5-trichlorobenzene	mg/L	<0.00050	<0.00050	0.00050	9491118
1,1,1-trichloroethane	mg/L	<0.00050	<0.00050	0.00050	9491118
1,1,2-trichloroethane	mg/L	<0.00050	<0.00050	0.00050	9491118
Trichloroethene	mg/L	<0.00050	<0.00050	0.00050	9491118
Trichlorofluoromethane	mg/L	<0.00050	<0.00050	0.00050	9491118
1,2,4-trimethylbenzene	mg/L	<0.00050	<0.00050	0.00050	9491118
1,3,5-trimethylbenzene	mg/L	<0.00050	<0.00050	0.00050	9491118
Vinyl chloride	mg/L	<0.00050	<0.00050	0.00050	9491118
Xylenes (Total)	mg/L	<0.00080	<0.00080	0.00080	9491118
m & p-Xylene	mg/L	<0.00080	<0.00080	0.00080	9491118
o-Xylene	mg/L	<0.00040	<0.00040	0.00040	9491118
Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	98	99	N/A	9491118
4-Bromofluorobenzene (sur.)	%	101	99	N/A	9491118
D4-1,2-Dichloroethane (sur.)	%	99	102	N/A	9491118

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	1.7°C

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9489714	LSH	Matrix Spike	O-TERPHENYL (sur.)	2019/07/03		93	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/07/03		NC	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2019/07/03		NC	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2019/07/03		NC	%	60 - 140
9489714	LSH	Spiked Blank	O-TERPHENYL (sur.)	2019/07/03		98	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/07/03		116	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2019/07/03		107	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2019/07/03		108	%	60 - 140
9489714	LSH	Method Blank	O-TERPHENYL (sur.)	2019/07/03		107	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/07/03	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2019/07/03	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2019/07/03	<50		mg/kg	
9489714	LSH	RPD	F2 (C10-C16 Hydrocarbons)	2019/07/03	9.0		%	40
			F3 (C16-C34 Hydrocarbons)	2019/07/03	5.0		%	40
			F4 (C34-C50 Hydrocarbons)	2019/07/03	28		%	40
9489744	RSU	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/07/03		98	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/03		111	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/03		113	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/03		99	%	50 - 140
			Benzene	2019/07/03		92	%	50 - 140
			Toluene	2019/07/03		94	%	50 - 140
			Ethylbenzene	2019/07/03		104	%	50 - 140
			m & p-Xylene	2019/07/03		101	%	50 - 140
			o-Xylene	2019/07/03		99	%	50 - 140
			F1 (C6-C10)	2019/07/03		89	%	60 - 140
9489744	RSU	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/07/03		96	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/03		110	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/03		99	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/03		97	%	50 - 140
			Benzene	2019/07/03		84	%	60 - 130
			Toluene	2019/07/03		87	%	60 - 130
			Ethylbenzene	2019/07/03		96	%	60 - 130
			m & p-Xylene	2019/07/03		95	%	60 - 130
			o-Xylene	2019/07/03		94	%	60 - 130
			F1 (C6-C10)	2019/07/03		86	%	60 - 140
9489744	RSU	Method Blank	1,4-Difluorobenzene (sur.)	2019/07/03		96	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/03		111	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/03		95	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/03		102	%	50 - 140
			Benzene	2019/07/03	<0.0050		mg/kg	
			Toluene	2019/07/03	<0.050		mg/kg	
			Ethylbenzene	2019/07/03	<0.010		mg/kg	
			m & p-Xylene	2019/07/03	<0.040		mg/kg	
			o-Xylene	2019/07/03	<0.020		mg/kg	
			F1 (C6-C10)	2019/07/03	<10		mg/kg	
9489744	RSU	RPD	Benzene	2019/07/03	NC		%	50
			Toluene	2019/07/03	NC		%	50
			Ethylbenzene	2019/07/03	NC		%	50
			m & p-Xylene	2019/07/03	NC		%	50
			o-Xylene	2019/07/03	NC		%	50
			F1 (C6-C10)	2019/07/03	NC		%	30
9489748	LSH	Matrix Spike	O-TERPHENYL (sur.)	2019/07/04		96	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/07/04		96	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2019/07/04		94	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2019/07/04		93	%	60 - 140

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9489748	LSH	Spiked Blank	O-TERPHENYL (sur.)	2019/07/04		103	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/07/04		108	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2019/07/04		108	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2019/07/04		106	%	60 - 140
9489748	LSH	Method Blank	O-TERPHENYL (sur.)	2019/07/04		102	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/07/04	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2019/07/04	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2019/07/04	<50		mg/kg	
9489748	LSH	RPD	F2 (C10-C16 Hydrocarbons)	2019/07/04	8.1		%	40
			F3 (C16-C34 Hydrocarbons)	2019/07/04	11		%	40
			F4 (C34-C50 Hydrocarbons)	2019/07/04	22		%	40
9489762	LZ3	Matrix Spike	D10-ANTHRACENE (sur.)	2019/07/04		85	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/07/04		92	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/07/04		82	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/07/04		87	%	50 - 130
			Acenaphthene	2019/07/04		79	%	50 - 130
			Acenaphthylene	2019/07/04		81	%	50 - 130
			Acridine	2019/07/04		87	%	50 - 130
			Anthracene	2019/07/04		74	%	50 - 130
			Benzo(a)anthracene	2019/07/04		67	%	50 - 130
			Benzo(b&j)fluoranthene	2019/07/04		57	%	50 - 130
			Benzo(k)fluoranthene	2019/07/04		62	%	50 - 130
			Benzo(g,h,i)perylene	2019/07/04		50	%	50 - 130
			Benzo(c)phenanthrene	2019/07/04		77	%	50 - 130
			Benzo(a)pyrene	2019/07/04		58	%	50 - 130
			Benzo[e]pyrene	2019/07/04		58	%	50 - 130
			Chrysene	2019/07/04		60	%	50 - 130
			Dibenz(a,h)anthracene	2019/07/04		62	%	50 - 130
			Fluoranthene	2019/07/04		57	%	50 - 130
			Fluorene	2019/07/04		82	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/07/04		50	%	50 - 130
			1-Methylnaphthalene	2019/07/04		NC	%	50 - 130
			2-Methylnaphthalene	2019/07/04		NC	%	50 - 130
			Naphthalene	2019/07/04		87	%	50 - 130
			Phenanthrene	2019/07/04		NC	%	50 - 130
			Perylene	2019/07/04		58	%	50 - 130
			Pyrene	2019/07/04		56	%	50 - 130
			Quinoline	2019/07/04		113	%	50 - 130
9489762	LZ3	Spiked Blank	D10-ANTHRACENE (sur.)	2019/07/04		97	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/07/04		99	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/07/04		100	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/07/04		104	%	50 - 130
			Acenaphthene	2019/07/04		91	%	50 - 130
			Acenaphthylene	2019/07/04		92	%	50 - 130
			Acridine	2019/07/04		71	%	50 - 130
			Anthracene	2019/07/04		89	%	50 - 130
			Benzo(a)anthracene	2019/07/04		91	%	50 - 130
			Benzo(b&j)fluoranthene	2019/07/04		88	%	50 - 130
			Benzo(k)fluoranthene	2019/07/04		100	%	50 - 130
			Benzo(g,h,i)perylene	2019/07/04		87	%	50 - 130
			Benzo(c)phenanthrene	2019/07/04		96	%	50 - 130
			Benzo(a)pyrene	2019/07/04		92	%	50 - 130
			Benzo[e]pyrene	2019/07/04		90	%	50 - 130
			Chrysene	2019/07/04		91	%	50 - 130
			Dibenz(a,h)anthracene	2019/07/04		93	%	50 - 130

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Fluoranthene	2019/07/04		85	%	50 - 130
			Fluorene	2019/07/04		91	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/07/04		90	%	50 - 130
			1-Methylnaphthalene	2019/07/04		98	%	50 - 130
			2-Methylnaphthalene	2019/07/04		95	%	50 - 130
			Naphthalene	2019/07/04		92	%	50 - 130
			Phenanthrene	2019/07/04		89	%	50 - 130
			Perylene	2019/07/04		93	%	50 - 130
			Pyrene	2019/07/04		86	%	50 - 130
			Quinoline	2019/07/04		95	%	50 - 130
9489762	LZ3	Method Blank	D10-ANTHRACENE (sur.)	2019/07/04		100	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/07/04		101	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/07/04		97	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/07/04		107	%	50 - 130
			Acenaphthene	2019/07/04	<0.0050		mg/kg	
			Acenaphthylene	2019/07/04	<0.0050		mg/kg	
			Acridine	2019/07/04	<0.010		mg/kg	
			Anthracene	2019/07/04	<0.0040		mg/kg	
			Benzo(a)anthracene	2019/07/04	<0.0050		mg/kg	
			Benzo(b&j)fluoranthene	2019/07/04	<0.0050		mg/kg	
			Benzo(k)fluoranthene	2019/07/04	<0.0050		mg/kg	
			Benzo(g,h,i)perylene	2019/07/04	<0.0050		mg/kg	
			Benzo(c)phenanthrene	2019/07/04	<0.0050		mg/kg	
			Benzo(a)pyrene	2019/07/04	<0.0050		mg/kg	
			Benzo[e]pyrene	2019/07/04	<0.0050		mg/kg	
			Chrysene	2019/07/04	<0.0050		mg/kg	
			Dibenz(a,h)anthracene	2019/07/04	<0.0050		mg/kg	
			Fluoranthene	2019/07/04	<0.0050		mg/kg	
			Fluorene	2019/07/04	<0.0050		mg/kg	
			Indeno(1,2,3-cd)pyrene	2019/07/04	<0.0050		mg/kg	
			1-Methylnaphthalene	2019/07/04	<0.0050		mg/kg	
			2-Methylnaphthalene	2019/07/04	<0.0050		mg/kg	
			Naphthalene	2019/07/04	<0.0050		mg/kg	
			Phenanthrene	2019/07/04	<0.0050		mg/kg	
			Perylene	2019/07/04	<0.0050		mg/kg	
			Pyrene	2019/07/04	<0.0050		mg/kg	
			Quinoline	2019/07/04	<0.010		mg/kg	
9489762	LZ3	RPD	Acenaphthene	2019/07/04	7.6		%	50
			Acenaphthylene	2019/07/04	5.9		%	50
			Acridine	2019/07/04	NC		%	50
			Anthracene	2019/07/04	7.4		%	50
			Benzo(a)anthracene	2019/07/04	34		%	50
			Benzo(b&j)fluoranthene	2019/07/04	27		%	50
			Benzo(k)fluoranthene	2019/07/04	33		%	50
			Benzo(g,h,i)perylene	2019/07/04	17		%	50
			Benzo(c)phenanthrene	2019/07/04	17		%	50
			Benzo(a)pyrene	2019/07/04	35		%	50
			Benzo[e]pyrene	2019/07/04	19		%	50
			Chrysene	2019/07/04	22		%	50
			Dibenz(a,h)anthracene	2019/07/04	12		%	50
			Fluoranthene	2019/07/04	50		%	50
			Fluorene	2019/07/04	7.7		%	50
			Indeno(1,2,3-cd)pyrene	2019/07/04	24		%	50
			1-Methylnaphthalene	2019/07/04	5.8		%	50
			2-Methylnaphthalene	2019/07/04	6.2		%	50

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Naphthalene	2019/07/04	3.2		%	50
			Phenanthrene	2019/07/04	8.8		%	50
			Perylene	2019/07/04	22		%	50
			Pyrene	2019/07/04	47		%	50
			Quinoline	2019/07/04	NC		%	50
9490331	QW1	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/07/03		106	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/03		97	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/03		119	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/03		101	%	50 - 140
			Bromodichloromethane	2019/07/03		110	%	50 - 140
			Bromoform	2019/07/03		111	%	50 - 140
			Bromomethane	2019/07/03		124	%	50 - 140
			Carbon tetrachloride	2019/07/03		110	%	50 - 140
			Chlorobenzene	2019/07/03		98	%	50 - 140
			Chlorodibromomethane	2019/07/03		112	%	50 - 140
			Chloroethane	2019/07/03		100	%	50 - 140
			Chloroform	2019/07/03		97	%	50 - 140
			Chloromethane	2019/07/03		74	%	50 - 140
			1,2-dibromoethane	2019/07/03		103	%	50 - 140
			1,2-dichlorobenzene	2019/07/03		96	%	50 - 140
			1,3-dichlorobenzene	2019/07/03		101	%	50 - 140
			1,4-dichlorobenzene	2019/07/03		96	%	50 - 140
			1,1-dichloroethane	2019/07/03		95	%	50 - 140
			1,2-dichloroethane	2019/07/03		108	%	50 - 140
			1,1-dichloroethene	2019/07/03		96	%	50 - 140
			cis-1,2-dichloroethene	2019/07/03		100	%	50 - 140
			trans-1,2-dichloroethene	2019/07/03		96	%	50 - 140
			Dichloromethane	2019/07/03		87	%	50 - 140
			1,2-dichloropropane	2019/07/03		91	%	50 - 140
			cis-1,3-dichloropropene	2019/07/03		101	%	50 - 140
			trans-1,3-dichloropropene	2019/07/03		97	%	50 - 140
			Methyl methacrylate	2019/07/03		96	%	50 - 140
			Methyl-tert-butylether (MTBE)	2019/07/03		96	%	50 - 140
			Styrene	2019/07/03		103	%	50 - 140
			1,1,1,2-tetrachloroethane	2019/07/03		105	%	50 - 140
			1,1,2,2-tetrachloroethane	2019/07/03		85	%	50 - 140
			Tetrachloroethene	2019/07/03		109	%	50 - 140
			1,2,3-trichlorobenzene	2019/07/03		81	%	50 - 140
			1,2,4-trichlorobenzene	2019/07/03		87	%	50 - 140
			1,3,5-trichlorobenzene	2019/07/03		94	%	50 - 140
			1,1,1-trichloroethane	2019/07/03		111	%	50 - 140
			1,1,2-trichloroethane	2019/07/03		103	%	50 - 140
			Trichloroethene	2019/07/03		108	%	50 - 140
			Trichlorofluoromethane	2019/07/03		110	%	50 - 140
			1,2,4-trimethylbenzene	2019/07/03		101	%	50 - 140
			1,3,5-trimethylbenzene	2019/07/03		101	%	50 - 140
			Vinyl chloride	2019/07/03		79	%	50 - 140
9490331	QW1	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/07/03		105	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/03		96	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/03		117	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/03		99	%	50 - 140
			Bromodichloromethane	2019/07/03		113	%	60 - 130
			Bromoform	2019/07/03		113	%	60 - 130
			Bromomethane	2019/07/03		118	%	60 - 130
			Carbon tetrachloride	2019/07/03		116	%	60 - 130

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Chlorobenzene	2019/07/03		102	%	60 - 130
			Chlorodibromomethane	2019/07/03		113	%	60 - 130
			Chloroethane	2019/07/03		106	%	60 - 130
			Chloroform	2019/07/03		100	%	60 - 130
			Chloromethane	2019/07/03		72	%	60 - 130
			1,2-dibromoethane	2019/07/03		107	%	60 - 130
			1,2-dichlorobenzene	2019/07/03		102	%	60 - 130
			1,3-dichlorobenzene	2019/07/03		105	%	60 - 130
			1,4-dichlorobenzene	2019/07/03		102	%	60 - 130
			1,1-dichloroethane	2019/07/03		99	%	60 - 130
			1,2-dichloroethane	2019/07/03		113	%	60 - 130
			1,1-dichloroethene	2019/07/03		101	%	60 - 130
			cis-1,2-dichloroethene	2019/07/03		104	%	60 - 130
			trans-1,2-dichloroethene	2019/07/03		102	%	60 - 130
			Dichloromethane	2019/07/03		92	%	60 - 130
			1,2-dichloropropane	2019/07/03		93	%	60 - 130
			cis-1,3-dichloropropene	2019/07/03		97	%	60 - 130
			trans-1,3-dichloropropene	2019/07/03		98	%	60 - 130
			Methyl methacrylate	2019/07/03		99	%	60 - 130
			Methyl-tert-butylether (MTBE)	2019/07/03		99	%	60 - 130
			Styrene	2019/07/03		107	%	60 - 130
			1,1,1,2-tetrachloroethane	2019/07/03		107	%	60 - 130
			1,1,2,2-tetrachloroethane	2019/07/03		92	%	60 - 130
			Tetrachloroethene	2019/07/03		117	%	60 - 130
			1,2,3-trichlorobenzene	2019/07/03		93	%	60 - 130
			1,2,4-trichlorobenzene	2019/07/03		98	%	60 - 130
			1,3,5-trichlorobenzene	2019/07/03		100	%	60 - 130
			1,1,1-trichloroethane	2019/07/03		116	%	60 - 130
			1,1,2-trichloroethane	2019/07/03		103	%	60 - 130
			Trichloroethene	2019/07/03		113	%	60 - 130
			Trichlorofluoromethane	2019/07/03		116	%	60 - 130
			1,2,4-trimethylbenzene	2019/07/03		99	%	60 - 130
			1,3,5-trimethylbenzene	2019/07/03		105	%	60 - 130
			Vinyl chloride	2019/07/03		80	%	60 - 130
9490331	QW1	Method Blank	1,4-Difluorobenzene (sur.)	2019/07/03		101	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/03		92	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/03		99	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/03		112	%	50 - 140
			Bromodichloromethane	2019/07/03	<0.030		mg/kg	
			Bromoform	2019/07/03	<0.050		mg/kg	
			Bromomethane	2019/07/03	<0.020		mg/kg	
			Carbon tetrachloride	2019/07/03	<0.00050		mg/kg	
			Chlorobenzene	2019/07/03	<0.0010		mg/kg	
			Chlorodibromomethane	2019/07/03	<0.020		mg/kg	
			Chloroethane	2019/07/03	<0.020		mg/kg	
			Chloroform	2019/07/03	<0.010		mg/kg	
			Chloromethane	2019/07/03	<0.030		mg/kg	
			1,2-dibromoethane	2019/07/03	<0.0020		mg/kg	
			1,2-dichlorobenzene	2019/07/03	<0.020		mg/kg	
			1,3-dichlorobenzene	2019/07/03	<0.020		mg/kg	
			1,4-dichlorobenzene	2019/07/03	<0.020		mg/kg	
			1,1-dichloroethane	2019/07/03	<0.020		mg/kg	
			1,2-dichloroethane	2019/07/03	<0.0020		mg/kg	
			1,1-dichloroethene	2019/07/03	<0.020		mg/kg	
			cis-1,2-dichloroethene	2019/07/03	<0.020		mg/kg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			trans-1,2-dichloroethene	2019/07/03	<0.020		mg/kg	
			Dichloromethane	2019/07/03	<0.030		mg/kg	
			1,2-dichloropropane	2019/07/03	<0.020		mg/kg	
			cis-1,3-dichloropropene	2019/07/03	<0.020		mg/kg	
			trans-1,3-dichloropropene	2019/07/03	<0.020		mg/kg	
			Methyl methacrylate	2019/07/03	<0.040		mg/kg	
			Methyl-tert-butylether (MTBE)	2019/07/03	<0.030		mg/kg	
			Styrene	2019/07/03	<0.020		mg/kg	
			1,1,1,2-tetrachloroethane	2019/07/03	<0.050		mg/kg	
			1,1,2,2-tetrachloroethane	2019/07/03	<0.050		mg/kg	
			Tetrachloroethene	2019/07/03	<0.010		mg/kg	
			1,2,3-trichlorobenzene	2019/07/03	<0.040		mg/kg	
			1,2,4-trichlorobenzene	2019/07/03	<0.040		mg/kg	
			1,3,5-trichlorobenzene	2019/07/03	<0.040		mg/kg	
			1,1,1-trichloroethane	2019/07/03	<0.020		mg/kg	
			1,1,2-trichloroethane	2019/07/03	<0.020		mg/kg	
			Trichloroethene	2019/07/03	<0.010		mg/kg	
			Trichlorofluoromethane	2019/07/03	<0.020		mg/kg	
			1,2,4-trimethylbenzene	2019/07/03	<0.50		mg/kg	
			1,3,5-trimethylbenzene	2019/07/03	<0.50		mg/kg	
			Vinyl chloride	2019/07/03	<0.00030		mg/kg	
9490331	QW1	RPD	Bromodichloromethane	2019/07/04	NC		%	50
			Bromoform	2019/07/04	NC		%	50
			Bromomethane	2019/07/04	NC		%	50
			Carbon tetrachloride	2019/07/04	NC		%	50
			Chlorobenzene	2019/07/04	NC		%	50
			Chlorodibromomethane	2019/07/04	NC		%	50
			Chloroethane	2019/07/04	NC		%	50
			Chloroform	2019/07/04	NC		%	50
			Chloromethane	2019/07/04	NC		%	50
			1,2-dibromoethane	2019/07/04	NC		%	50
			1,2-dichlorobenzene	2019/07/04	NC		%	50
			1,3-dichlorobenzene	2019/07/04	NC		%	50
			1,4-dichlorobenzene	2019/07/04	NC		%	50
			1,1-dichloroethane	2019/07/04	NC		%	50
			1,2-dichloroethane	2019/07/04	2.2		%	50
			1,1-dichloroethene	2019/07/04	NC		%	50
			cis-1,2-dichloroethene	2019/07/04	NC		%	50
			trans-1,2-dichloroethene	2019/07/04	NC		%	50
			Dichloromethane	2019/07/04	NC		%	50
			1,2-dichloropropane	2019/07/04	NC		%	50
			cis-1,3-dichloropropene	2019/07/04	NC		%	50
			trans-1,3-dichloropropene	2019/07/04	NC		%	50
			Methyl methacrylate	2019/07/04	NC		%	50
			Methyl-tert-butylether (MTBE)	2019/07/04	NC		%	50
			Styrene	2019/07/04	NC		%	50
			1,1,1,2-tetrachloroethane	2019/07/04	NC		%	50
			1,1,2,2-tetrachloroethane	2019/07/04	NC		%	50
			Tetrachloroethene	2019/07/04	NC		%	50
			1,2,3-trichlorobenzene	2019/07/04	NC		%	50
			1,2,4-trichlorobenzene	2019/07/04	NC		%	50
			1,3,5-trichlorobenzene	2019/07/04	NC		%	50
			1,1,1-trichloroethane	2019/07/04	NC		%	50
			1,1,2-trichloroethane	2019/07/04	NC		%	50
			Trichloroethene	2019/07/04	NC		%	50

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Trichlorofluoromethane	2019/07/04	NC		%	50
			1,2,4-trimethylbenzene	2019/07/04	NC		%	50
			1,3,5-trimethylbenzene	2019/07/04	NC		%	50
			Vinyl chloride	2019/07/04	NC		%	50
9490557	SAY	Method Blank	Moisture	2019/07/04	<0.30		%	
9490557	SAY	RPD	Moisture	2019/07/04	0.66		%	20
9491118	MZ	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/07/04		102	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/04		108	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/04		100	%	50 - 140
			Benzene	2019/07/04		NC	%	50 - 140
			Bromodichloromethane	2019/07/04		109	%	50 - 140
			Bromoform	2019/07/04		100	%	50 - 140
			Bromomethane	2019/07/04		91	%	50 - 140
			Carbon tetrachloride	2019/07/04		77	%	50 - 140
			Chlorobenzene	2019/07/04		92	%	50 - 140
			Chlorodibromomethane	2019/07/04		104	%	50 - 140
			Chloroethane	2019/07/04		89	%	50 - 140
			Chloroform	2019/07/04		97	%	50 - 140
			Chloromethane	2019/07/04		94	%	50 - 140
			1,2-dibromoethane	2019/07/04		100	%	50 - 140
			1,2-dichlorobenzene	2019/07/04		104	%	50 - 140
			1,3-dichlorobenzene	2019/07/04		101	%	50 - 140
			1,4-dichlorobenzene	2019/07/04		100	%	50 - 140
			1,1-dichloroethane	2019/07/04		96	%	50 - 140
			1,2-dichloroethane	2019/07/04		87	%	50 - 140
			1,1-dichloroethene	2019/07/04		89	%	50 - 140
			cis-1,2-dichloroethene	2019/07/04		96	%	50 - 140
			trans-1,2-dichloroethene	2019/07/04		85	%	50 - 140
			Dichloromethane	2019/07/04		94	%	50 - 140
			1,2-dichloropropane	2019/07/04		104	%	50 - 140
			cis-1,3-dichloropropene	2019/07/04		110	%	50 - 140
			trans-1,3-dichloropropene	2019/07/04		119	%	50 - 140
			Ethylbenzene	2019/07/04		74	%	50 - 140
			Methyl methacrylate	2019/07/04		108	%	50 - 140
			Methyl-tert-butylether (MTBE)	2019/07/04		98	%	50 - 140
			Styrene	2019/07/04		101	%	50 - 140
			1,1,1,2-tetrachloroethane	2019/07/04		93	%	50 - 140
			1,1,2,2-tetrachloroethane	2019/07/04		103	%	50 - 140
			Tetrachloroethene	2019/07/04		82	%	50 - 140
			Toluene	2019/07/04		NC	%	50 - 140
			1,2,3-trichlorobenzene	2019/07/04		99	%	50 - 140
			1,2,4-trichlorobenzene	2019/07/04		98	%	50 - 140
			1,3,5-trichlorobenzene	2019/07/04		96	%	50 - 140
			1,1,1-trichloroethane	2019/07/04		96	%	50 - 140
			1,1,2-trichloroethane	2019/07/04		108	%	50 - 140
			Trichloroethene	2019/07/04		101	%	50 - 140
			Trichlorofluoromethane	2019/07/04		87	%	50 - 140
			1,2,4-trimethylbenzene	2019/07/04		NC	%	50 - 140
			1,3,5-trimethylbenzene	2019/07/04		90	%	50 - 140
			Vinyl chloride	2019/07/04		85	%	50 - 140
			m & p-Xylene	2019/07/04		NC	%	50 - 140
			o-Xylene	2019/07/04		NC	%	50 - 140
9491118	MZ	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/07/04		102	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/04		107	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/04		115	%	50 - 140

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Benzene	2019/07/04		88	%	60 - 130
			Bromodichloromethane	2019/07/04		102	%	60 - 130
			Bromoform	2019/07/04		90	%	60 - 130
			Bromomethane	2019/07/04		87	%	60 - 130
			Carbon tetrachloride	2019/07/04		97	%	60 - 130
			Chlorobenzene	2019/07/04		88	%	60 - 130
			Chlorodibromomethane	2019/07/04		95	%	60 - 130
			Chloroethane	2019/07/04		90	%	60 - 130
			Chloroform	2019/07/04		93	%	60 - 130
			Chloromethane	2019/07/04		92	%	60 - 130
			1,2-dibromoethane	2019/07/04		86	%	60 - 130
			1,2-dichlorobenzene	2019/07/04		99	%	60 - 130
			1,3-dichlorobenzene	2019/07/04		96	%	60 - 130
			1,4-dichlorobenzene	2019/07/04		93	%	60 - 130
			1,1-dichloroethane	2019/07/04		95	%	60 - 130
			1,2-dichloroethane	2019/07/04		97	%	60 - 130
			1,1-dichloroethene	2019/07/04		91	%	60 - 130
			cis-1,2-dichloroethene	2019/07/04		94	%	60 - 130
			trans-1,2-dichloroethene	2019/07/04		85	%	60 - 130
			Dichloromethane	2019/07/04		88	%	60 - 130
			1,2-dichloropropane	2019/07/04		98	%	60 - 130
			cis-1,3-dichloropropene	2019/07/04		96	%	60 - 130
			trans-1,3-dichloropropene	2019/07/04		107	%	60 - 130
			Ethylbenzene	2019/07/04		86	%	60 - 130
			Methyl methacrylate	2019/07/04		101	%	60 - 130
			Methyl-tert-butylether (MTBE)	2019/07/04		96	%	60 - 130
			Styrene	2019/07/04		92	%	60 - 130
			1,1,1,2-tetrachloroethane	2019/07/04		88	%	60 - 130
			1,1,2,2-tetrachloroethane	2019/07/04		90	%	60 - 130
			Tetrachloroethene	2019/07/04		83	%	60 - 130
			Toluene	2019/07/04		86	%	60 - 130
			1,2,3-trichlorobenzene	2019/07/04		91	%	60 - 130
			1,2,4-trichlorobenzene	2019/07/04		91	%	60 - 130
			1,3,5-trichlorobenzene	2019/07/04		91	%	60 - 130
			1,1,1-trichloroethane	2019/07/04		98	%	60 - 130
			1,1,2-trichloroethane	2019/07/04		97	%	60 - 130
			Trichloroethene	2019/07/04		100	%	60 - 130
			Trichlorofluoromethane	2019/07/04		90	%	60 - 130
			1,2,4-trimethylbenzene	2019/07/04		100	%	60 - 130
			1,3,5-trimethylbenzene	2019/07/04		102	%	60 - 130
			Vinyl chloride	2019/07/04		87	%	60 - 130
			m & p-Xylene	2019/07/04		84	%	60 - 130
			o-Xylene	2019/07/04		83	%	60 - 130
9491118	MZ	Method Blank	1,4-Difluorobenzene (sur.)	2019/07/04		98	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/04		100	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/04		99	%	50 - 140
			Benzene	2019/07/04	<0.00040		mg/L	
			Bromodichloromethane	2019/07/04	<0.00050		mg/L	
			Bromoform	2019/07/04	<0.00050		mg/L	
			Bromomethane	2019/07/04	<0.0020		mg/L	
			Carbon tetrachloride	2019/07/04	<0.00050		mg/L	
			Chlorobenzene	2019/07/04	<0.00050		mg/L	
			Chlorodibromomethane	2019/07/04	<0.0010		mg/L	
			Chloroethane	2019/07/04	<0.0010		mg/L	
			Chloroform	2019/07/04	<0.00050		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Chloromethane	2019/07/04	<0.0020		mg/L	
			1,2-dibromoethane	2019/07/04	<0.00020		mg/L	
			1,2-dichlorobenzene	2019/07/04	<0.00050		mg/L	
			1,3-dichlorobenzene	2019/07/04	<0.00050		mg/L	
			1,4-dichlorobenzene	2019/07/04	<0.00050		mg/L	
			1,1-dichloroethane	2019/07/04	<0.00050		mg/L	
			1,2-dichloroethane	2019/07/04	<0.00050		mg/L	
			1,1-dichloroethene	2019/07/04	<0.00050		mg/L	
			cis-1,2-dichloroethene	2019/07/04	<0.00050		mg/L	
			trans-1,2-dichloroethene	2019/07/04	<0.00050		mg/L	
			Dichloromethane	2019/07/04	<0.0020		mg/L	
			1,2-dichloropropane	2019/07/04	<0.00050		mg/L	
			cis-1,3-dichloropropene	2019/07/04	<0.00050		mg/L	
			trans-1,3-dichloropropene	2019/07/04	<0.00050		mg/L	
			Ethylbenzene	2019/07/04	<0.00040		mg/L	
			Methyl methacrylate	2019/07/04	<0.00050		mg/L	
			Methyl-tert-butylether (MTBE)	2019/07/04	<0.00050		mg/L	
			Styrene	2019/07/04	<0.00050		mg/L	
			1,1,1,2-tetrachloroethane	2019/07/04	<0.0010		mg/L	
			1,1,2,2-tetrachloroethane	2019/07/04	<0.0020		mg/L	
			Tetrachloroethene	2019/07/04	<0.00050		mg/L	
			Toluene	2019/07/04	<0.00040		mg/L	
			1,2,3-trichlorobenzene	2019/07/04	<0.0010		mg/L	
			1,2,4-trichlorobenzene	2019/07/04	<0.0010		mg/L	
			1,3,5-trichlorobenzene	2019/07/04	<0.00050		mg/L	
			1,1,1-trichloroethane	2019/07/04	<0.00050		mg/L	
			1,1,2-trichloroethane	2019/07/04	<0.00050		mg/L	
			Trichloroethene	2019/07/04	<0.00050		mg/L	
			Trichlorofluoromethane	2019/07/04	<0.00050		mg/L	
			1,2,4-trimethylbenzene	2019/07/04	<0.00050		mg/L	
			1,3,5-trimethylbenzene	2019/07/04	<0.00050		mg/L	
			Vinyl chloride	2019/07/04	<0.00050		mg/L	
			Xylenes (Total)	2019/07/04	<0.00080		mg/L	
			m & p-Xylene	2019/07/04	<0.00080		mg/L	
			o-Xylene	2019/07/04	<0.00040		mg/L	
9491118	MZ	RPD [VZ7274-01]	Benzene	2019/07/04	NC		%	30
			Bromodichloromethane	2019/07/04	NC		%	30
			Bromoform	2019/07/04	NC		%	30
			Bromomethane	2019/07/04	NC		%	30
			Carbon tetrachloride	2019/07/04	NC		%	30
			Chlorobenzene	2019/07/04	NC		%	30
			Chlorodibromomethane	2019/07/04	NC		%	30
			Chloroethane	2019/07/04	NC		%	30
			Chloroform	2019/07/04	NC		%	30
			Chloromethane	2019/07/04	NC		%	30
			1,2-dibromoethane	2019/07/04	NC		%	30
			1,2-dichlorobenzene	2019/07/04	NC		%	30
			1,3-dichlorobenzene	2019/07/04	NC		%	30
			1,4-dichlorobenzene	2019/07/04	NC		%	30
			1,1-dichloroethane	2019/07/04	NC		%	30
			1,2-dichloroethane	2019/07/04	NC		%	30
			1,1-dichloroethene	2019/07/04	NC		%	30
			cis-1,2-dichloroethene	2019/07/04	NC		%	30
			trans-1,2-dichloroethene	2019/07/04	NC		%	30
			Dichloromethane	2019/07/04	NC		%	30

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,2-dichloropropane	2019/07/04	NC		%	30
			cis-1,3-dichloropropene	2019/07/04	NC		%	30
			trans-1,3-dichloropropene	2019/07/04	NC		%	30
			Ethylbenzene	2019/07/04	NC		%	30
			Methyl methacrylate	2019/07/04	NC		%	30
			Methyl-tert-butylether (MTBE)	2019/07/04	NC		%	30
			Styrene	2019/07/04	NC		%	30
			1,1,1,2-tetrachloroethane	2019/07/04	NC		%	30
			1,1,2,2-tetrachloroethane	2019/07/04	NC		%	30
			Tetrachloroethene	2019/07/04	NC		%	30
			Toluene	2019/07/04	NC		%	30
			1,2,3-trichlorobenzene	2019/07/04	NC		%	30
			1,2,4-trichlorobenzene	2019/07/04	NC		%	30
			1,3,5-trichlorobenzene	2019/07/04	NC		%	30
			1,1,1-trichloroethane	2019/07/04	NC		%	30
			1,1,2-trichloroethane	2019/07/04	NC		%	30
			Trichloroethene	2019/07/04	NC		%	30
			Trichlorofluoromethane	2019/07/04	NC		%	30
			1,2,4-trimethylbenzene	2019/07/04	NC		%	30
			1,3,5-trimethylbenzene	2019/07/04	NC		%	30
			Vinyl chloride	2019/07/04	NC		%	30
			Xylenes (Total)	2019/07/04	NC		%	30
			m & p-Xylene	2019/07/04	NC		%	30
			o-Xylene	2019/07/04	NC		%	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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NOTIFICATION LOG

No Reportable Regulation Exceedences Noted.

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Dennis Ngondu, B.Sc., P.Chem., QP, Supervisor, Organics

Gita Pokhrel, Senior Analyst

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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1130

CHAIN OF CUSTODY RECORD

M 082710

Page 1 of 1

Invoice Information		Report Information (if differs from invoice)		Project Information		Turnaround Time (TAT) Required
Company :	Clifton	Company:		Quotation #:		☑ 5 - 7 Days Regular (Most analyses)
Contact Name:	Stephen Dabadie	Contact Name:		P.O. #/ AFE#:		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address:	2222 30 Av NW Calgary	Address:		Project #:	CG-2430.1 -E37	Rush TAT (Surcharges will be applied) ☐ Same Day ☐ 2 Days ☐ 1 Day ☐ 3-4 Days
Phone:	403 263-2556	Phone:		Site Location:		Date Required:
Email:	Stephen_dabadie@Clifton.ca	Email:		Site #:		Rush Confirmation #:
Copies:	one	Copies:		Sampled By:		

Laboratory Use Only

	YES	NO	Cooler ID			
Seal Present		✓	Temp	1	1	3
Seal Intact		✓				
Cooling Media	✓					
	YES	NO	Cooler ID			
Seal Present			Temp			
Seal Intact						
Cooling Media						
	YES	NO	Cooler ID			
Seal Present			Temp			
Seal Intact						
Cooling Media						

Depot Reception

Analysis Requested

	Sample Identification	Depth (Unit)	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	# of containers	BTEX F1 ☐ VOC ☑	BTEX F1-F2	BTEX F1-F4	Routine Water	Regulated Metals Tot ☐ Diss ☐	Mercury Total ☐ Dissolved ☐	Salinity 4	Sieve (75 micron)	Texture (% Sand, Silt, Clay)	Basic Class II Landfill	PAH	HOLD - DO NOT ANALYZE
1	MS 092		2019/06/27		Soil	5	X		X								X	
2	MS 098				↓	3	X		X								X	
3	MS 102					5	X		X								X	
4	Dup002					2			X								~~X~~ no sample	
5	Trip 004				water	2	X											
6																		
7																		
8																		
9																		
10																		

Please indicate Filtered, Preserved or Both (F, P, F/P)

Regulatory Criteria

☐ AT1
☐ CCME
☐ Drinking Water
☐ D50 (Drilling Waste)
☐ Saskatchewan
☐ Other:

Special Instructions

Relinquished by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)	Received by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)
Matthew Stan / Matthew Stan	2019/06/27	18:00	Jenine McIntyre JENINE MCINTYRE	2019/06/27	17:57

28-Jun-19 19:34
Linsay Sunderman
B952107

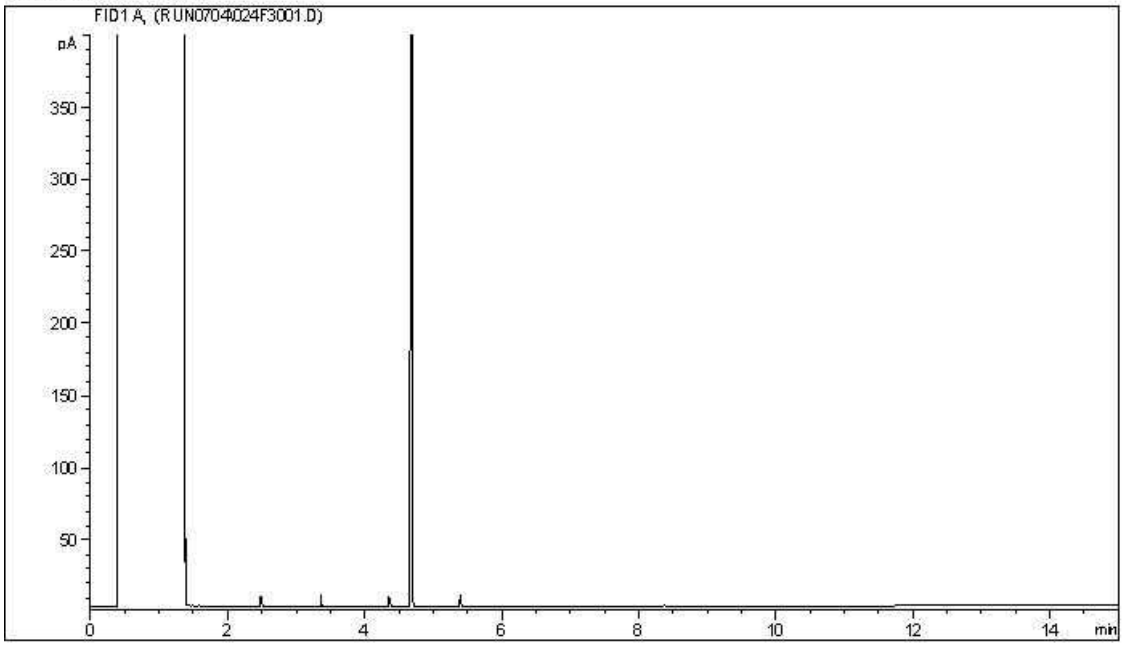
Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Maxxam's standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms which are available for viewing at www.maxxam

MO3 INS-0248

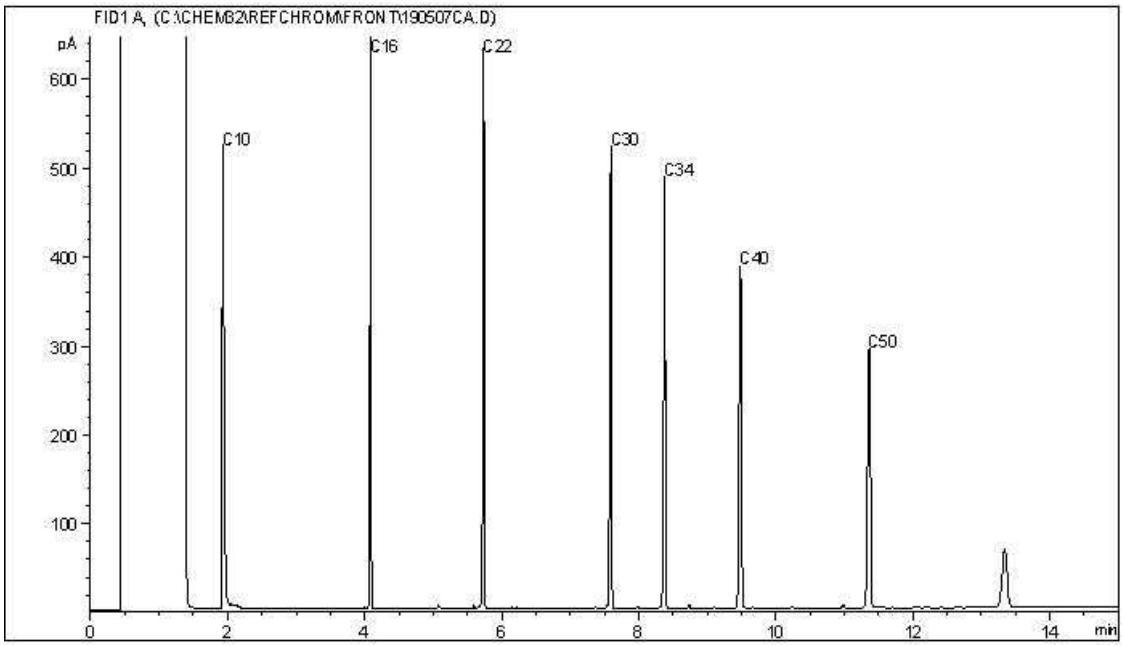
AB FCD-00331/7

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC12



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

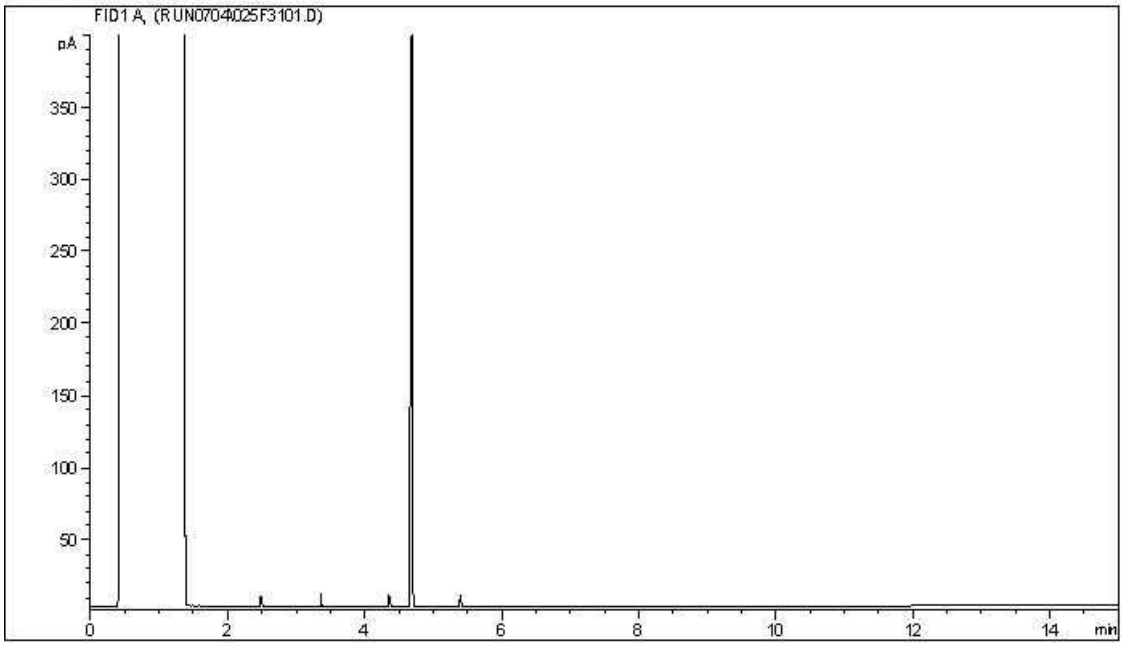
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B952107
Report Date: 2019/07/06
BV Labs Sample: VZ7271

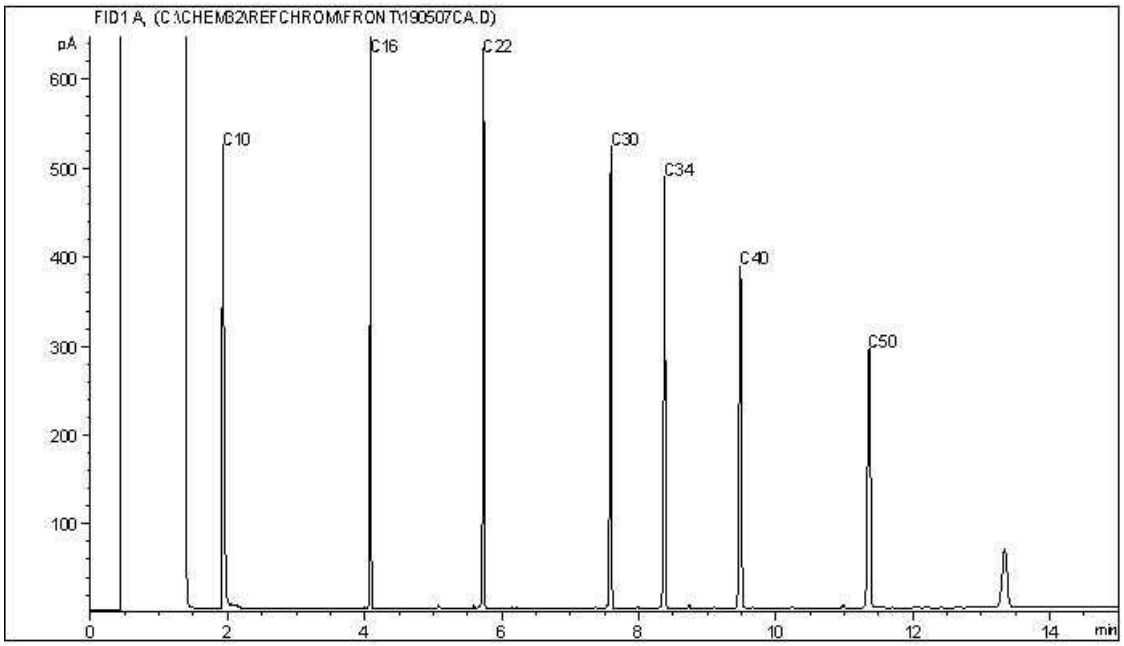
CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1-E37
Client ID: MS 098

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC12



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

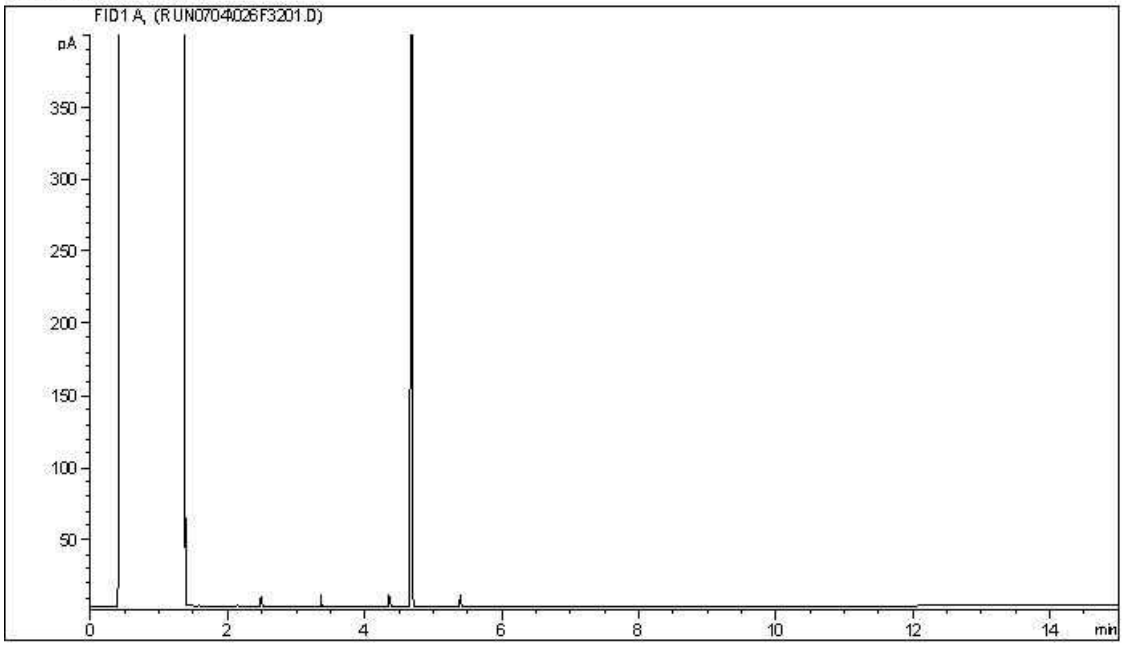
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B952107
Report Date: 2019/07/06
BV Labs Sample: VZ7272

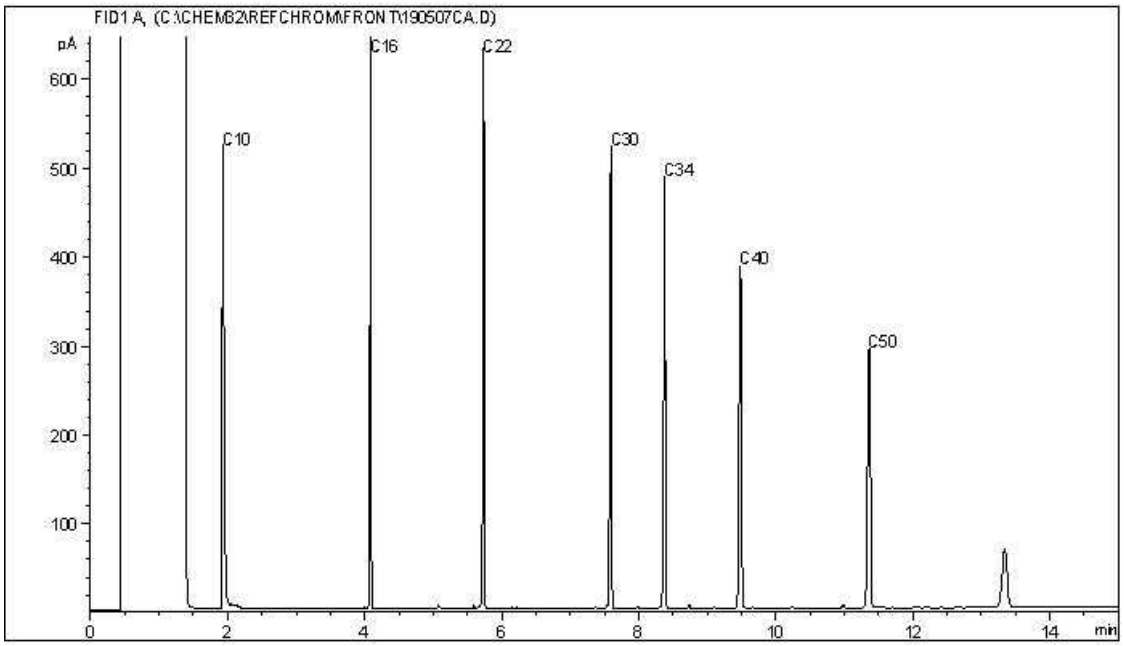
CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1-E37
Client ID: MS 102

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC12



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

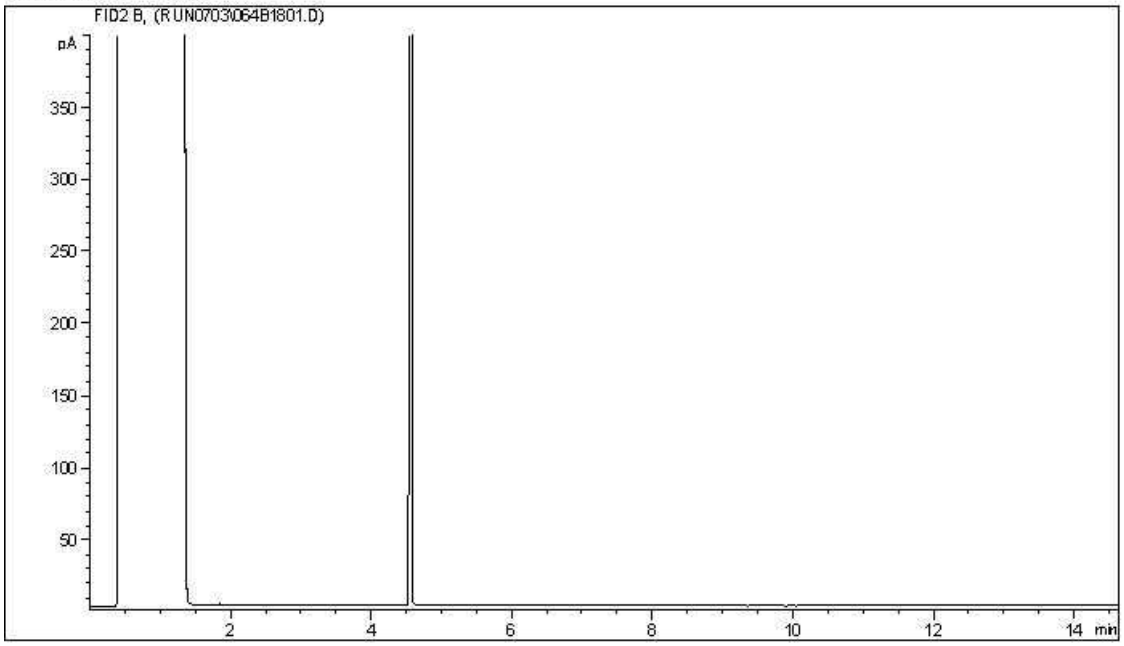
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B952107
Report Date: 2019/07/06
BV Labs Sample: VZ7273

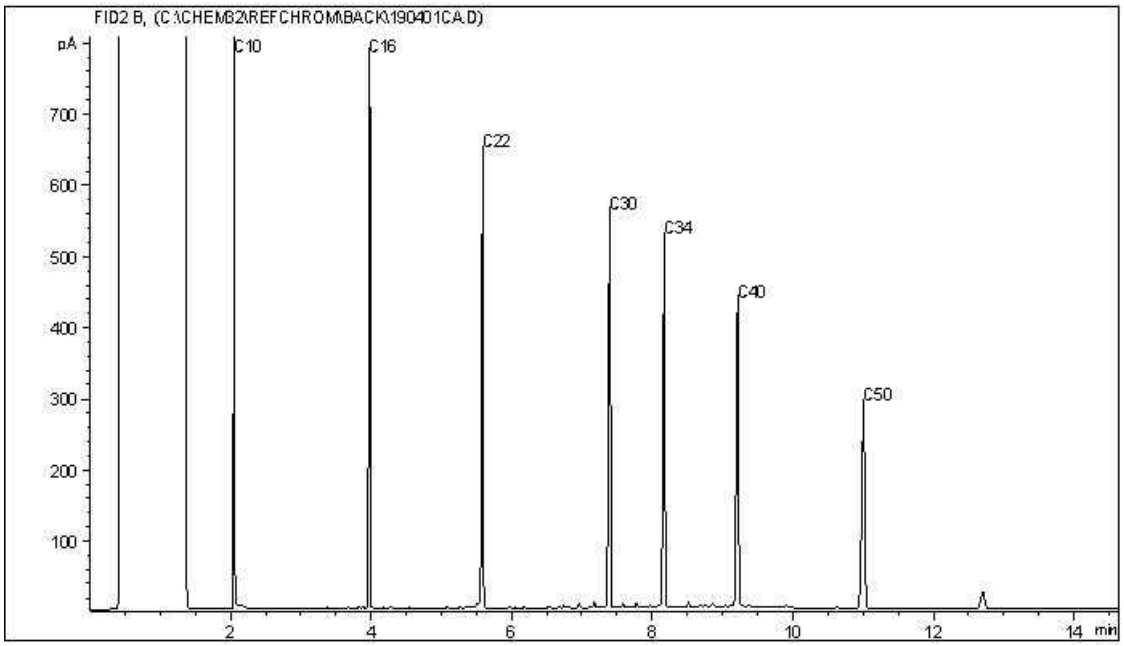
CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1-E37
Client ID: DUP 002

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC10



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
Your C.O.C. #: m082726

Attention: Stephen D'Abadie

CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
CANADA T2E 7K9

Report Date: 2019/07/09
Report #: R2749609
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B952543
Received: 2019/06/28, 17:43

Sample Matrix: Soil
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS/FID (MeOH extract) (1)	7	N/A	2019/07/04	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX	7	N/A	2019/07/05		Auto Calc
BTEX in Leachates by HS GC/MS/FID (2)	1	2019/07/03	2019/07/04	AB SOP-00039	EPA 8260d m
CCME Hydrocarbons (F2-F4 in soil) (3)	6	2019/07/03	2019/07/05	AB SOP-00036	CCME PHC-CWS m
Flash Point	1	N/A	2019/07/03	AB SOP-00062	ASTM D3828-16a/ A m
ICPMS Metals on TCLP Leachate (2)	1	2019/07/06	2019/07/07	AB SOP-00043	EPA 6020b R2 m
Moisture	7	N/A	2019/07/04	AB SOP-00002	CCME PHC-CWS m
Benzo[a]pyrene Equivalency	6	N/A	2019/07/09		Auto Calc
PAH in Soil by GC/MS	6	2019/07/03	2019/07/09	AB SOP-00036 / AB SOP-00003	EPA 3540C/8270E m
Free Liquid (Paint filter)	1	N/A	2019/07/03	AB SOP-00047	EPA 9095B R2 m
TCLP pH Measurements	1	2019/07/06	2019/07/07	AB SOP-00006	SM 23 4500 H+B m
pH @25C (1:1 extract, solid waste)	1	2019/07/05	2019/07/05	AB SOP-00033 / AB SOP-00006	SM 23 4500 H+B m
VOCs in Soil by HS GC/MS (Std List) (1)	4	N/A	2019/07/03	AB SOP-00056	EPA 5021a/8260d m
VOCs in Soil by HS GC/MS (Std List) (1)	2	N/A	2019/07/04	AB SOP-00056	EPA 5021a/8260d m

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total Trihalomethanes Calculation	1	N/A	2019/07/08		Auto Calc
VOCs in Water by HS GC/MS (Std List)	1	N/A	2019/07/08	AB SOP-00056	EPA 5021a/8260d m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

Your Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
Your C.O.C. #: m082726

Attention: Stephen D'Abadie

CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
CANADA T2E 7K9

Report Date: 2019/07/09
Report #: R2749609
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B952543
Received: 2019/06/28, 17:43

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.
(2) Samples were extracted as per EPA 1311 unless otherwise noted in the report.
(3) All CCME results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods September 2003. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

AUTHORIZED REPORT
RAPPORT AUTORISÉ

Bureau Veritas Laboratories
09 Jul 2019 14:33:20

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Linsay Sunderman, Key Account Specialist
Email: Lsunderman@bvlabs.com
Phone# (403)735-2237 Ext:2237

==========

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Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B952543
Report Date: 2019/07/09

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
Sampler Initials: AM

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		VZ9812		VZ9813		VZ9814	VZ9815	VZ9816		
Sampling Date		2019/06/28		2019/06/28		2019/06/28	2019/06/28	2019/06/28		
COC Number		m082726		m082726		m082726	m082726	m082726		
	UNITS	**116**	**QC Batch**	**122**	**QC Batch**	**125**	**131**	**138**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	9491412	<10	9491412	<10	<10	<10	10	9491412
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	9491412	<50	9491412	<50	<50	<50	50	9491412
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	9491412	<50	9491412	<50	<50	<50	50	9491412
Reached Baseline at C50	mg/kg	Yes	9491412	Yes	9491412	Yes	Yes	Yes	N/A	9491412
Physical Properties										
Moisture	%	14	9490566	21	9491456	19	19	20	0.30	9490566
Volatiles										
Xylenes (Total)	mg/kg	0.099	9489474	1.3	9489474	<0.045	0.11	0.13	0.045	9489474
F1 (C6-C10) - BTEX	mg/kg	<10	9489474	<10	9489474	<10	<10	<10	10	9489474
Field Preserved Volatiles										
Benzene	mg/kg	0.028	9490749	0.46	9490749	<0.0050	0.12	0.42	0.0050	9490749
Toluene	mg/kg	0.077	9490749	<0.050	9490749	<0.050	0.071	<0.050	0.050	9490749
Ethylbenzene	mg/kg	0.014	9490749	<0.010	9490749	<0.010	<0.010	0.22	0.010	9490749
m & p-Xylene	mg/kg	0.073	9490749	0.087	9490749	<0.040	0.060	0.089	0.040	9490749
o-Xylene	mg/kg	0.026	9490749	1.2	9490749	<0.020	0.049	0.041	0.020	9490749
F1 (C6-C10)	mg/kg	<10	9490749	<10	9490749	<10	<10	<10	10	9490749
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	103	9490749	100	9490749	100	109	103	N/A	9490749
4-Bromofluorobenzene (sur.)	%	98	9490749	108	9490749	110	108	110	N/A	9490749
D10-o-Xylene (sur.)	%	102	9490749	109	9490749	101	112	106	N/A	9490749
D4-1,2-Dichloroethane (sur.)	%	105	9490749	103	9490749	101	111	107	N/A	9490749
O-TERPHENYL (sur.)	%	97	9491412	102	9491412	102	96	103	N/A	9491412

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B952543
Report Date: 2019/07/09

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
Sampler Initials: AM

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		VZ9817	VZ9817		
Sampling Date		2019/06/28	2019/06/28		
COC Number		m082726	m082726		
	UNITS	**141**	**141 Lab-Dup**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon					
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	N/A	10	9491412
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	N/A	50	9491412
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	N/A	50	9491412
Reached Baseline at C50	mg/kg	Yes	N/A	N/A	9491412
Physical Properties					
Moisture	%	19	19	0.30	9490566
Volatiles					
Xylenes (Total)	mg/kg	<0.045	N/A	0.045	9489474
F1 (C6-C10) - BTEX	mg/kg	<10	N/A	10	9489474
Field Preserved Volatiles					
Benzene	mg/kg	<0.0050	N/A	0.0050	9490749
Toluene	mg/kg	<0.050	N/A	0.050	9490749
Ethylbenzene	mg/kg	<0.010	N/A	0.010	9490749
m & p-Xylene	mg/kg	<0.040	N/A	0.040	9490749
o-Xylene	mg/kg	<0.020	N/A	0.020	9490749
F1 (C6-C10)	mg/kg	<10	N/A	10	9490749
Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	109	N/A	N/A	9490749
4-Bromofluorobenzene (sur.)	%	117	N/A	N/A	9490749
D10-o-Xylene (sur.)	%	113	N/A	N/A	9490749
D4-1,2-Dichloroethane (sur.)	%	111	N/A	N/A	9490749
O-TERPHENYL (sur.)	%	99	N/A	N/A	9491412

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B952543
Report Date: 2019/07/09

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
Sampler Initials: AM

AT1 BTEX AND F1 (SOIL)

BV Labs ID		VZ9818		
Sampling Date		2019/06/28		
COC Number		m082726		
	UNITS	**191**	**RDL**	**QC Batch**
Physical Properties				
Moisture	%	13	0.30	9491456
Volatiles				
Xylenes (Total)	mg/kg	<0.045	0.045	9489474
F1 (C6-C10) - BTEX	mg/kg	<10	10	9489474
Field Preserved Volatiles				
Benzene	mg/kg	0.091	0.0050	9490749
Toluene	mg/kg	<0.050	0.050	9490749
Ethylbenzene	mg/kg	<0.010	0.010	9490749
m & p-Xylene	mg/kg	<0.040	0.040	9490749
o-Xylene	mg/kg	0.038	0.020	9490749
F1 (C6-C10)	mg/kg	<10	10	9490749
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	100	N/A	9490749
4-Bromofluorobenzene (sur.)	%	108	N/A	9490749
D10-o-Xylene (sur.)	%	107	N/A	9490749
D4-1,2-Dichloroethane (sur.)	%	100	N/A	9490749

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B952543
Report Date: 2019/07/09

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
Sampler Initials: AM

BASIC CLASS II LANDFILL PACKAGE (SOIL)

BV Labs ID		VZ9819		VZ9819	
Sampling Date		2019/06/28		2019/06/28	
COC Number		m082726		m082726	
	UNITS	**SOIL CUTTING**	**RDL**	**SOIL CUTTING Lab-Dup**	**QC Batch**
Soluble Parameters					
Soluble (1:1) pH	pH	10.5	N/A	N/A	9493456
Physical Properties					
Closed Cup Flash Point	deg. C	>61	N/A	>61	9491255
Free Liquid	N/A	PASS	N/A	N/A	9491258
Elements					
Leachable Antimony (Sb)	mg/L	<1.0	1.0	N/A	9495852
Leachable Arsenic (As)	mg/L	<0.50	0.50	N/A	9495852
Leachable Barium (Ba)	mg/L	1.5	1.0	N/A	9495852
Leachable Beryllium (Be)	mg/L	<0.50	0.50	N/A	9495852
Leachable Boron (B)	mg/L	<1.0	1.0	N/A	9495852
Leachable Cadmium (Cd)	mg/L	<0.10	0.10	N/A	9495852
Leachable Chromium (Cr)	mg/L	<0.50	0.50	N/A	9495852
Leachable Cobalt (Co)	mg/L	<1.0	1.0	N/A	9495852
Leachable Copper (Cu)	mg/L	<1.0	1.0	N/A	9495852
Leachable Iron (Fe)	mg/L	6.5	1.0	N/A	9495852
Leachable Lead (Pb)	mg/L	<0.50	0.50	N/A	9495852
Leachable Mercury (Hg)	mg/L	<0.020	0.020	N/A	9495852
Leachable Nickel (Ni)	mg/L	<0.50	0.50	N/A	9495852
Leachable Selenium (Se)	mg/L	<0.10	0.10	N/A	9495852
Leachable Silver (Ag)	mg/L	<0.50	0.50	N/A	9495852
Leachable Thallium (Tl)	mg/L	<0.50	0.50	N/A	9495852
Leachable Uranium (U)	mg/L	<0.20	0.20	N/A	9495852
Leachable Vanadium (V)	mg/L	<1.0	1.0	N/A	9495852
Leachable Zinc (Zn)	mg/L	<1.0	1.0	N/A	9495852
Leachable Zirconium (Zr)	mg/L	<1.0	1.0	N/A	9495852
Volatiles					
Leachable (ZH) Benzene	mg/L	<0.010	0.010	N/A	9490986
Leachable (ZH) Toluene	mg/L	<0.010	0.010	N/A	9490986
Leachable (ZH) Ethylbenzene	mg/L	<0.010	0.010	N/A	9490986

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B952543
Report Date: 2019/07/09

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
Sampler Initials: AM

BASIC CLASS II LANDFILL PACKAGE (SOIL)

BV Labs ID		VZ9819		VZ9819	
Sampling Date		2019/06/28		2019/06/28	
COC Number		m082726		m082726	
	UNITS	**SOIL CUTTING**	**RDL**	**SOIL CUTTING Lab-Dup**	**QC Batch**
Leachable (ZH) o-Xylene	mg/L	<0.010	0.010	N/A	9490986
Leachable (ZH) m & p-Xylene	mg/L	<0.020	0.020	N/A	9490986
Leachable (ZH) Xylenes (Total)	mg/L	<0.020	0.020	N/A	9490986
Surrogate Recovery (%)					
Leachable (ZH) 1,4-Difluorobenzene (sur.)	%	100	N/A	N/A	9490986
Leachable (ZH) 4-Bromofluorobenzene (sur.)	%	96	N/A	N/A	9490986
Leachable (ZH) D4-1,2-Dichloroethane (sur.)	%	90	N/A	N/A	9490986

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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BV Labs Job #: B952543
Report Date: 2019/07/09

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
Sampler Initials: AM

RESULTS OF CHEMICAL ANALYSES OF SOIL

BV Labs ID		VZ9819	
Sampling Date		2019/06/28	
COC Number		m082726	
	UNITS	**SOIL CUTTING**	**QC Batch**
Misc. Inorganics			
Leachable Initial pH of Sample	pH	10.1	9495603
Leachable pH after HCl	pH	1.87	9495603
Leachable Final pH of Leachate	pH	6.52	9495603

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BV Labs Job #: B952543
Report Date: 2019/07/09

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
Sampler Initials: AM

SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		VZ9812	VZ9813	VZ9814	VZ9815	VZ9816	VZ9817		
Sampling Date		2019/06/28	2019/06/28	2019/06/28	2019/06/28	2019/06/28	2019/06/28		
COC Number		m082726	m082726	m082726	m082726	m082726	m082726		
	UNITS	**116**	**122**	**125**	**131**	**138**	**141**	**RDL**	**QC Batch**
Polycyclic Aromatics									
Acenaphthene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	9491416
B[a]P TPE Total Potency Equivalents	mg/kg	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	0.0071	9488906
Acenaphthylene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	9491416
Acridine	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	9491416
Anthracene	mg/kg	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	0.0040	9491416
Benzo(a)anthracene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	9491416
Benzo(b&j)fluoranthene	mg/kg	<0.0050	<0.0050	<0.0050	0.012	<0.0050	<0.0050	0.0050	9491416
Benzo(k)fluoranthene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	9491416
Benzo(g,h,i)perylene	mg/kg	0.0065	<0.0050	<0.0050	0.0089	<0.0050	<0.0050	0.0050	9491416
Benzo(c)phenanthrene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	9491416
Benzo(a)pyrene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	9491416
Benzo[e]pyrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0083	<0.0050	<0.0050	0.0050	9491416
Chrysene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	9491416
Dibenz(a,h)anthracene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	9491416
Fluoranthene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	9491416
Fluorene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	9491416
Indeno(1,2,3-cd)pyrene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	9491416
1-Methylnaphthalene	mg/kg	0.051	0.028	<0.0050	0.037	0.040	<0.0050	0.0050	9491416
2-Methylnaphthalene	mg/kg	0.092	0.044	<0.0050	0.071	0.056	<0.0050	0.0050	9491416
Naphthalene	mg/kg	0.050	0.21	<0.0050	0.051	0.27	<0.0050	0.0050	9491416
Phenanthrene	mg/kg	0.0090	<0.0050	<0.0050	0.010	<0.0050	<0.0050	0.0050	9491416
Perylene	mg/kg	<0.0050	<0.0050	<0.0050	0.013	<0.0050	<0.0050	0.0050	9491416
Pyrene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	9491416
Quinoline	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	9491416
Surrogate Recovery (%)									
D10-ANTHRACENE (sur.)	%	93	95	94	94	93	100	N/A	9491416
D8-ACENAPHTHYLENE (sur.)	%	94	94	94	93	93	101	N/A	9491416
D8-NAPHTHALENE (sur.)	%	91	92	93	91	94	98	N/A	9491416
TERPHENYL-D14 (sur.)	%	104	106	105	105	107	112	N/A	9491416

RDL = Reportable Detection Limit
N/A = Not Applicable

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BV Labs Job #: B952543
Report Date: 2019/07/09

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
Sampler Initials: AM

VOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		VZ9812	VZ9813	VZ9814	VZ9815	VZ9816		
Sampling Date		2019/06/28	2019/06/28	2019/06/28	2019/06/28	2019/06/28		
COC Number		m082726	m082726	m082726	m082726	m082726		
	UNITS	**116**	**122**	**125**	**131**	**138**	**RDL**	**QC Batch**
Field Preserved Volatiles								
Bromodichloromethane	mg/kg	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	9490331
Bromoform	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	9490331
Bromomethane	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9490331
Carbon tetrachloride	mg/kg	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9490331
Chlorobenzene	mg/kg	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	9490331
Chlorodibromomethane	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9490331
Chloroethane	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9490331
Chloroform	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	9490331
Chloromethane	mg/kg	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	9490331
1,2-dibromoethane	mg/kg	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	9490331
1,2-dichlorobenzene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9490331
1,3-dichlorobenzene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9490331
1,4-dichlorobenzene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9490331
1,1-dichloroethane	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9490331
1,2-dichloroethane	mg/kg	0.0085	0.044	<0.0020	0.020	0.0048	0.0020	9490331
1,1-dichloroethene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9490331
cis-1,2-dichloroethene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9490331
trans-1,2-dichloroethene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9490331
Dichloromethane	mg/kg	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	9490331
1,2-dichloropropane	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9490331
cis-1,3-dichloropropene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9490331
trans-1,3-dichloropropene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9490331
Methyl methacrylate	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	9490331
Methyl-tert-butylether (MTBE)	mg/kg	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	9490331
Styrene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9490331
1,1,1,2-tetrachloroethane	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	9490331
1,1,2,2-tetrachloroethane	mg/kg	<0.050	<0.050	<0.050	0.076	<0.050	0.050	9490331
Tetrachloroethene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	9490331
1,2,3-trichlorobenzene	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	9490331
1,2,4-trichlorobenzene	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	9490331
1,3,5-trichlorobenzene	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	9490331
1,1,1-trichloroethane	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9490331
RDL = Reportable Detection Limit								

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BV Labs Job #: B952543
Report Date: 2019/07/09

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
Sampler Initials: AM

VOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		VZ9812	VZ9813	VZ9814	VZ9815	VZ9816		
Sampling Date		2019/06/28	2019/06/28	2019/06/28	2019/06/28	2019/06/28		
COC Number		m082726	m082726	m082726	m082726	m082726		
	UNITS	**116**	**122**	**125**	**131**	**138**	**RDL**	**QC Batch**
1,1,2-trichloroethane	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9490331
Trichloroethene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	9490331
Trichlorofluoromethane	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9490331
1,2,4-trimethylbenzene	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	9490331
1,3,5-trimethylbenzene	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	9490331
Vinyl chloride	mg/kg	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	0.00030	9490331
Surrogate Recovery (%)								
1,4-Difluorobenzene (sur.)	%	102	102	101	101	102	N/A	9490331
4-Bromofluorobenzene (sur.)	%	93	92	95	92	95	N/A	9490331
D10-o-Xylene (sur.)	%	113	116	109	114	111	N/A	9490331
D4-1,2-Dichloroethane (sur.)	%	111	113	112	111	118	N/A	9490331

RDL = Reportable Detection Limit
N/A = Not Applicable

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BV Labs Job #: B952543
Report Date: 2019/07/09

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
Sampler Initials: AM

VOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		VZ9817		
Sampling Date		2019/06/28		
COC Number		m082726		
	UNITS	**141**	**RDL**	**QC Batch**
Field Preserved Volatiles				
Bromodichloromethane	mg/kg	<0.030	0.030	9490331
Bromoform	mg/kg	<0.050	0.050	9490331
Bromomethane	mg/kg	<0.020	0.020	9490331
Carbon tetrachloride	mg/kg	<0.00050	0.00050	9490331
Chlorobenzene	mg/kg	<0.0010	0.0010	9490331
Chlorodibromomethane	mg/kg	<0.020	0.020	9490331
Chloroethane	mg/kg	<0.020	0.020	9490331
Chloroform	mg/kg	<0.010	0.010	9490331
Chloromethane	mg/kg	<0.030	0.030	9490331
1,2-dibromoethane	mg/kg	<0.0020	0.0020	9490331
1,2-dichlorobenzene	mg/kg	<0.020	0.020	9490331
1,3-dichlorobenzene	mg/kg	<0.020	0.020	9490331
1,4-dichlorobenzene	mg/kg	<0.020	0.020	9490331
1,1-dichloroethane	mg/kg	<0.020	0.020	9490331
1,2-dichloroethane	mg/kg	<0.0020	0.0020	9490331
1,1-dichloroethene	mg/kg	<0.020	0.020	9490331
cis-1,2-dichloroethene	mg/kg	<0.020	0.020	9490331
trans-1,2-dichloroethene	mg/kg	<0.020	0.020	9490331
Dichloromethane	mg/kg	<0.030	0.030	9490331
1,2-dichloropropane	mg/kg	<0.020	0.020	9490331
cis-1,3-dichloropropene	mg/kg	<0.020	0.020	9490331
trans-1,3-dichloropropene	mg/kg	<0.020	0.020	9490331
Methyl methacrylate	mg/kg	<0.040	0.040	9490331
Methyl-tert-butylether (MTBE)	mg/kg	<0.030	0.030	9490331
Styrene	mg/kg	<0.020	0.020	9490331
1,1,1,2-tetrachloroethane	mg/kg	<0.050	0.050	9490331
1,1,2,2-tetrachloroethane	mg/kg	<0.050	0.050	9490331
Tetrachloroethene	mg/kg	<0.010	0.010	9490331
1,2,3-trichlorobenzene	mg/kg	<0.040	0.040	9490331
1,2,4-trichlorobenzene	mg/kg	<0.040	0.040	9490331
1,3,5-trichlorobenzene	mg/kg	<0.040	0.040	9490331
1,1,1-trichloroethane	mg/kg	<0.020	0.020	9490331
RDL = Reportable Detection Limit				

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BV Labs Job #: B952543
Report Date: 2019/07/09

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
Sampler Initials: AM

VOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		VZ9817		
Sampling Date		2019/06/28		
COC Number		m082726		
	UNITS	**141**	**RDL**	**QC Batch**
1,1,2-trichloroethane	mg/kg	<0.020	0.020	9490331
Trichloroethene	mg/kg	<0.010	0.010	9490331
Trichlorofluoromethane	mg/kg	<0.020	0.020	9490331
1,2,4-trimethylbenzene	mg/kg	<0.50	0.50	9490331
1,3,5-trimethylbenzene	mg/kg	<0.50	0.50	9490331
Vinyl chloride	mg/kg	<0.00030	0.00030	9490331
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	101	N/A	9490331
4-Bromofluorobenzene (sur.)	%	93	N/A	9490331
D10-o-Xylene (sur.)	%	113	N/A	9490331
D4-1,2-Dichloroethane (sur.)	%	113	N/A	9490331

RDL = Reportable Detection Limit
N/A = Not Applicable

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BV Labs Job #: B952543
Report Date: 2019/07/09

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
Sampler Initials: AM

VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		VZ9820		
Sampling Date		2019/06/28		
COC Number		m082726		
	UNITS	**TRIP BLANK**	**RDL**	**QC Batch**
Volatiles				
Total Trihalomethanes	mg/L	<0.0013	0.0013	9494392
Benzene	mg/L	<0.00040	0.00040	9492619
Bromodichloromethane	mg/L	<0.00050	0.00050	9492619
Bromoform	mg/L	<0.00050	0.00050	9492619
Bromomethane	mg/L	<0.0020	0.0020	9492619
Carbon tetrachloride	mg/L	<0.00050	0.00050	9492619
Chlorobenzene	mg/L	<0.00050	0.00050	9492619
Chlorodibromomethane	mg/L	<0.0010	0.0010	9492619
Chloroethane	mg/L	<0.0010	0.0010	9492619
Chloroform	mg/L	<0.00050	0.00050	9492619
Chloromethane	mg/L	<0.0020	0.0020	9492619
1,2-dibromoethane	mg/L	<0.00020	0.00020	9492619
1,2-dichlorobenzene	mg/L	<0.00050	0.00050	9492619
1,3-dichlorobenzene	mg/L	<0.00050	0.00050	9492619
1,4-dichlorobenzene	mg/L	<0.00050	0.00050	9492619
1,1-dichloroethane	mg/L	<0.00050	0.00050	9492619
1,2-dichloroethane	mg/L	<0.00050	0.00050	9492619
1,1-dichloroethene	mg/L	<0.00050	0.00050	9492619
cis-1,2-dichloroethene	mg/L	<0.00050	0.00050	9492619
trans-1,2-dichloroethene	mg/L	<0.00050	0.00050	9492619
Dichloromethane	mg/L	<0.0020	0.0020	9492619
1,2-dichloropropane	mg/L	<0.00050	0.00050	9492619
cis-1,3-dichloropropene	mg/L	<0.00050	0.00050	9492619
trans-1,3-dichloropropene	mg/L	<0.00050	0.00050	9492619
Ethylbenzene	mg/L	<0.00040	0.00040	9492619
Methyl methacrylate	mg/L	<0.00050	0.00050	9492619
Methyl-tert-butylether (MTBE)	mg/L	<0.00050	0.00050	9492619
Styrene	mg/L	<0.00050	0.00050	9492619
1,1,1,2-tetrachloroethane	mg/L	<0.0010	0.0010	9492619
1,1,2,2-tetrachloroethane	mg/L	<0.0020	0.0020	9492619
Tetrachloroethene	mg/L	<0.00050	0.00050	9492619
Toluene	mg/L	<0.00040	0.00040	9492619
RDL = Reportable Detection Limit				

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BV Labs Job #: B952543
Report Date: 2019/07/09

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
Sampler Initials: AM

VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		VZ9820		
Sampling Date		2019/06/28		
COC Number		m082726		
	UNITS	**TRIP BLANK**	**RDL**	**QC Batch**
1,2,3-trichlorobenzene	mg/L	<0.0010	0.0010	9492619
1,2,4-trichlorobenzene	mg/L	<0.0010	0.0010	9492619
1,3,5-trichlorobenzene	mg/L	<0.00050	0.00050	9492619
1,1,1-trichloroethane	mg/L	<0.00050	0.00050	9492619
1,1,2-trichloroethane	mg/L	<0.00050	0.00050	9492619
Trichloroethene	mg/L	<0.00050	0.00050	9492619
Trichlorofluoromethane	mg/L	<0.00050	0.00050	9492619
1,2,4-trimethylbenzene	mg/L	<0.00050	0.00050	9492619
1,3,5-trimethylbenzene	mg/L	<0.00050	0.00050	9492619
Vinyl chloride	mg/L	<0.00050	0.00050	9492619
Xylenes (Total)	mg/L	<0.00080	0.00080	9492619
m & p-Xylene	mg/L	<0.00080	0.00080	9492619
o-Xylene	mg/L	<0.00040	0.00040	9492619
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	100	N/A	9492619
4-Bromofluorobenzene (sur.)	%	96	N/A	9492619
D4-1,2-Dichloroethane (sur.)	%	95	N/A	9492619

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	22.3°C

Results relate only to the items tested.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B952543
Report Date: 2019/07/09

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
Sampler Initials: AM

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9490331	QW1	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/07/03		106	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/03		97	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/03		119	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/03		101	%	50 - 140
			Bromodichloromethane	2019/07/03		110	%	50 - 140
			Bromoform	2019/07/03		111	%	50 - 140
			Bromomethane	2019/07/03		124	%	50 - 140
			Carbon tetrachloride	2019/07/03		110	%	50 - 140
			Chlorobenzene	2019/07/03		98	%	50 - 140
			Chlorodibromomethane	2019/07/03		112	%	50 - 140
			Chloroethane	2019/07/03		100	%	50 - 140
			Chloroform	2019/07/03		97	%	50 - 140
			Chloromethane	2019/07/03		74	%	50 - 140
			1,2-dibromoethane	2019/07/03		103	%	50 - 140
			1,2-dichlorobenzene	2019/07/03		96	%	50 - 140
			1,3-dichlorobenzene	2019/07/03		101	%	50 - 140
			1,4-dichlorobenzene	2019/07/03		96	%	50 - 140
			1,1-dichloroethane	2019/07/03		95	%	50 - 140
			1,2-dichloroethane	2019/07/03		108	%	50 - 140
			1,1-dichloroethene	2019/07/03		96	%	50 - 140
			cis-1,2-dichloroethene	2019/07/03		100	%	50 - 140
			trans-1,2-dichloroethene	2019/07/03		96	%	50 - 140
			Dichloromethane	2019/07/03		87	%	50 - 140
			1,2-dichloropropane	2019/07/03		91	%	50 - 140
			cis-1,3-dichloropropene	2019/07/03		101	%	50 - 140
			trans-1,3-dichloropropene	2019/07/03		97	%	50 - 140
			Methyl methacrylate	2019/07/03		96	%	50 - 140
			Methyl-tert-butylether (MTBE)	2019/07/03		96	%	50 - 140
			Styrene	2019/07/03		103	%	50 - 140
			1,1,1,2-tetrachloroethane	2019/07/03		105	%	50 - 140
			1,1,2,2-tetrachloroethane	2019/07/03		85	%	50 - 140
			Tetrachloroethene	2019/07/03		109	%	50 - 140
			1,2,3-trichlorobenzene	2019/07/03		81	%	50 - 140
			1,2,4-trichlorobenzene	2019/07/03		87	%	50 - 140
			1,3,5-trichlorobenzene	2019/07/03		94	%	50 - 140
			1,1,1-trichloroethane	2019/07/03		111	%	50 - 140
			1,1,2-trichloroethane	2019/07/03		103	%	50 - 140
			Trichloroethene	2019/07/03		108	%	50 - 140
			Trichlorofluoromethane	2019/07/03		110	%	50 - 140
			1,2,4-trimethylbenzene	2019/07/03		101	%	50 - 140
			1,3,5-trimethylbenzene	2019/07/03		101	%	50 - 140
			Vinyl chloride	2019/07/03		79	%	50 - 140
9490331	QW1	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/07/03		105	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/03		96	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/03		117	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/03		99	%	50 - 140
			Bromodichloromethane	2019/07/03		113	%	60 - 130
			Bromoform	2019/07/03		113	%	60 - 130
			Bromomethane	2019/07/03		118	%	60 - 130
			Carbon tetrachloride	2019/07/03		116	%	60 - 130
			Chlorobenzene	2019/07/03		102	%	60 - 130
			Chlorodibromomethane	2019/07/03		113	%	60 - 130
			Chloroethane	2019/07/03		106	%	60 - 130

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BV Labs Job #: B952543
Report Date: 2019/07/09

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
Sampler Initials: AM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Chloroform	2019/07/03		100	%	60 - 130
			Chloromethane	2019/07/03		72	%	60 - 130
			1,2-dibromoethane	2019/07/03		107	%	60 - 130
			1,2-dichlorobenzene	2019/07/03		102	%	60 - 130
			1,3-dichlorobenzene	2019/07/03		105	%	60 - 130
			1,4-dichlorobenzene	2019/07/03		102	%	60 - 130
			1,1-dichloroethane	2019/07/03		99	%	60 - 130
			1,2-dichloroethane	2019/07/03		113	%	60 - 130
			1,1-dichloroethene	2019/07/03		101	%	60 - 130
			cis-1,2-dichloroethene	2019/07/03		104	%	60 - 130
			trans-1,2-dichloroethene	2019/07/03		102	%	60 - 130
			Dichloromethane	2019/07/03		92	%	60 - 130
			1,2-dichloropropane	2019/07/03		93	%	60 - 130
			cis-1,3-dichloropropene	2019/07/03		97	%	60 - 130
			trans-1,3-dichloropropene	2019/07/03		98	%	60 - 130
			Methyl methacrylate	2019/07/03		99	%	60 - 130
			Methyl-tert-butylether (MTBE)	2019/07/03		99	%	60 - 130
			Styrene	2019/07/03		107	%	60 - 130
			1,1,1,2-tetrachloroethane	2019/07/03		107	%	60 - 130
			1,1,2,2-tetrachloroethane	2019/07/03		92	%	60 - 130
			Tetrachloroethene	2019/07/03		117	%	60 - 130
			1,2,3-trichlorobenzene	2019/07/03		93	%	60 - 130
			1,2,4-trichlorobenzene	2019/07/03		98	%	60 - 130
			1,3,5-trichlorobenzene	2019/07/03		100	%	60 - 130
			1,1,1-trichloroethane	2019/07/03		116	%	60 - 130
			1,1,2-trichloroethane	2019/07/03		103	%	60 - 130
			Trichloroethene	2019/07/03		113	%	60 - 130
			Trichlorofluoromethane	2019/07/03		116	%	60 - 130
			1,2,4-trimethylbenzene	2019/07/03		99	%	60 - 130
			1,3,5-trimethylbenzene	2019/07/03		105	%	60 - 130
			Vinyl chloride	2019/07/03		80	%	60 - 130
9490331	QW1	Method Blank	1,4-Difluorobenzene (sur.)	2019/07/03		101	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/03		92	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/03		99	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/03		112	%	50 - 140
			Bromodichloromethane	2019/07/03	<0.030		mg/kg	
			Bromoform	2019/07/03	<0.050		mg/kg	
			Bromomethane	2019/07/03	<0.020		mg/kg	
			Carbon tetrachloride	2019/07/03	<0.00050		mg/kg	
			Chlorobenzene	2019/07/03	<0.0010		mg/kg	
			Chlorodibromomethane	2019/07/03	<0.020		mg/kg	
			Chloroethane	2019/07/03	<0.020		mg/kg	
			Chloroform	2019/07/03	<0.010		mg/kg	
			Chloromethane	2019/07/03	<0.030		mg/kg	
			1,2-dibromoethane	2019/07/03	<0.0020		mg/kg	
			1,2-dichlorobenzene	2019/07/03	<0.020		mg/kg	
			1,3-dichlorobenzene	2019/07/03	<0.020		mg/kg	
			1,4-dichlorobenzene	2019/07/03	<0.020		mg/kg	
			1,1-dichloroethane	2019/07/03	<0.020		mg/kg	
			1,2-dichloroethane	2019/07/03	<0.0020		mg/kg	
			1,1-dichloroethene	2019/07/03	<0.020		mg/kg	
			cis-1,2-dichloroethene	2019/07/03	<0.020		mg/kg	
			trans-1,2-dichloroethene	2019/07/03	<0.020		mg/kg	

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Client Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
Sampler Initials: AM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dichloromethane	2019/07/03	<0.030		mg/kg	
			1,2-dichloropropane	2019/07/03	<0.020		mg/kg	
			cis-1,3-dichloropropene	2019/07/03	<0.020		mg/kg	
			trans-1,3-dichloropropene	2019/07/03	<0.020		mg/kg	
			Methyl methacrylate	2019/07/03	<0.040		mg/kg	
			Methyl-tert-butylether (MTBE)	2019/07/03	<0.030		mg/kg	
			Styrene	2019/07/03	<0.020		mg/kg	
			1,1,1,2-tetrachloroethane	2019/07/03	<0.050		mg/kg	
			1,1,2,2-tetrachloroethane	2019/07/03	<0.050		mg/kg	
			Tetrachloroethene	2019/07/03	<0.010		mg/kg	
			1,2,3-trichlorobenzene	2019/07/03	<0.040		mg/kg	
			1,2,4-trichlorobenzene	2019/07/03	<0.040		mg/kg	
			1,3,5-trichlorobenzene	2019/07/03	<0.040		mg/kg	
			1,1,1-trichloroethane	2019/07/03	<0.020		mg/kg	
			1,1,2-trichloroethane	2019/07/03	<0.020		mg/kg	
			Trichloroethene	2019/07/03	<0.010		mg/kg	
			Trichlorofluoromethane	2019/07/03	<0.020		mg/kg	
			1,2,4-trimethylbenzene	2019/07/03	<0.50		mg/kg	
			1,3,5-trimethylbenzene	2019/07/03	<0.50		mg/kg	
			Vinyl chloride	2019/07/03	<0.00030		mg/kg	
9490331	QW1	RPD	Bromodichloromethane	2019/07/04	NC		%	50
			Bromoform	2019/07/04	NC		%	50
			Bromomethane	2019/07/04	NC		%	50
			Carbon tetrachloride	2019/07/04	NC		%	50
			Chlorobenzene	2019/07/04	NC		%	50
			Chlorodibromomethane	2019/07/04	NC		%	50
			Chloroethane	2019/07/04	NC		%	50
			Chloroform	2019/07/04	NC		%	50
			Chloromethane	2019/07/04	NC		%	50
			1,2-dibromoethane	2019/07/04	NC		%	50
			1,2-dichlorobenzene	2019/07/04	NC		%	50
			1,3-dichlorobenzene	2019/07/04	NC		%	50
			1,4-dichlorobenzene	2019/07/04	NC		%	50
			1,1-dichloroethane	2019/07/04	NC		%	50
			1,2-dichloroethane	2019/07/04	2.2		%	50
			1,1-dichloroethene	2019/07/04	NC		%	50
			cis-1,2-dichloroethene	2019/07/04	NC		%	50
			trans-1,2-dichloroethene	2019/07/04	NC		%	50
			Dichloromethane	2019/07/04	NC		%	50
			1,2-dichloropropane	2019/07/04	NC		%	50
			cis-1,3-dichloropropene	2019/07/04	NC		%	50
			trans-1,3-dichloropropene	2019/07/04	NC		%	50
			Methyl methacrylate	2019/07/04	NC		%	50
			Methyl-tert-butylether (MTBE)	2019/07/04	NC		%	50
			Styrene	2019/07/04	NC		%	50
			1,1,1,2-tetrachloroethane	2019/07/04	NC		%	50
			1,1,2,2-tetrachloroethane	2019/07/04	NC		%	50
			Tetrachloroethene	2019/07/04	NC		%	50
			1,2,3-trichlorobenzene	2019/07/04	NC		%	50
			1,2,4-trichlorobenzene	2019/07/04	NC		%	50
			1,3,5-trichlorobenzene	2019/07/04	NC		%	50
			1,1,1-trichloroethane	2019/07/04	NC		%	50
			1,1,2-trichloroethane	2019/07/04	NC		%	50

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BV Labs Job #: B952543
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Client Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Trichloroethene	2019/07/04	NC		%	50
			Trichlorofluoromethane	2019/07/04	NC		%	50
			1,2,4-trimethylbenzene	2019/07/04	NC		%	50
			1,3,5-trimethylbenzene	2019/07/04	NC		%	50
			Vinyl chloride	2019/07/04	NC		%	50
9490566	SAY	Method Blank	Moisture	2019/07/04	<0.30		%	
9490566	SAY	RPD [VZ9817-01]	Moisture	2019/07/04	0		%	20
9490749	DO1	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/07/04		104	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/04		106	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/04		97	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/04		107	%	50 - 140
			Benzene	2019/07/04		93	%	50 - 140
			Toluene	2019/07/04		85	%	50 - 140
			Ethylbenzene	2019/07/04		88	%	50 - 140
			m & p-Xylene	2019/07/04		86	%	50 - 140
			o-Xylene	2019/07/04		87	%	50 - 140
			F1 (C6-C10)	2019/07/04		95	%	60 - 140
9490749	DO1	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/07/04		106	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/04		107	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/04		93	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/04		106	%	50 - 140
			Benzene	2019/07/04		82	%	60 - 130
			Toluene	2019/07/04		78	%	60 - 130
			Ethylbenzene	2019/07/04		79	%	60 - 130
			m & p-Xylene	2019/07/04		79	%	60 - 130
			o-Xylene	2019/07/04		81	%	60 - 130
			F1 (C6-C10)	2019/07/04		89	%	60 - 140
9490749	DO1	Method Blank	1,4-Difluorobenzene (sur.)	2019/07/04		110	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/04		103	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/04		92	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/04		109	%	50 - 140
			Benzene	2019/07/04	<0.0050		mg/kg	
			Toluene	2019/07/04	<0.050		mg/kg	
			Ethylbenzene	2019/07/04	<0.010		mg/kg	
			m & p-Xylene	2019/07/04	<0.040		mg/kg	
			o-Xylene	2019/07/04	<0.020		mg/kg	
			F1 (C6-C10)	2019/07/04	<10		mg/kg	
9490749	DO1	RPD	Benzene	2019/07/04	NC		%	50
			Toluene	2019/07/04	NC		%	50
			Ethylbenzene	2019/07/04	NC		%	50
			m & p-Xylene	2019/07/04	NC		%	50
			o-Xylene	2019/07/04	NC		%	50
			F1 (C6-C10)	2019/07/04	NC		%	30
9490986	DO1	Matrix Spike	Leachable (ZH) 1,4-Difluorobenzene (sur.)	2019/07/04		100	%	50 - 140
			Leachable (ZH) 4-Bromofluorobenzene (sur.)	2019/07/04		95	%	50 - 140
			Leachable (ZH) D4-1,2-Dichloroethane (sur.)	2019/07/04		78	%	50 - 140
			Leachable (ZH) Benzene	2019/07/04		81	%	50 - 140
			Leachable (ZH) Toluene	2019/07/04		NC	%	50 - 140
			Leachable (ZH) Ethylbenzene	2019/07/04		NC	%	50 - 140
			Leachable (ZH) o-Xylene	2019/07/04		NC	%	50 - 140
			Leachable (ZH) m & p-Xylene	2019/07/04		NC	%	50 - 140
9490986	DO1	Spiked Blank	Leachable (ZH) 1,4-Difluorobenzene (sur.)	2019/07/04		96	%	50 - 140
			Leachable (ZH) 4-Bromofluorobenzene (sur.)	2019/07/04		102	%	50 - 140

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Leachable (ZH) D4-1,2-Dichloroethane (sur.)	2019/07/04		95	%	50 - 140
			Leachable (ZH) Benzene	2019/07/04		85	%	60 - 130
			Leachable (ZH) Toluene	2019/07/04		90	%	60 - 130
			Leachable (ZH) Ethylbenzene	2019/07/04		89	%	60 - 130
			Leachable (ZH) o-Xylene	2019/07/04		89	%	60 - 130
			Leachable (ZH) m & p-Xylene	2019/07/04		90	%	60 - 130
9490986	DO1	Method Blank	Leachable (ZH) 1,4-Difluorobenzene (sur.)	2019/07/04		102	%	50 - 140
			Leachable (ZH) 4-Bromofluorobenzene (sur.)	2019/07/04		96	%	50 - 140
			Leachable (ZH) D4-1,2-Dichloroethane (sur.)	2019/07/04		89	%	50 - 140
			Leachable (ZH) Benzene	2019/07/04	<0.010		mg/L	
			Leachable (ZH) Toluene	2019/07/04	<0.010		mg/L	
			Leachable (ZH) Ethylbenzene	2019/07/04	<0.010		mg/L	
			Leachable (ZH) o-Xylene	2019/07/04	<0.010		mg/L	
			Leachable (ZH) m & p-Xylene	2019/07/04	<0.020		mg/L	
			Leachable (ZH) Xylenes (Total)	2019/07/04	<0.020		mg/L	
9490986	DO1	RPD	Leachable (ZH) Benzene	2019/07/04	60 (1)		%	30
			Leachable (ZH) Toluene	2019/07/04	26		%	30
			Leachable (ZH) Ethylbenzene	2019/07/04	9.4		%	30
			Leachable (ZH) o-Xylene	2019/07/04	5.9		%	30
			Leachable (ZH) m & p-Xylene	2019/07/04	9.4		%	30
			Leachable (ZH) Xylenes (Total)	2019/07/04	8.3		%	30
9491255	BL7	RPD [VZ9819-02]	Closed Cup Flash Point	2019/07/03	NC		%	35
9491412	VP4	Matrix Spike	O-TERPHENYL (sur.)	2019/07/05		101	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/07/05		103	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2019/07/05		95	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2019/07/05		92	%	60 - 140
9491412	VP4	Spiked Blank	O-TERPHENYL (sur.)	2019/07/05		104	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/07/05		107	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2019/07/05		101	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2019/07/05		97	%	60 - 140
9491412	VP4	Method Blank	O-TERPHENYL (sur.)	2019/07/05		105	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/07/05	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2019/07/05	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2019/07/05	<50		mg/kg	
9491412	VP4	RPD	F2 (C10-C16 Hydrocarbons)	2019/07/05	NC		%	40
			F3 (C16-C34 Hydrocarbons)	2019/07/05	14		%	40
			F4 (C34-C50 Hydrocarbons)	2019/07/05	3.8		%	40
9491416	NK3	Matrix Spike	D10-ANTHRACENE (sur.)	2019/07/09		93	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/07/09		95	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/07/09		94	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/07/09		102	%	50 - 130
			Acenaphthene	2019/07/09		92	%	50 - 130
			Acenaphthylene	2019/07/09		89	%	50 - 130
			Acridine	2019/07/09		67	%	50 - 130
			Anthracene	2019/07/09		87	%	50 - 130
			Benzo(a)anthracene	2019/07/09		92	%	50 - 130
			Benzo(b&j)fluoranthene	2019/07/09		83	%	50 - 130
			Benzo(k)fluoranthene	2019/07/09		86	%	50 - 130
			Benzo(g,h,i)perylene	2019/07/09		82	%	50 - 130
			Benzo(c)phenanthrene	2019/07/09		97	%	50 - 130
			Benzo(a)pyrene	2019/07/09		88	%	50 - 130
			Benzo[e]pyrene	2019/07/09		87	%	50 - 130
			Chrysene	2019/07/09		89	%	50 - 130

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B952543
Report Date: 2019/07/09

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
Sampler Initials: AM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dibenz(a,h)anthracene	2019/07/09		86	%	50 - 130
			Fluoranthene	2019/07/09		91	%	50 - 130
			Fluorene	2019/07/09		91	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/07/09		86	%	50 - 130
			1-Methylnaphthalene	2019/07/09		96	%	50 - 130
			2-Methylnaphthalene	2019/07/09		91	%	50 - 130
			Naphthalene	2019/07/09		88	%	50 - 130
			Phenanthrene	2019/07/09		87	%	50 - 130
			Perylene	2019/07/09		84	%	50 - 130
			Pyrene	2019/07/09		91	%	50 - 130
			Quinoline	2019/07/09		97	%	50 - 130
9491416	NK3	Spiked Blank	D10-ANTHRACENE (sur.)	2019/07/08		100	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/07/08		103	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/07/08		101	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/07/08		110	%	50 - 130
			Acenaphthene	2019/07/08		98	%	50 - 130
			Acenaphthylene	2019/07/08		96	%	50 - 130
			Acridine	2019/07/08		73	%	50 - 130
			Anthracene	2019/07/08		93	%	50 - 130
			Benzo(a)anthracene	2019/07/08		97	%	50 - 130
			Benzo(b&j)fluoranthene	2019/07/08		89	%	50 - 130
			Benzo(k)fluoranthene	2019/07/08		93	%	50 - 130
			Benzo(g,h,i)perylene	2019/07/08		95	%	50 - 130
			Benzo(c)phenanthrene	2019/07/08		102	%	50 - 130
			Benzo(a)pyrene	2019/07/08		97	%	50 - 130
			Benzo[e]pyrene	2019/07/08		95	%	50 - 130
			Chrysene	2019/07/08		97	%	50 - 130
			Dibenz(a,h)anthracene	2019/07/08		95	%	50 - 130
			Fluoranthene	2019/07/08		97	%	50 - 130
			Fluorene	2019/07/08		96	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/07/08		96	%	50 - 130
			1-Methylnaphthalene	2019/07/08		102	%	50 - 130
			2-Methylnaphthalene	2019/07/08		96	%	50 - 130
			Naphthalene	2019/07/08		94	%	50 - 130
			Phenanthrene	2019/07/08		93	%	50 - 130
			Perylene	2019/07/08		95	%	50 - 130
			Pyrene	2019/07/08		97	%	50 - 130
			Quinoline	2019/07/08		97	%	50 - 130
9491416	NK3	Method Blank	D10-ANTHRACENE (sur.)	2019/07/09		95	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/07/09		97	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/07/09		94	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/07/09		105	%	50 - 130
			Acenaphthene	2019/07/09	<0.0050		mg/kg	
			Acenaphthylene	2019/07/09	<0.0050		mg/kg	
			Acridine	2019/07/09	<0.010		mg/kg	
			Anthracene	2019/07/09	<0.0040		mg/kg	
			Benzo(a)anthracene	2019/07/09	<0.0050		mg/kg	
			Benzo(b&j)fluoranthene	2019/07/09	<0.0050		mg/kg	
			Benzo(k)fluoranthene	2019/07/09	<0.0050		mg/kg	
			Benzo(g,h,i)perylene	2019/07/09	<0.0050		mg/kg	
			Benzo(c)phenanthrene	2019/07/09	<0.0050		mg/kg	
			Benzo(a)pyrene	2019/07/09	<0.0050		mg/kg	
			Benzo[e]pyrene	2019/07/09	<0.0050		mg/kg	

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B952543
Report Date: 2019/07/09

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
Sampler Initials: AM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Chrysene	2019/07/09	<0.0050		mg/kg	
			Dibenz(a,h)anthracene	2019/07/09	<0.0050		mg/kg	
			Fluoranthene	2019/07/09	<0.0050		mg/kg	
			Fluorene	2019/07/09	<0.0050		mg/kg	
			Indeno(1,2,3-cd)pyrene	2019/07/09	<0.0050		mg/kg	
			1-Methylnaphthalene	2019/07/09	<0.0050		mg/kg	
			2-Methylnaphthalene	2019/07/09	<0.0050		mg/kg	
			Naphthalene	2019/07/09	<0.0050		mg/kg	
			Phenanthrene	2019/07/09	<0.0050		mg/kg	
			Perylene	2019/07/09	<0.0050		mg/kg	
			Pyrene	2019/07/09	<0.0050		mg/kg	
			Quinoline	2019/07/09	<0.010		mg/kg	
9491416	NK3	RPD	Acenaphthene	2019/07/09	NC		%	50
			Acenaphthylene	2019/07/09	NC		%	50
			Acridine	2019/07/09	NC		%	50
			Anthracene	2019/07/09	NC		%	50
			Benzo(a)anthracene	2019/07/09	NC		%	50
			Benzo(b&j)fluoranthene	2019/07/09	NC		%	50
			Benzo(k)fluoranthene	2019/07/09	NC		%	50
			Benzo(g,h,i)perylene	2019/07/09	NC		%	50
			Benzo(c)phenanthrene	2019/07/09	NC		%	50
			Benzo(a)pyrene	2019/07/09	NC		%	50
			Benzo[e]pyrene	2019/07/09	NC		%	50
			Chrysene	2019/07/09	NC		%	50
			Dibenz(a,h)anthracene	2019/07/09	NC		%	50
			Fluoranthene	2019/07/09	NC		%	50
			Fluorene	2019/07/09	NC		%	50
			Indeno(1,2,3-cd)pyrene	2019/07/09	NC		%	50
			1-Methylnaphthalene	2019/07/09	NC		%	50
			2-Methylnaphthalene	2019/07/09	NC		%	50
			Naphthalene	2019/07/09	NC		%	50
			Phenanthrene	2019/07/09	NC		%	50
			Perylene	2019/07/09	21		%	50
			Pyrene	2019/07/09	NC		%	50
			Quinoline	2019/07/09	NC		%	50
9491456	SAY	Method Blank	Moisture	2019/07/04	<0.30		%	
9491456	SAY	RPD	Moisture	2019/07/04	2.7		%	20
9492619	MZ	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/07/05		101	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/05		106	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/05		119	%	50 - 140
			Benzene	2019/07/05		91	%	50 - 140
			Bromodichloromethane	2019/07/05		104	%	50 - 140
			Bromoform	2019/07/05		96	%	50 - 140
			Bromomethane	2019/07/05		91	%	50 - 140
			Carbon tetrachloride	2019/07/05		96	%	50 - 140
			Chlorobenzene	2019/07/05		94	%	50 - 140
			Chlorodibromomethane	2019/07/05		101	%	50 - 140
			Chloroethane	2019/07/05		90	%	50 - 140
			Chloroform	2019/07/05		97	%	50 - 140
			Chloromethane	2019/07/05		90	%	50 - 140
			1,2-dibromoethane	2019/07/05		96	%	50 - 140
			1,2-dichlorobenzene	2019/07/05		104	%	50 - 140
			1,3-dichlorobenzene	2019/07/05		100	%	50 - 140

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B952543
Report Date: 2019/07/09

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
Sampler Initials: AM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,4-dichlorobenzene	2019/07/05		98	%	50 - 140
			1,1-dichloroethane	2019/07/05		97	%	50 - 140
			1,2-dichloroethane	2019/07/05		104	%	50 - 140
			1,1-dichloroethene	2019/07/05		91	%	50 - 140
			cis-1,2-dichloroethene	2019/07/05		97	%	50 - 140
			trans-1,2-dichloroethene	2019/07/05		88	%	50 - 140
			Dichloromethane	2019/07/05		92	%	50 - 140
			1,2-dichloropropane	2019/07/05		101	%	50 - 140
			cis-1,3-dichloropropene	2019/07/05		111	%	50 - 140
			trans-1,3-dichloropropene	2019/07/05		128	%	50 - 140
			Ethylbenzene	2019/07/05		90	%	50 - 140
			Methyl methacrylate	2019/07/05		108	%	50 - 140
			Methyl-tert-butylether (MTBE)	2019/07/05		100	%	50 - 140
			Styrene	2019/07/05		97	%	50 - 140
			1,1,1,2-tetrachloroethane	2019/07/05		93	%	50 - 140
			1,1,2,2-tetrachloroethane	2019/07/05		81	%	50 - 140
			Tetrachloroethene	2019/07/05		86	%	50 - 140
			Toluene	2019/07/05		90	%	50 - 140
			1,2,3-trichlorobenzene	2019/07/05		97	%	50 - 140
			1,2,4-trichlorobenzene	2019/07/05		97	%	50 - 140
			1,3,5-trichlorobenzene	2019/07/05		95	%	50 - 140
			1,1,1-trichloroethane	2019/07/05		98	%	50 - 140
			1,1,2-trichloroethane	2019/07/05		103	%	50 - 140
			Trichloroethene	2019/07/05		115	%	50 - 140
			Trichlorofluoromethane	2019/07/05		89	%	50 - 140
			1,2,4-trimethylbenzene	2019/07/05		102	%	50 - 140
			1,3,5-trimethylbenzene	2019/07/05		103	%	50 - 140
			Vinyl chloride	2019/07/05		87	%	50 - 140
			m & p-Xylene	2019/07/05		88	%	50 - 140
			o-Xylene	2019/07/05		87	%	50 - 140
9492619	MZ	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/07/05		101	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/05		106	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/05		116	%	50 - 140
			Benzene	2019/07/05		88	%	60 - 130
			Bromodichloromethane	2019/07/05		100	%	60 - 130
			Bromoform	2019/07/05		91	%	60 - 130
			Bromomethane	2019/07/05		87	%	60 - 130
			Carbon tetrachloride	2019/07/05		95	%	60 - 130
			Chlorobenzene	2019/07/05		88	%	60 - 130
			Chlorodibromomethane	2019/07/05		96	%	60 - 130
			Chloroethane	2019/07/05		88	%	60 - 130
			Chloroform	2019/07/05		93	%	60 - 130
			Chloromethane	2019/07/05		87	%	60 - 130
			1,2-dibromoethane	2019/07/05		88	%	60 - 130
			1,2-dichlorobenzene	2019/07/05		97	%	60 - 130
			1,3-dichlorobenzene	2019/07/05		95	%	60 - 130
			1,4-dichlorobenzene	2019/07/05		92	%	60 - 130
			1,1-dichloroethane	2019/07/05		94	%	60 - 130
			1,2-dichloroethane	2019/07/05		98	%	60 - 130
			1,1-dichloroethene	2019/07/05		89	%	60 - 130
			cis-1,2-dichloroethene	2019/07/05		94	%	60 - 130
			trans-1,2-dichloroethene	2019/07/05		85	%	60 - 130
			Dichloromethane	2019/07/05		88	%	60 - 130

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B952543
Report Date: 2019/07/09

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
Sampler Initials: AM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,2-dichloropropane	2019/07/05		97	%	60 - 130
			cis-1,3-dichloropropene	2019/07/05		104	%	60 - 130
			trans-1,3-dichloropropene	2019/07/05		118	%	60 - 130
			Ethylbenzene	2019/07/05		86	%	60 - 130
			Methyl methacrylate	2019/07/05		102	%	60 - 130
			Methyl-tert-butylether (MTBE)	2019/07/05		95	%	60 - 130
			Styrene	2019/07/05		92	%	60 - 130
			1,1,1,2-tetrachloroethane	2019/07/05		87	%	60 - 130
			1,1,2,2-tetrachloroethane	2019/07/05		93	%	60 - 130
			Tetrachloroethene	2019/07/05		82	%	60 - 130
			Toluene	2019/07/05		85	%	60 - 130
			1,2,3-trichlorobenzene	2019/07/05		90	%	60 - 130
			1,2,4-trichlorobenzene	2019/07/05		90	%	60 - 130
			1,3,5-trichlorobenzene	2019/07/05		90	%	60 - 130
			1,1,1-trichloroethane	2019/07/05		96	%	60 - 130
			1,1,2-trichloroethane	2019/07/05		98	%	60 - 130
			Trichloroethene	2019/07/05		98	%	60 - 130
			Trichlorofluoromethane	2019/07/05		87	%	60 - 130
			1,2,4-trimethylbenzene	2019/07/05		97	%	60 - 130
			1,3,5-trimethylbenzene	2019/07/05		98	%	60 - 130
			Vinyl chloride	2019/07/05		83	%	60 - 130
			m & p-Xylene	2019/07/05		84	%	60 - 130
			o-Xylene	2019/07/05		82	%	60 - 130
9492619	MZ	Method Blank	1,4-Difluorobenzene (sur.)	2019/07/05		99	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/05		98	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/05		101	%	50 - 140
			Benzene	2019/07/05	<0.00040		mg/L	
			Bromodichloromethane	2019/07/05	<0.00050		mg/L	
			Bromoform	2019/07/05	<0.00050		mg/L	
			Bromomethane	2019/07/05	<0.0020		mg/L	
			Carbon tetrachloride	2019/07/05	<0.00050		mg/L	
			Chlorobenzene	2019/07/05	<0.00050		mg/L	
			Chlorodibromomethane	2019/07/05	<0.0010		mg/L	
			Chloroethane	2019/07/05	<0.0010		mg/L	
			Chloroform	2019/07/05	<0.00050		mg/L	
			Chloromethane	2019/07/05	<0.0020		mg/L	
			1,2-dibromoethane	2019/07/05	<0.00020		mg/L	
			1,2-dichlorobenzene	2019/07/05	<0.00050		mg/L	
			1,3-dichlorobenzene	2019/07/05	<0.00050		mg/L	
			1,4-dichlorobenzene	2019/07/05	<0.00050		mg/L	
			1,1-dichloroethane	2019/07/05	<0.00050		mg/L	
			1,2-dichloroethane	2019/07/05	<0.00050		mg/L	
			1,1-dichloroethene	2019/07/05	<0.00050		mg/L	
			cis-1,2-dichloroethene	2019/07/05	<0.00050		mg/L	
			trans-1,2-dichloroethene	2019/07/05	<0.00050		mg/L	
			Dichloromethane	2019/07/05	<0.0020		mg/L	
			1,2-dichloropropane	2019/07/05	<0.00050		mg/L	
			cis-1,3-dichloropropene	2019/07/05	<0.00050		mg/L	
			trans-1,3-dichloropropene	2019/07/05	<0.00050		mg/L	
			Ethylbenzene	2019/07/05	<0.00040		mg/L	
			Methyl methacrylate	2019/07/05	<0.00050		mg/L	
			Methyl-tert-butylether (MTBE)	2019/07/05	<0.00050		mg/L	
			Styrene	2019/07/05	<0.00050		mg/L	

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,1,1,2-tetrachloroethane	2019/07/05	<0.0010		mg/L	
			1,1,2,2-tetrachloroethane	2019/07/05	<0.0020		mg/L	
			Tetrachloroethene	2019/07/05	<0.00050		mg/L	
			Toluene	2019/07/05	<0.00040		mg/L	
			1,2,3-trichlorobenzene	2019/07/05	<0.0010		mg/L	
			1,2,4-trichlorobenzene	2019/07/05	<0.0010		mg/L	
			1,3,5-trichlorobenzene	2019/07/05	<0.00050		mg/L	
			1,1,1-trichloroethane	2019/07/05	<0.00050		mg/L	
			1,1,2-trichloroethane	2019/07/05	<0.00050		mg/L	
			Trichloroethene	2019/07/05	<0.00050		mg/L	
			Trichlorofluoromethane	2019/07/05	<0.00050		mg/L	
			1,2,4-trimethylbenzene	2019/07/05	<0.00050		mg/L	
			1,3,5-trimethylbenzene	2019/07/05	<0.00050		mg/L	
			Vinyl chloride	2019/07/05	<0.00050		mg/L	
			Xylenes (Total)	2019/07/05	<0.00080		mg/L	
			m & p-Xylene	2019/07/05	<0.00080		mg/L	
			o-Xylene	2019/07/05	<0.00040		mg/L	
9492619	MZ	RPD	1,2-dichloroethane	2019/07/05	2.1		%	30
9493456	LZ0	QC Standard	Soluble (1:1) pH	2019/07/05		99	%	98 - 102
9493456	LZ0	Spiked Blank	Soluble (1:1) pH	2019/07/05		99	%	97 - 103
9493456	LZ0	RPD	Soluble (1:1) pH	2019/07/05	1.4		%	N/A
9495603	BAL	Spiked Blank	Leachable Initial pH of Sample	2019/07/07		100	%	97 - 103
			Leachable pH after HCl	2019/07/07		100	%	97 - 103
			Leachable Final pH of Leachate	2019/07/07		100	%	97 - 103
9495603	BAL	RPD	Leachable Initial pH of Sample	2019/07/07	0.31		%	N/A
			Leachable pH after HCl	2019/07/07	1.7		%	N/A
			Leachable Final pH of Leachate	2019/07/07	0		%	N/A
9495852	LQ1	Matrix Spike	Leachable Antimony (Sb)	2019/07/07		93	%	75 - 125
			Leachable Arsenic (As)	2019/07/07		92	%	75 - 125
			Leachable Barium (Ba)	2019/07/07		NC	%	75 - 125
			Leachable Beryllium (Be)	2019/07/07		92	%	75 - 125
			Leachable Boron (B)	2019/07/07		93	%	75 - 125
			Leachable Cadmium (Cd)	2019/07/07		89	%	75 - 125
			Leachable Chromium (Cr)	2019/07/07		88	%	75 - 125
			Leachable Cobalt (Co)	2019/07/07		88	%	75 - 125
			Leachable Copper (Cu)	2019/07/07		86	%	75 - 125
			Leachable Iron (Fe)	2019/07/07		NC	%	75 - 125
			Leachable Lead (Pb)	2019/07/07		83	%	75 - 125
			Leachable Mercury (Hg)	2019/07/07		72 (1)	%	75 - 125
			Leachable Nickel (Ni)	2019/07/07		87	%	75 - 125
			Leachable Selenium (Se)	2019/07/07		92	%	75 - 125
			Leachable Silver (Ag)	2019/07/07		90	%	75 - 125
			Leachable Thallium (Tl)	2019/07/07		87	%	75 - 125
			Leachable Uranium (U)	2019/07/07		102	%	75 - 125
			Leachable Vanadium (V)	2019/07/07		96	%	75 - 125
			Leachable Zinc (Zn)	2019/07/07		86	%	75 - 125
			Leachable Zirconium (Zr)	2019/07/07		97	%	75 - 125
9495852	LQ1	Spiked Blank	Leachable Antimony (Sb)	2019/07/07		98	%	80 - 120
			Leachable Arsenic (As)	2019/07/07		96	%	80 - 120
			Leachable Barium (Ba)	2019/07/07		103	%	80 - 120
			Leachable Beryllium (Be)	2019/07/07		96	%	80 - 120
			Leachable Boron (B)	2019/07/07		99	%	80 - 120
			Leachable Cadmium (Cd)	2019/07/07		95	%	80 - 120

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B952543
Report Date: 2019/07/09

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
Sampler Initials: AM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Leachable Chromium (Cr)	2019/07/07		93	%	80 - 120
			Leachable Cobalt (Co)	2019/07/07		93	%	80 - 120
			Leachable Copper (Cu)	2019/07/07		92	%	80 - 120
			Leachable Iron (Fe)	2019/07/07		104	%	80 - 120
			Leachable Lead (Pb)	2019/07/07		90	%	80 - 120
			Leachable Mercury (Hg)	2019/07/07		79 (1)	%	80 - 120
			Leachable Nickel (Ni)	2019/07/07		92	%	80 - 120
			Leachable Selenium (Se)	2019/07/07		99	%	80 - 120
			Leachable Silver (Ag)	2019/07/07		96	%	80 - 120
			Leachable Thallium (Tl)	2019/07/07		92	%	80 - 120
			Leachable Uranium (U)	2019/07/07		101	%	80 - 120
			Leachable Vanadium (V)	2019/07/07		99	%	80 - 120
			Leachable Zinc (Zn)	2019/07/07		94	%	80 - 120
			Leachable Zirconium (Zr)	2019/07/07		105	%	80 - 120
9495852	LQ1	Method Blank	Leachable Antimony (Sb)	2019/07/07	<1.0		mg/L	
			Leachable Arsenic (As)	2019/07/07	<0.50		mg/L	
			Leachable Barium (Ba)	2019/07/07	<1.0		mg/L	
			Leachable Beryllium (Be)	2019/07/07	<0.50		mg/L	
			Leachable Boron (B)	2019/07/07	<1.0		mg/L	
			Leachable Cadmium (Cd)	2019/07/07	<0.10		mg/L	
			Leachable Chromium (Cr)	2019/07/07	<0.50		mg/L	
			Leachable Cobalt (Co)	2019/07/07	<1.0		mg/L	
			Leachable Copper (Cu)	2019/07/07	<1.0		mg/L	
			Leachable Iron (Fe)	2019/07/07	<1.0		mg/L	
			Leachable Lead (Pb)	2019/07/07	<0.50		mg/L	
			Leachable Mercury (Hg)	2019/07/07	<0.020		mg/L	
			Leachable Nickel (Ni)	2019/07/07	<0.50		mg/L	
			Leachable Selenium (Se)	2019/07/07	<0.10		mg/L	
			Leachable Silver (Ag)	2019/07/07	<0.50		mg/L	
			Leachable Thallium (Tl)	2019/07/07	<0.50		mg/L	
			Leachable Uranium (U)	2019/07/07	<0.20		mg/L	
			Leachable Vanadium (V)	2019/07/07	<1.0		mg/L	
			Leachable Zinc (Zn)	2019/07/07	<1.0		mg/L	
			Leachable Zirconium (Zr)	2019/07/07	<1.0		mg/L	
9495852	LQ1	RPD	Leachable Antimony (Sb)	2019/07/07	NC		%	35
			Leachable Arsenic (As)	2019/07/07	NC		%	35
			Leachable Barium (Ba)	2019/07/07	0.79		%	35
			Leachable Beryllium (Be)	2019/07/07	NC		%	35
			Leachable Boron (B)	2019/07/07	NC		%	35
			Leachable Cadmium (Cd)	2019/07/07	NC		%	35
			Leachable Chromium (Cr)	2019/07/07	NC		%	35
			Leachable Cobalt (Co)	2019/07/07	NC		%	35
			Leachable Copper (Cu)	2019/07/07	NC		%	35
			Leachable Iron (Fe)	2019/07/07	0.49		%	35
			Leachable Lead (Pb)	2019/07/07	NC		%	35
			Leachable Mercury (Hg)	2019/07/07	NC		%	35
			Leachable Nickel (Ni)	2019/07/07	NC		%	35
			Leachable Selenium (Se)	2019/07/07	NC		%	35
			Leachable Silver (Ag)	2019/07/07	NC		%	35
			Leachable Thallium (Tl)	2019/07/07	NC		%	35
			Leachable Uranium (U)	2019/07/07	NC		%	35
			Leachable Vanadium (V)	2019/07/07	NC		%	35
			Leachable Zinc (Zn)	2019/07/07	NC		%	35

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B952543
Report Date: 2019/07/09

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
Sampler Initials: AM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Leachable Zirconium (Zr)	2019/07/07	NC		%	35

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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NOTIFICATION LOG

No Reportable Regulation Exceedences Noted.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B952543
Report Date: 2019/07/09

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Location: BENTALL PARKING LOT
Sampler Initials: AM

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Dennis Ngondu, B.Sc., P.Chem., QP, Supervisor, Organics

Gita Pokhrel, Senior Analyst

Janet Gao, B.Sc., QP, Supervisor, Organics

Harry (Peng) Liang, Senior Analyst

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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A Bureau Veritas Group Company

Calgary: 4000 19th St. NE, T2E 6P8. Toll Free (800) 386-7247
Edmonton: 9331-48 St. T6B 2R4. Toll Free (800) 386-7247
maxxam.ca

CHAIN OF CUSTODY RECORD

1198
M 082726

Invoice Information		Report Information (if differs from invoice)		Project Information		Turnaround Time (TAT) Required
Company:	Clifton Associates	Company:		Quotation #:		☑ 5-7 Days Regular (Most analyses)
Contact Name:	Stephen d'Abadie	Contact Name:		P.O. #/ AFE#:		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address:	2222 - 30 Ave NE Calgary, AB	Address:		Project #:	CG2430.1 E37	Rush TAT (Surcharges will be applied): ☐ Same Day ☐ 2 Days ☐ 1 Day ☐ 3-4 Days
Phone:	403-701-8226	Phone:		Site Location:	Bentall Parking Lot	
Email:	Stephen-dabadie@clifton.ca	Email:		Site #:		Date Required:
Copies:		Copies:		Sampled By:	Austin	Rush Confirmation #:

Laboratory Use Only

	YES	NO	Cooler ID			
Seal Present		✓				
Seal Intact		✓	Temp	23	22	22
Cooling Media	✓					
	YES	NO	Cooler ID			
Seal Present						
Seal Intact			Temp			
Cooling Media						
	YES	NO	Cooler ID			
Seal Present						
Seal Intact			Temp			
Cooling Media						

Depot Reception

Analysis Requested

	Sample Identification	Depth (Unit)	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	# of containers	BTEX F1 ☐ VOC ☑	BTEX F1-F2	BTEX F1-F4	Routine Water	Regulated Metals Tot ☐ Diss	Mercury Total ☐ Dissolved	Salinity 4	Sieve (75 micron)	Texture (% Sand, Silt, Clay)	Basic Class II Landfill	PAHs	BTEX/F1							HOLD - DO NOT ANALYZE
1	116		2019.6.28		soil	3	✓		✓								✓								
2	122		↓		↓	3	✓		✓								✓								
3	125					3	✓		✓								✓								
4	131					3	✓		✓								✓								
5	138					3	✓		✓								✓								
6	141					3	✓		✓								✓								
7	191				↓	3												✓							
8	Soil Cutting		✓		soil	3										✓									
9	Trip Blank		2019.6.28		MeOH	2	✓																		
10																									

Please indicate Filtered, Preserved or Both (F, P, F/P)

Regulatory Criteria

☑ AT1
☐ CCME
☐ Drinking Water
☐ D50 (Drilling Waste)
☐ Saskatchewan
☐ Other:

Special Instructions

Relinquished by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)	Received by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)
Austin Mei	2019.6.28	17:40	Jasmine Moumne	2019/06/28	17:43

28-Jun-19 17:43
Linsay Sunderman
B952543
DH7 INS-0187

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Maxxam's standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms which are available for viewing at www.maxxam.ca/terms

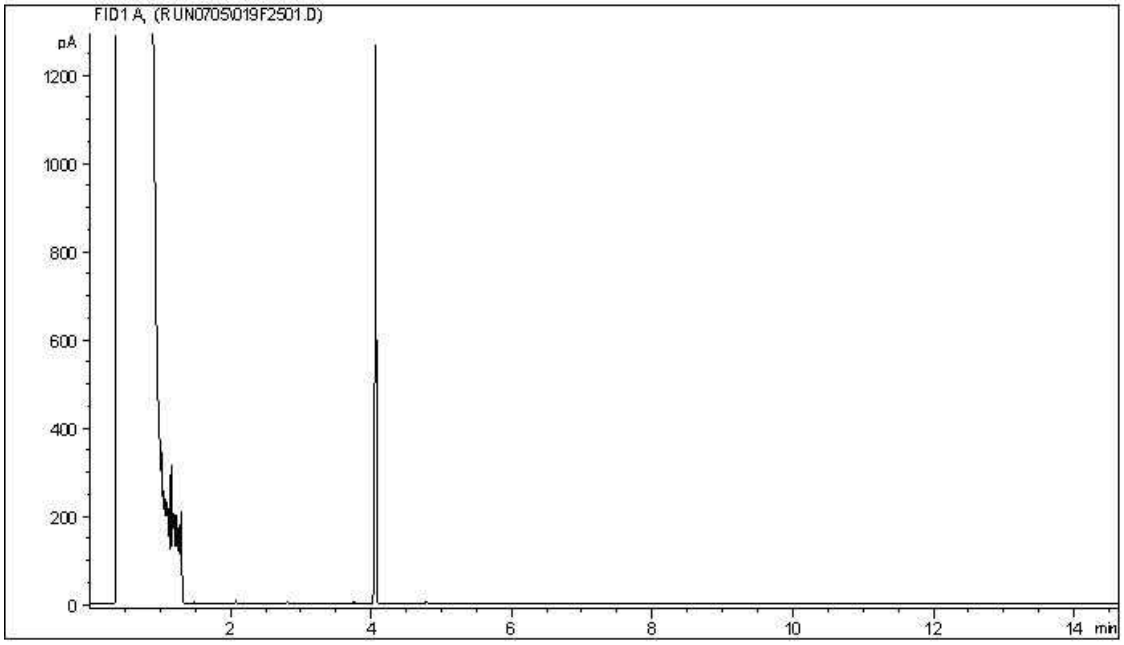
AB FCD-00331/7

BV Labs Job #: B952543
Report Date: 2019/07/09
BV Labs Sample: VZ9812

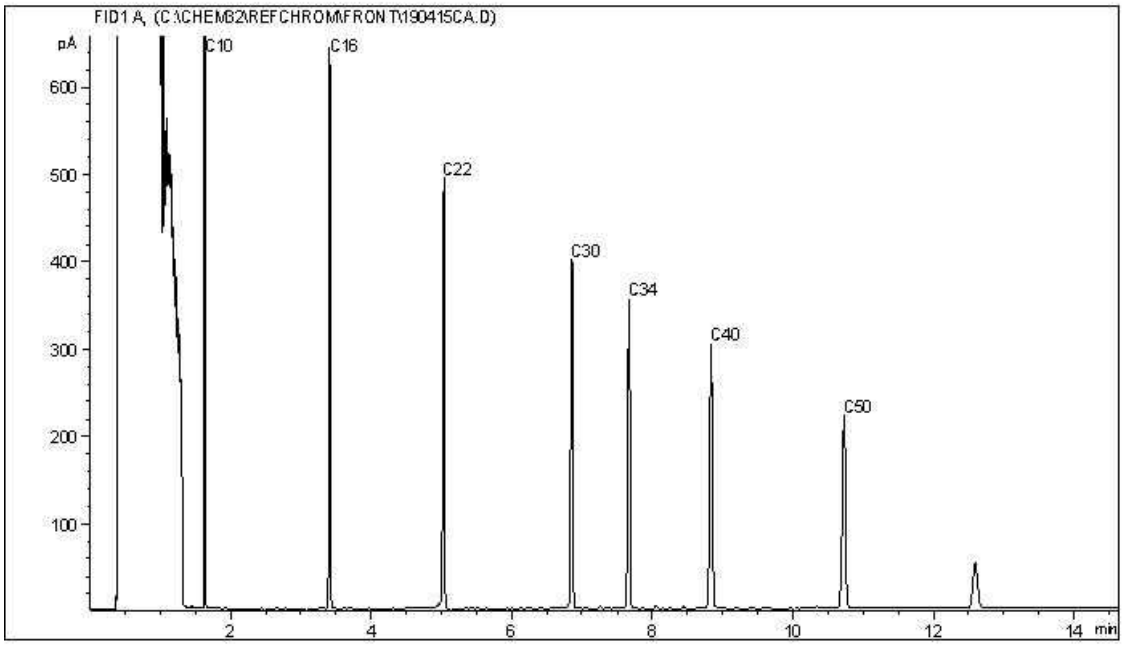
CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Reference: BENTALL PARKING LOT
Client ID: 116

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC6



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

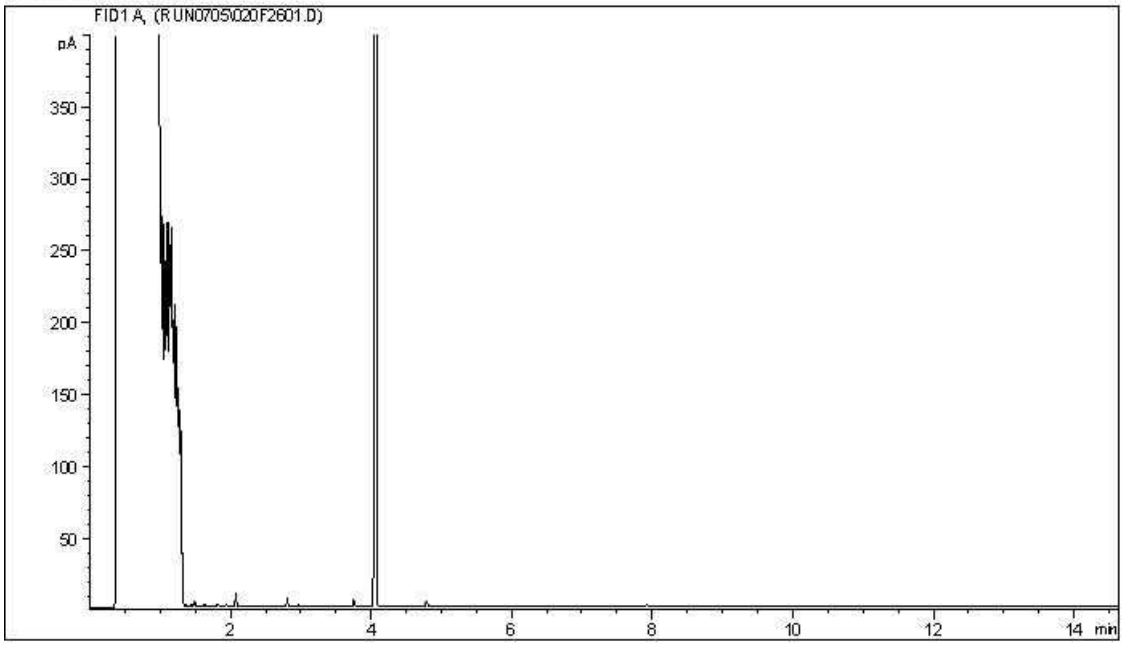
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B952543
Report Date: 2019/07/09
BV Labs Sample: VZ9813

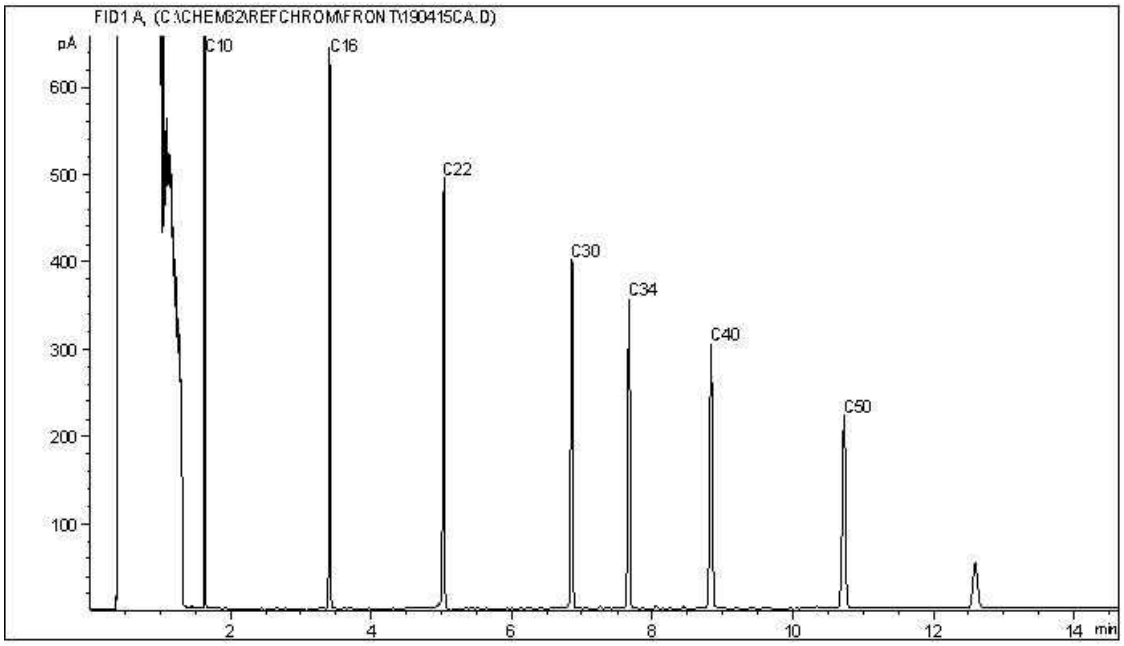
CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Reference: BENTALL PARKING LOT
Client ID: 122

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC6



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

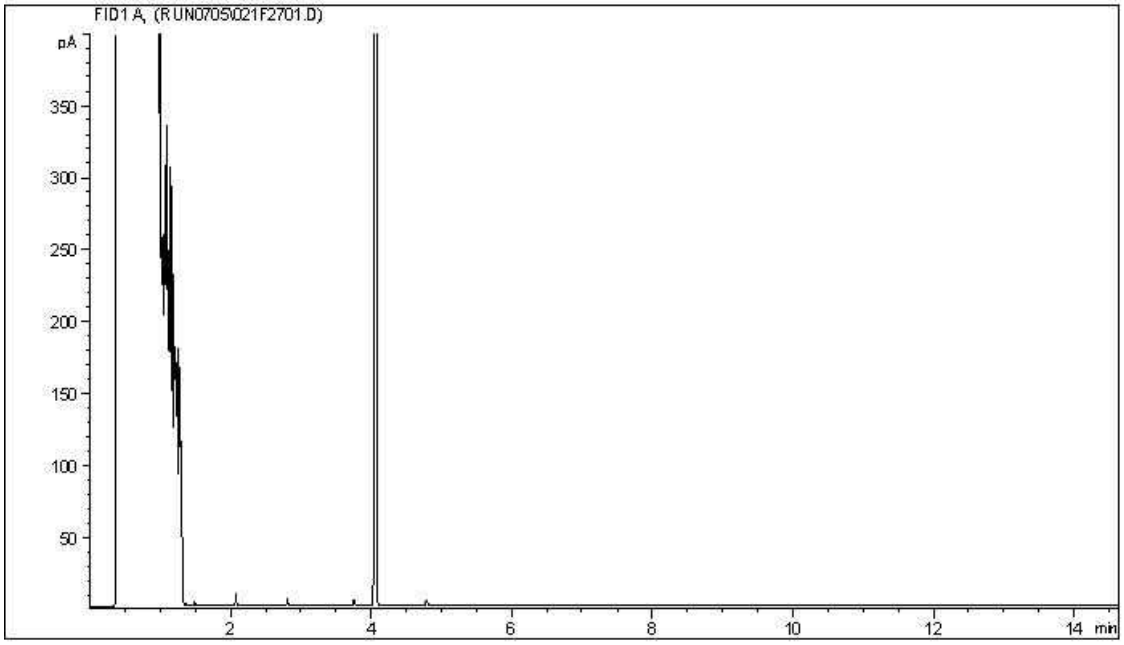
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B952543
Report Date: 2019/07/09
BV Labs Sample: VZ9814

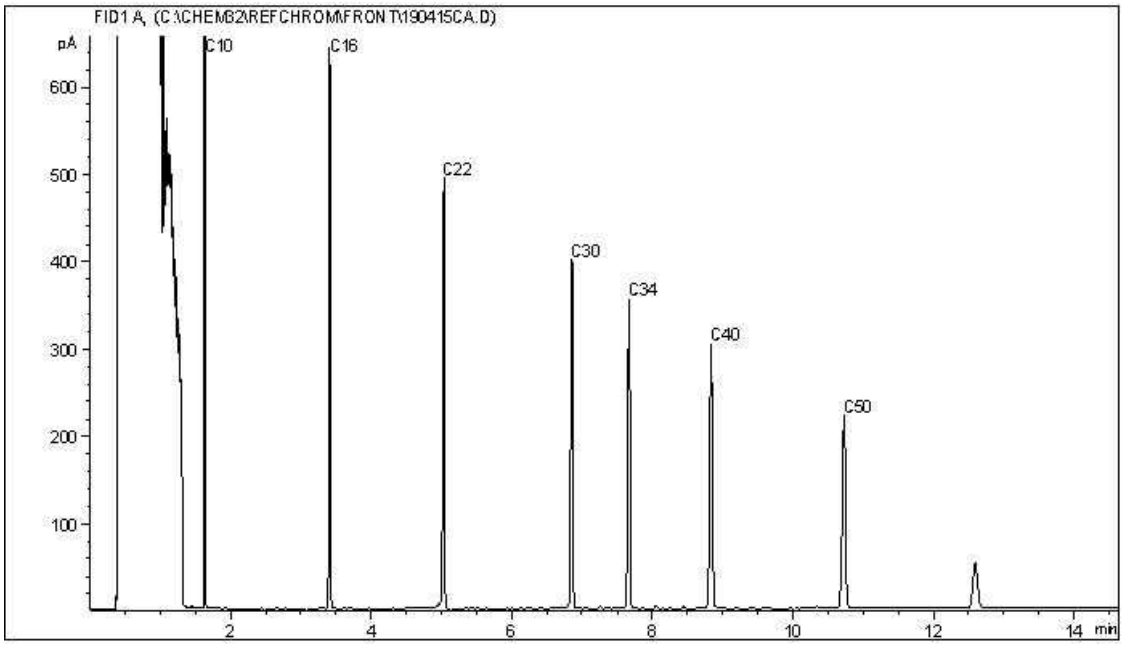
CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Reference: BENTALL PARKING LOT
Client ID: 125

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC6



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

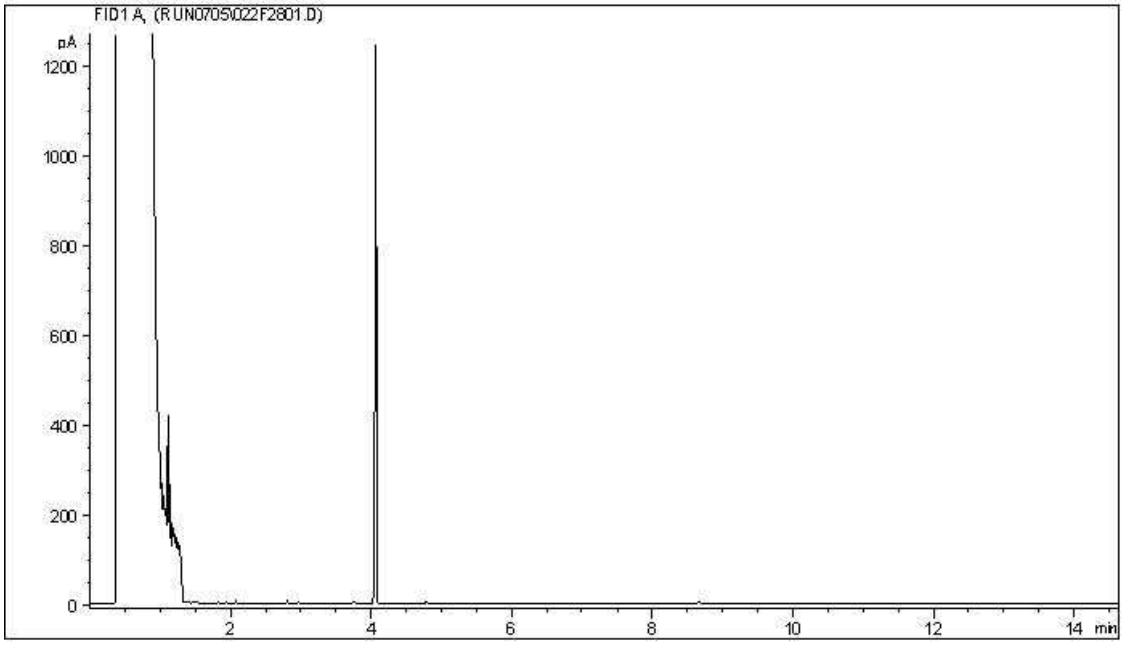
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B952543
Report Date: 2019/07/09
BV Labs Sample: VZ9815

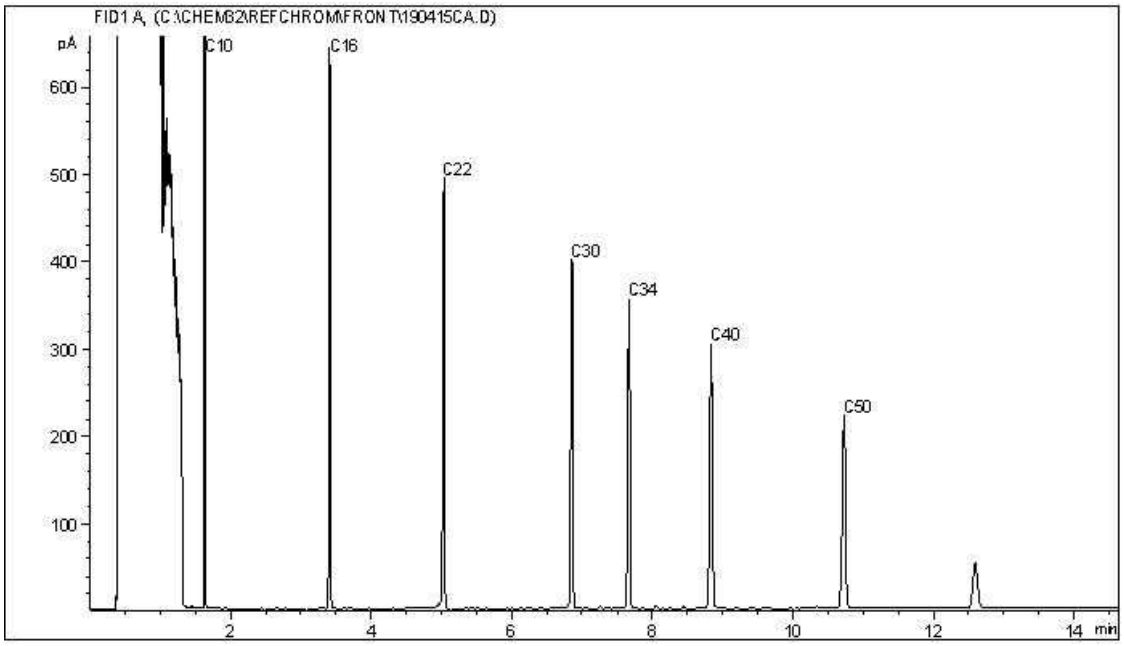
CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Reference: BENTALL PARKING LOT
Client ID: 131

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC6



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

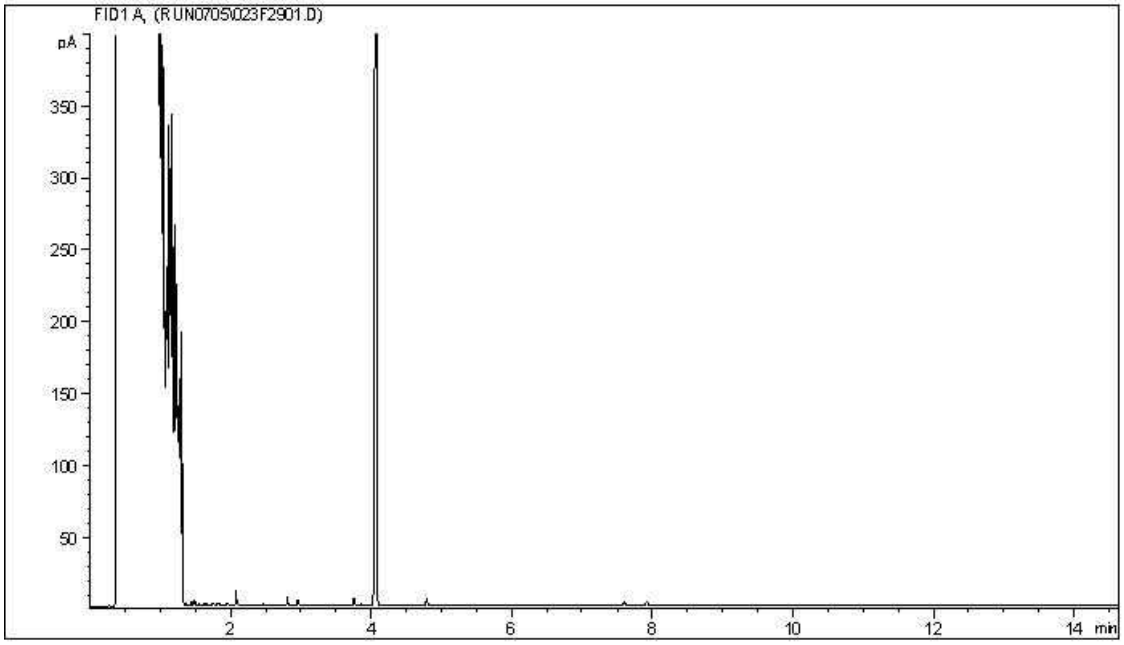
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B952543
Report Date: 2019/07/09
BV Labs Sample: VZ9816

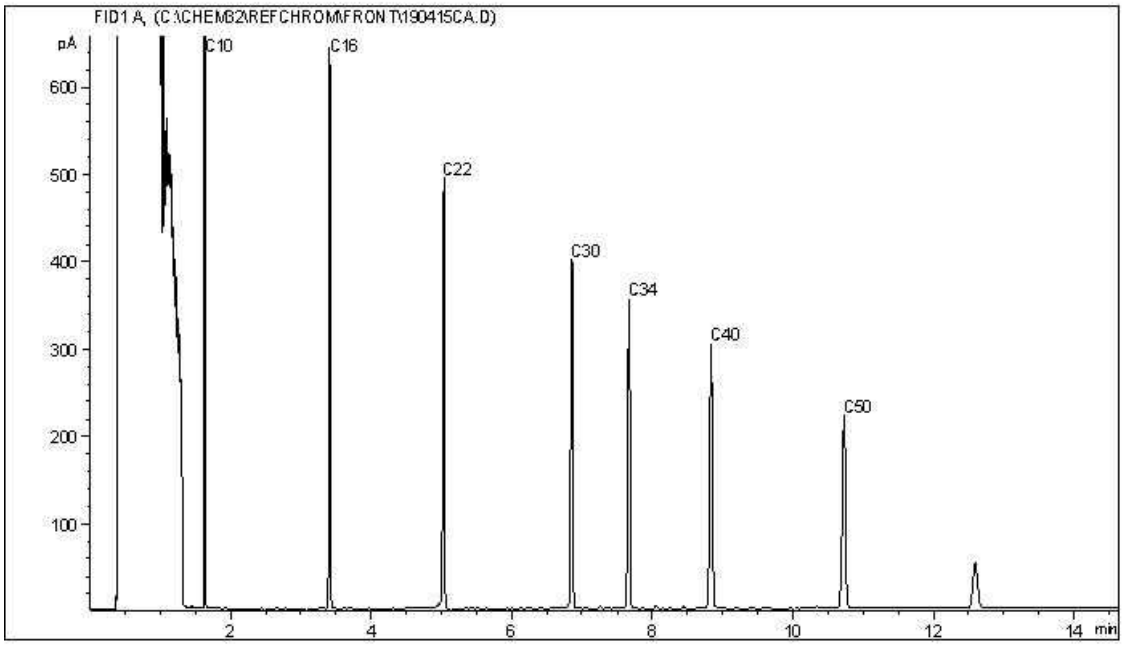
CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Reference: BENTALL PARKING LOT
Client ID: 138

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC6



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

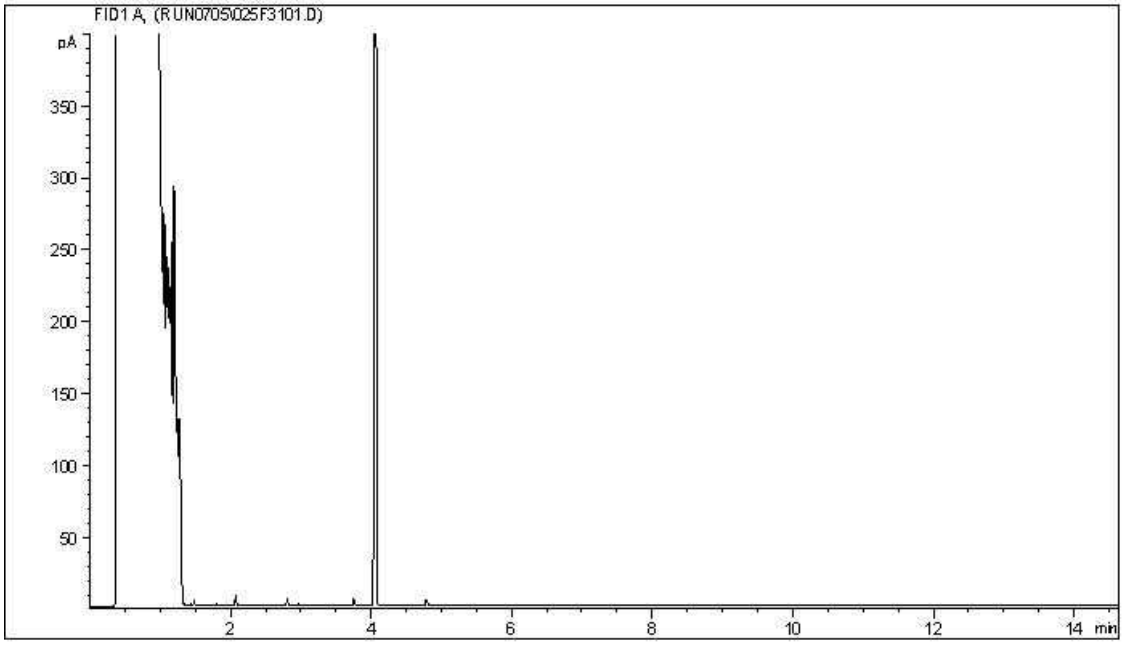
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B952543
Report Date: 2019/07/09
BV Labs Sample: VZ9817

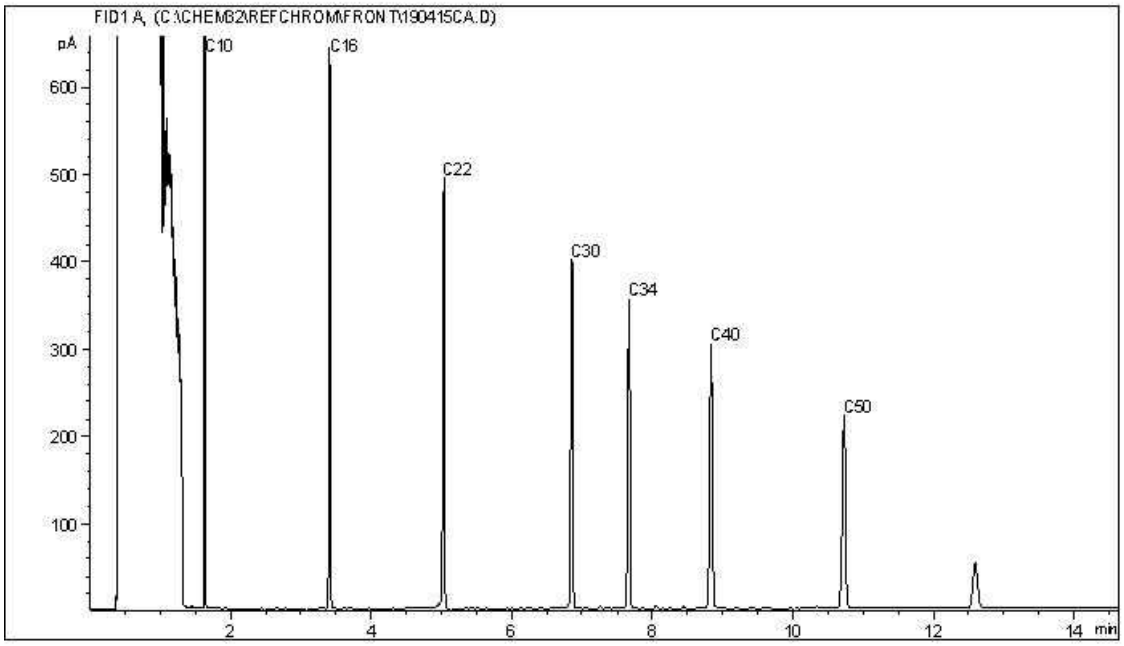
CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Site Reference: BENTALL PARKING LOT
Client ID: 141

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC6



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: CG24301. E37
Your C.O.C. #: M083884

Attention: Stephen D'Abadie

CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
CANADA T2E 7K9

Report Date: 2019/07/10
Report #: R2750135
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B953196
Received: 2019/07/03, 16:06

Sample Matrix: Ground Water
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 in Water by HS GC/MS/FID	2	N/A	2019/07/05	AB SOP-00039	CCME CWS/EPA 8260d m
BTEX/F1 in Water by HS GC/MS/FID	2	N/A	2019/07/08	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX	2	N/A	2019/07/08		Auto Calc
F1-BTEX	2	N/A	2019/07/09		Auto Calc
CCME Hydrocarbons in Water (F2; C10-C16) (1)	4	2019/07/05	2019/07/06	AB SOP-00037 AB SOP-00040	CCME PHC-CWS m
Benzo[a]pyrene Equivalency (2)	1	N/A	2019/07/08		Auto Calc
Benzo[a]pyrene Equivalency (2)	3	N/A	2019/07/10		Auto Calc
PAH in Water by GC/MS	1	2019/07/05	2019/07/07	AB SOP-00037 / AB SOP-00003	EPA 3510C/8270E m
PAH in Water by GC/MS	3	2019/07/09	2019/07/10	AB SOP-00037 / AB SOP-00003	EPA 3510C/8270E m
Total Trihalomethanes Calculation	5	N/A	2019/07/09		Auto Calc
VOCs in Water by HS GC/MS (Std List)	5	N/A	2019/07/08	AB SOP-00056	EPA 5021a/8260d m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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Your Project #: CG24301. E37
Your C.O.C. #: M083884

Attention: Stephen D'Abadie

CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
CANADA T2E 7K9

Report Date: 2019/07/10
Report #: R2750135
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B953196
Received: 2019/07/03, 16:06

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Silica gel clean up employed.
(2) B[a]P TPE is calculated using 1/2 of the RDL for non detect results as per Alberta Environment instructions. This protocol may not apply in other jurisdictions.

Encryption Key

AUTHORIZED REPORT
RAPPORT AUTORISÉ

Bureau Veritas Laboratories
10 Jul 2019 11:33:53

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Linsay Sunderman, Key Account Specialist
Email: Lsunderman@bvlabs.com
Phone# (403)735-2237 Ext:2237
==========
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Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B953196
Report Date: 2019/07/10

CLIFTON ASSOCIATES LTD.
Client Project #: CG24301. E37
Sampler Initials: MM

AT1 BTEX AND F1-F2 IN WATER (GROUND WATER)

BV Labs ID		WA2888		WA2889	WA2890	WA2891		
Sampling Date		2019/07/03 12:51		2019/07/03 13:48	2019/07/03 13:15	2019/07/03 14:44		
COC Number		M083884		M083884	M083884	M083884		
	UNITS	**BH4002**	**RDL**	**BH4004B**	**BH4003B**	**BH4005**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/L	0.66	0.10	<0.10	<0.10	<0.10	0.10	9492710
Volatiles								
Benzene	mg/L	0.0018 (1)	0.00040	<0.00040	0.0017	0.031	0.00040	9493285
Toluene	mg/L	0.23	0.00040	<0.00040	<0.00040	0.014	0.00040	9493285
Ethylbenzene	mg/L	0.019	0.00040	<0.00040	<0.00040	0.063	0.00040	9493285
m & p-Xylene	mg/L	3.4 (2)	0.0080	<0.00080	<0.00080	0.15	0.00080	9493285
o-Xylene	mg/L	1.1 (2)	0.0040	<0.00040	0.00087	0.13	0.00040	9493285
Xylenes (Total)	mg/L	4.5	0.0089	<0.00089	<0.00089	0.28	0.00089	9492594
F1 (C6-C10) - BTEX	mg/L	3.9	0.10	<0.10	<0.10	0.44	0.10	9492594
F1 (C6-C10)	mg/L	8.6	0.10	<0.10	<0.10	0.83	0.10	9493285
Surrogate Recovery (%)								
1,4-Difluorobenzene (sur.)	%	99	N/A	87	100	100	N/A	9493285
4-Bromofluorobenzene (sur.)	%	100	N/A	99	101	102	N/A	9493285
D4-1,2-Dichloroethane (sur.)	%	112	N/A	70	97	100	N/A	9493285
O-TERPHENYL (sur.)	%	78	N/A	76	79	76	N/A	9492710

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Qualifying ion outside of acceptance criteria. Results are tentatively identified and potentially biased high.
(2) Detection limits raised due to dilution to bring analyte within the calibrated range.

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BV Labs Job #: B953196
Report Date: 2019/07/10

CLIFTON ASSOCIATES LTD.
Client Project #: CG24301. E37
Sampler Initials: MM

SEMIVOLATILE ORGANICS BY GC-MS (GROUND WATER)

BV Labs ID		WA2888		WA2889	WA2890	WA2891		
Sampling Date		2019/07/03 12:51		2019/07/03 13:48	2019/07/03 13:15	2019/07/03 14:44		
COC Number		M083884		M083884	M083884	M083884		
	UNITS	**BH4002**	**RDL**	**BH4004B**	**BH4003B**	**BH4005**	**RDL**	**QC Batch**
Polycyclic Aromatics								
B[a]P TPE Total Potency Equivalents	mg/L	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	0.000010	9492096
Acenaphthene	mg/L	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	9492705
Acenaphthylene	mg/L	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00010	9492705
Acridine	mg/L	<0.000040	0.000040	<0.000040	<0.000040	<0.000040	0.000040	9492705
Anthracene	mg/L	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	0.000010	9492705
Benzo(a)anthracene	mg/L	<0.0000085	0.0000085	<0.0000085	<0.0000085	<0.0000085	0.0000085	9492705
Benzo(b&j)fluoranthene	mg/L	<0.0000085	0.0000085	<0.0000085	<0.0000085	<0.0000085	0.0000085	9492705
Benzo(k)fluoranthene	mg/L	<0.0000085	0.0000085	<0.0000085	<0.0000085	<0.0000085	0.0000085	9492705
Benzo(g,h,i)perylene	mg/L	<0.0000085	0.0000085	<0.0000085	<0.0000085	<0.0000085	0.0000085	9492705
Benzo(c)phenanthrene	mg/L	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	0.000050	9492705
Benzo(a)pyrene	mg/L	<0.0000075	0.0000075	<0.0000075	<0.0000075	<0.0000075	0.0000075	9492705
Benzo[e]pyrene	mg/L	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	0.000050	9492705
Chrysene	mg/L	<0.0000085	0.0000085	<0.0000085	<0.0000085	<0.0000085	0.0000085	9492705
Dibenz(a,h)anthracene	mg/L	<0.0000075	0.0000075	<0.0000075	<0.0000075	<0.0000075	0.0000075	9492705
Fluoranthene	mg/L	<0.000010	0.000010	<0.000010	<0.000010	<0.000010	0.000010	9492705
Fluorene	mg/L	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	0.000050	9492705
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	0.0000085	<0.0000085	<0.0000085	<0.0000085	0.0000085	9492705
1-Methylnaphthalene	mg/L	0.0052	0.00010	<0.00010	<0.00010	0.00014	0.00010	9492705
2-Methylnaphthalene	mg/L	0.0073	0.00010	<0.00010	<0.00010	<0.00010	0.00010	9492705
Naphthalene	mg/L	0.054 (1)	0.0010	<0.00010	<0.00010	0.0065	0.00010	9492705
Phenanthrene	mg/L	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	0.000050	9492705
Perylene	mg/L	<0.000050	0.000050	<0.000050	<0.000050	<0.000050	0.000050	9492705
Pyrene	mg/L	<0.000020	0.000020	<0.000020	<0.000020	<0.000020	0.000020	9492705
Quinoline	mg/L	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	0.00020	9492705
Surrogate Recovery (%)								
D10-ANTHRACENE (sur.)	%	116	N/A	119	123	114	N/A	9492705
D8-ACENAPHTHYLENE (sur.)	%	97	N/A	106	112	108	N/A	9492705
D8-NAPHTHALENE (sur.)	%	67	N/A	79	90	94	N/A	9492705
TERPHENYL-D14 (sur.)	%	105	N/A	107	112	107	N/A	9492705

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

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BV Labs Job #: B953196
Report Date: 2019/07/10

CLIFTON ASSOCIATES LTD.
Client Project #: CG24301. E37
Sampler Initials: MM

VOLATILE ORGANICS BY GC-MS (GROUND WATER)

BV Labs ID		WA2888		WA2889		WA2890		WA2891		
Sampling Date		2019/07/03 12:51		2019/07/03 13:48		2019/07/03 13:15		2019/07/03 14:44		
COC Number		M083884		M083884		M083884		M083884		
	UNITS	**BH4002**	**RDL**	**BH4004B**	**RDL**	**BH4003B**	**RDL**	**BH4005**	**RDL**	**QC Batch**
Volatiles										
Total Trihalomethanes	mg/L	<0.0013	0.0013	<0.0013	0.0013	<0.0013	0.0013	<0.0013	0.0013	9491630
Bromodichloromethane	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
Bromoform	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
Bromomethane	mg/L	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	9495873
Carbon tetrachloride	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
Chlorobenzene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
Chlorodibromomethane	mg/L	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	9495873
Chloroethane	mg/L	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	9495873
Chloroform	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
Chloromethane	mg/L	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	9495873
1,2-dibromoethane	mg/L	<0.00020	0.00020	<0.00020	0.00020	<0.00020	0.00020	<0.00020	0.00020	9495873
1,2-dichlorobenzene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
1,3-dichlorobenzene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
1,4-dichlorobenzene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
1,1-dichloroethane	mg/L	0.00074 (1)	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
1,2-dichloroethane	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
1,1-dichloroethene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
cis-1,2-dichloroethene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
trans-1,2-dichloroethene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
Dichloromethane	mg/L	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	9495873
1,2-dichloropropane	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
cis-1,3-dichloropropene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
trans-1,3-dichloropropene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
Methyl methacrylate	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
Methyl-tert-butylether (MTBE)	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
Styrene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
1,1,1,2-tetrachloroethane	mg/L	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	9495873
1,1,2,2-tetrachloroethane	mg/L	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	9495873
Tetrachloroethene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
1,2,3-trichlorobenzene	mg/L	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	9495873
1,2,4-trichlorobenzene	mg/L	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	9495873

RDL = Reportable Detection Limit
(1) Qualifying ion outside of acceptance criteria. Results are tentatively identified and potentially biased high.

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BV Labs Job #: B953196
Report Date: 2019/07/10

CLIFTON ASSOCIATES LTD.
Client Project #: CG24301. E37
Sampler Initials: MM

VOLATILE ORGANICS BY GC-MS (GROUND WATER)

BV Labs ID		WA2888		WA2889		WA2890		WA2891		
Sampling Date		2019/07/03 12:51		2019/07/03 13:48		2019/07/03 13:15		2019/07/03 14:44		
COC Number		M083884		M083884		M083884		M083884		
	UNITS	**BH4002**	**RDL**	**BH4004B**	**RDL**	**BH4003B**	**RDL**	**BH4005**	**RDL**	**QC Batch**
1,3,5-trichlorobenzene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
1,1,1-trichloroethane	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
1,1,2-trichloroethane	mg/L	<0.0010 (1)	0.0010	<0.00050	0.00050	<0.00050	0.00050	<0.00055 (1)	0.00055	9495873
Trichloroethene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
Trichlorofluoromethane	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
1,2,4-trimethylbenzene	mg/L	0.44	0.00050	<0.00060 (2)	0.00060	<0.00050	0.00050	0.081	0.00050	9495873
1,3,5-trimethylbenzene	mg/L	0.14	0.00050	<0.00050	0.00050	<0.00050	0.00050	0.029	0.00050	9495873
Vinyl chloride	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	99	N/A	98	N/A	98	N/A	100	N/A	9495873
4-Bromofluorobenzene (sur.)	%	100	N/A	99	N/A	100	N/A	97	N/A	9495873
D4-1,2-Dichloroethane (sur.)	%	95	N/A	98	N/A	98	N/A	103	N/A	9495873

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Detection limits raised due to matrix interference.
(2) Detection limit raised due to interferent.

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BV Labs Job #: B953196
Report Date: 2019/07/10

CLIFTON ASSOCIATES LTD.
Client Project #: CG24301. E37
Sampler Initials: MM

VOLATILE ORGANICS BY GC-MS (GROUND WATER)

BV Labs ID		WA2892		
Sampling Date		2019/07/03		
COC Number		M083884		
	UNITS	**TRIP BLANK**	**RDL**	**QC Batch**
Volatiles				
Total Trihalomethanes	mg/L	<0.0013	0.0013	9491630
Benzene	mg/L	<0.00040	0.00040	9495873
Bromodichloromethane	mg/L	<0.00050	0.00050	9495873
Bromoform	mg/L	<0.00050	0.00050	9495873
Bromomethane	mg/L	<0.0020	0.0020	9495873
Carbon tetrachloride	mg/L	<0.00050	0.00050	9495873
Chlorobenzene	mg/L	<0.00050	0.00050	9495873
Chlorodibromomethane	mg/L	<0.0010	0.0010	9495873
Chloroethane	mg/L	<0.0010	0.0010	9495873
Chloroform	mg/L	<0.00050	0.00050	9495873
Chloromethane	mg/L	<0.0020	0.0020	9495873
1,2-dibromoethane	mg/L	<0.00020	0.00020	9495873
1,2-dichlorobenzene	mg/L	<0.00050	0.00050	9495873
1,3-dichlorobenzene	mg/L	<0.00050	0.00050	9495873
1,4-dichlorobenzene	mg/L	<0.00050	0.00050	9495873
1,1-dichloroethane	mg/L	<0.00050	0.00050	9495873
1,2-dichloroethane	mg/L	<0.00050	0.00050	9495873
1,1-dichloroethene	mg/L	<0.00050	0.00050	9495873
cis-1,2-dichloroethene	mg/L	<0.00050	0.00050	9495873
trans-1,2-dichloroethene	mg/L	<0.00050	0.00050	9495873
Dichloromethane	mg/L	<0.0020	0.0020	9495873
1,2-dichloropropane	mg/L	<0.00050	0.00050	9495873
cis-1,3-dichloropropene	mg/L	<0.00050	0.00050	9495873
trans-1,3-dichloropropene	mg/L	<0.00050	0.00050	9495873
Ethylbenzene	mg/L	<0.00040	0.00040	9495873
Methyl methacrylate	mg/L	<0.00050	0.00050	9495873
Methyl-tert-butylether (MTBE)	mg/L	<0.00050	0.00050	9495873
Styrene	mg/L	<0.00050	0.00050	9495873
1,1,1,2-tetrachloroethane	mg/L	<0.0010	0.0010	9495873
1,1,2,2-tetrachloroethane	mg/L	<0.0020	0.0020	9495873
Tetrachloroethene	mg/L	<0.00050	0.00050	9495873
Toluene	mg/L	<0.00040	0.00040	9495873
RDL = Reportable Detection Limit				

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BV Labs Job #: B953196
Report Date: 2019/07/10

CLIFTON ASSOCIATES LTD.
Client Project #: CG24301. E37
Sampler Initials: MM

VOLATILE ORGANICS BY GC-MS (GROUND WATER)

BV Labs ID		WA2892		
Sampling Date		2019/07/03		
COC Number		M083884		
	UNITS	**TRIP BLANK**	**RDL**	**QC Batch**
1,2,3-trichlorobenzene	mg/L	<0.0010	0.0010	9495873
1,2,4-trichlorobenzene	mg/L	<0.0010	0.0010	9495873
1,3,5-trichlorobenzene	mg/L	<0.00050	0.00050	9495873
1,1,1-trichloroethane	mg/L	<0.00050	0.00050	9495873
1,1,2-trichloroethane	mg/L	<0.00050	0.00050	9495873
Trichloroethene	mg/L	<0.00050	0.00050	9495873
Trichlorofluoromethane	mg/L	<0.00050	0.00050	9495873
1,2,4-trimethylbenzene	mg/L	<0.00050	0.00050	9495873
1,3,5-trimethylbenzene	mg/L	<0.00050	0.00050	9495873
Vinyl chloride	mg/L	<0.00050	0.00050	9495873
Xylenes (Total)	mg/L	<0.00080	0.00080	9495873
m & p-Xylene	mg/L	<0.00080	0.00080	9495873
o-Xylene	mg/L	<0.00040	0.00040	9495873
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	98	N/A	9495873
4-Bromofluorobenzene (sur.)	%	99	N/A	9495873
D4-1,2-Dichloroethane (sur.)	%	93	N/A	9495873

RDL = Reportable Detection Limit
N/A = Not Applicable

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	15.0°C

Results relate only to the items tested.

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BV Labs Job #: B953196
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CLIFTON ASSOCIATES LTD.
Client Project #: CG24301. E37
Sampler Initials: MM

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9492705	DM	Matrix Spike [WA2888-01]	D10-ANTHRACENE (sur.)	2019/07/07		114	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/07/07		108	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/07/07		84	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/07/07		107	%	50 - 130
			Acenaphthene	2019/07/07		100	%	50 - 130
			Acenaphthylene	2019/07/07		101	%	50 - 130
			Acridine	2019/07/07		98	%	50 - 130
			Anthracene	2019/07/07		94	%	50 - 130
			Benzo(a)anthracene	2019/07/07		105	%	50 - 130
			Benzo(b&j)fluoranthene	2019/07/07		97	%	50 - 130
			Benzo(k)fluoranthene	2019/07/07		98	%	50 - 130
			Benzo(g,h,i)perylene	2019/07/07		88	%	50 - 130
			Benzo(c)phenanthrene	2019/07/07		112	%	50 - 130
			Benzo(a)pyrene	2019/07/07		100	%	50 - 130
			Benzo[e]pyrene	2019/07/07		100	%	50 - 130
			Chrysene	2019/07/07		101	%	50 - 130
			Dibenz(a,h)anthracene	2019/07/07		84	%	50 - 130
			Fluoranthene	2019/07/07		95	%	50 - 130
			Fluorene	2019/07/07		105	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/07/07		86	%	50 - 130
			1-Methylnaphthalene	2019/07/07		91	%	50 - 130
			2-Methylnaphthalene	2019/07/07		87	%	50 - 130
			Naphthalene	2019/07/07		NC	%	50 - 130
			Phenanthrene	2019/07/07		100	%	50 - 130
			Perylene	2019/07/07		92	%	50 - 130
			Pyrene	2019/07/07		97	%	50 - 130
			Quinoline	2019/07/07		111	%	50 - 130
9492705	DM	Spiked Blank	D10-ANTHRACENE (sur.)	2019/07/07		113	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/07/07		106	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/07/07		94	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/07/07		106	%	50 - 130
			Acenaphthene	2019/07/07		100	%	50 - 130
			Acenaphthylene	2019/07/07		103	%	50 - 130
			Acridine	2019/07/07		99	%	50 - 130
			Anthracene	2019/07/07		92	%	50 - 130
			Benzo(a)anthracene	2019/07/07		111	%	50 - 130
			Benzo(b&j)fluoranthene	2019/07/07		104	%	50 - 130
			Benzo(k)fluoranthene	2019/07/07		103	%	50 - 130
			Benzo(g,h,i)perylene	2019/07/07		94	%	50 - 130
			Benzo(c)phenanthrene	2019/07/07		112	%	50 - 130
			Benzo(a)pyrene	2019/07/07		108	%	50 - 130
			Benzo[e]pyrene	2019/07/07		107	%	50 - 130
			Chrysene	2019/07/07		107	%	50 - 130
			Dibenz(a,h)anthracene	2019/07/07		89	%	50 - 130
			Fluoranthene	2019/07/07		96	%	50 - 130
			Fluorene	2019/07/07		100	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/07/07		92	%	50 - 130
			1-Methylnaphthalene	2019/07/07		103	%	50 - 130
			2-Methylnaphthalene	2019/07/07		96	%	50 - 130
			Naphthalene	2019/07/07		100	%	50 - 130
			Phenanthrene	2019/07/07		97	%	50 - 130
			Perylene	2019/07/07		103	%	50 - 130
			Pyrene	2019/07/07		99	%	50 - 130

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B953196
Report Date: 2019/07/10

CLIFTON ASSOCIATES LTD.
Client Project #: CG24301. E37
Sampler Initials: MM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Quinoline	2019/07/07		105	%	50 - 130
9492705	DM	Method Blank	D10-ANTHRACENE (sur.)	2019/07/10		126	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/07/10		111	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/07/10		88	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/07/10		113	%	50 - 130
			Acenaphthene	2019/07/10	<0.00010		mg/L	
			Acenaphthylene	2019/07/10	<0.00010		mg/L	
			Acridine	2019/07/10	<0.000040		mg/L	
			Anthracene	2019/07/10	<0.000010		mg/L	
			Benzo(a)anthracene	2019/07/10	<0.0000085		mg/L	
			Benzo(b&j)fluoranthene	2019/07/10	<0.0000085		mg/L	
			Benzo(k)fluoranthene	2019/07/10	<0.0000085		mg/L	
			Benzo(g,h,i)perylene	2019/07/10	<0.0000085		mg/L	
			Benzo(c)phenanthrene	2019/07/10	<0.000050		mg/L	
			Benzo(a)pyrene	2019/07/10	<0.0000075		mg/L	
			Benzo[e]pyrene	2019/07/10	<0.000050		mg/L	
			Chrysene	2019/07/10	<0.0000085		mg/L	
			Dibenz(a,h)anthracene	2019/07/10	<0.0000075		mg/L	
			Fluoranthene	2019/07/10	<0.000010		mg/L	
			Fluorene	2019/07/10	<0.000050		mg/L	
			Indeno(1,2,3-cd)pyrene	2019/07/10	<0.0000085		mg/L	
			1-Methylnaphthalene	2019/07/10	<0.00010		mg/L	
			2-Methylnaphthalene	2019/07/10	<0.00010		mg/L	
			Naphthalene	2019/07/10	<0.00010		mg/L	
			Phenanthrene	2019/07/10	<0.000050		mg/L	
			Perylene	2019/07/10	<0.000050		mg/L	
			Pyrene	2019/07/10	<0.000020		mg/L	
			Quinoline	2019/07/10	<0.00020		mg/L	
9492705	DM	RPD	Acenaphthene	2019/07/10	NC		%	30
			Acenaphthylene	2019/07/10	NC		%	30
			Acridine	2019/07/10	NC		%	30
			Anthracene	2019/07/10	NC		%	30
			Benzo(a)anthracene	2019/07/10	NC		%	30
			Benzo(b&j)fluoranthene	2019/07/10	NC		%	30
			Benzo(k)fluoranthene	2019/07/10	NC		%	30
			Benzo(g,h,i)perylene	2019/07/10	NC		%	30
			Benzo(c)phenanthrene	2019/07/10	NC		%	30
			Benzo(a)pyrene	2019/07/10	NC		%	30
			Benzo[e]pyrene	2019/07/10	NC		%	30
			Chrysene	2019/07/10	NC		%	30
			Dibenz(a,h)anthracene	2019/07/10	NC		%	30
			Fluoranthene	2019/07/10	NC		%	30
			Fluorene	2019/07/10	NC		%	30
			Indeno(1,2,3-cd)pyrene	2019/07/10	NC		%	30
			1-Methylnaphthalene	2019/07/10	NC		%	30
			2-Methylnaphthalene	2019/07/10	NC		%	30
			Naphthalene	2019/07/10	NC		%	30
			Phenanthrene	2019/07/10	NC		%	30
			Perylene	2019/07/10	NC		%	30
			Pyrene	2019/07/10	NC		%	30
			Quinoline	2019/07/10	NC		%	30
9492710	MHF	Matrix Spike [WA2889-01]	O-TERPHENYL (sur.)	2019/07/08		94	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/07/08		126	%	60 - 140

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B953196
Report Date: 2019/07/10

CLIFTON ASSOCIATES LTD.
Client Project #: CG24301. E37
Sampler Initials: MM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9492710	MHF	Spiked Blank	O-TERPHENYL (sur.)	2019/07/06		77	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/07/06		101	%	60 - 140
9492710	MHF	Method Blank	O-TERPHENYL (sur.)	2019/07/06		77	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/07/06	<0.10		mg/L	
9492710	MHF	RPD	F2 (C10-C16 Hydrocarbons)	2019/07/06	NC		%	30
9493285	DO1	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/07/05		98	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/05		102	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/05		98	%	50 - 140
			Benzene	2019/07/05		85	%	50 - 140
			Toluene	2019/07/05		86	%	50 - 140
			Ethylbenzene	2019/07/05		87	%	50 - 140
			m & p-Xylene	2019/07/05		91	%	50 - 140
			o-Xylene	2019/07/05		90	%	50 - 140
			F1 (C6-C10)	2019/07/05		70	%	60 - 140
9493285	DO1	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/07/05		98	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/05		102	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/05		101	%	50 - 140
			Benzene	2019/07/05		87	%	60 - 130
			Toluene	2019/07/05		87	%	60 - 130
			Ethylbenzene	2019/07/05		87	%	60 - 130
			m & p-Xylene	2019/07/05		90	%	60 - 130
			o-Xylene	2019/07/05		90	%	60 - 130
			F1 (C6-C10)	2019/07/05		92	%	60 - 140
9493285	DO1	Method Blank	1,4-Difluorobenzene (sur.)	2019/07/05		102	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/05		99	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/05		96	%	50 - 140
			Benzene	2019/07/05	<0.00040		mg/L	
			Toluene	2019/07/05	<0.00040		mg/L	
			Ethylbenzene	2019/07/05	<0.00040		mg/L	
			m & p-Xylene	2019/07/05	<0.00080		mg/L	
			o-Xylene	2019/07/05	<0.00040		mg/L	
			F1 (C6-C10)	2019/07/05	<0.10		mg/L	
9493285	DO1	RPD	Benzene	2019/07/05	NC		%	30
			Toluene	2019/07/05	NC		%	30
			Ethylbenzene	2019/07/05	NC		%	30
			m & p-Xylene	2019/07/05	NC		%	30
			o-Xylene	2019/07/05	NC		%	30
			F1 (C6-C10)	2019/07/05	NC		%	30
9495873	GP4	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/07/08		101	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/08		104	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/08		111	%	50 - 140
			Benzene	2019/07/08		67	%	50 - 140
			Bromodichloromethane	2019/07/08		80	%	50 - 140
			Bromoform	2019/07/08		74	%	50 - 140
			Bromomethane	2019/07/08		57	%	50 - 140
			Carbon tetrachloride	2019/07/08		72	%	50 - 140
			Chlorobenzene	2019/07/08		70	%	50 - 140
			Chlorodibromomethane	2019/07/08		77	%	50 - 140
			Chloroethane	2019/07/08		59	%	50 - 140
			Chloroform	2019/07/08		73	%	50 - 140
			Chloromethane	2019/07/08		47 (1)	%	50 - 140
			1,2-dibromoethane	2019/07/08		71	%	50 - 140
			1,2-dichlorobenzene	2019/07/08		79	%	50 - 140
			1,3-dichlorobenzene	2019/07/08		77	%	50 - 140

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,4-dichlorobenzene	2019/07/08		75	%	50 - 140
			1,1-dichloroethane	2019/07/08		72	%	50 - 140
			1,2-dichloroethane	2019/07/08		76	%	50 - 140
			1,1-dichloroethene	2019/07/08		63	%	50 - 140
			cis-1,2-dichloroethene	2019/07/08		72	%	50 - 140
			trans-1,2-dichloroethene	2019/07/08		64	%	50 - 140
			Dichloromethane	2019/07/08		67	%	50 - 140
			1,2-dichloropropane	2019/07/08		77	%	50 - 140
			cis-1,3-dichloropropene	2019/07/08		80	%	50 - 140
			trans-1,3-dichloropropene	2019/07/08		90	%	50 - 140
			Ethylbenzene	2019/07/08		68	%	50 - 140
			Methyl methacrylate	2019/07/08		80	%	50 - 140
			Methyl-tert-butylether (MTBE)	2019/07/08		75	%	50 - 140
			Styrene	2019/07/08		73	%	50 - 140
			1,1,1,2-tetrachloroethane	2019/07/08		72	%	50 - 140
			1,1,2,2-tetrachloroethane	2019/07/08		76	%	50 - 140
			Tetrachloroethene	2019/07/08		63	%	50 - 140
			Toluene	2019/07/08		68	%	50 - 140
			1,2,3-trichlorobenzene	2019/07/08		75	%	50 - 140
			1,2,4-trichlorobenzene	2019/07/08		75	%	50 - 140
			1,3,5-trichlorobenzene	2019/07/08		74	%	50 - 140
			1,1,1-trichloroethane	2019/07/08		73	%	50 - 140
			1,1,2-trichloroethane	2019/07/08		78	%	50 - 140
			Trichloroethene	2019/07/08		74	%	50 - 140
			Trichlorofluoromethane	2019/07/08		61	%	50 - 140
			1,2,4-trimethylbenzene	2019/07/08		78	%	50 - 140
			1,3,5-trimethylbenzene	2019/07/08		79	%	50 - 140
			Vinyl chloride	2019/07/08		51	%	50 - 140
			m & p-Xylene	2019/07/08		66	%	50 - 140
			o-Xylene	2019/07/08		66	%	50 - 140
9495873	GP4	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/07/08		105	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/08		105	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/08		111	%	50 - 140
			Benzene	2019/07/08		85	%	60 - 130
			Bromodichloromethane	2019/07/08		102	%	60 - 130
			Bromoform	2019/07/08		89	%	60 - 130
			Bromomethane	2019/07/08		67	%	60 - 130
			Carbon tetrachloride	2019/07/08		94	%	60 - 130
			Chlorobenzene	2019/07/08		88	%	60 - 130
			Chlorodibromomethane	2019/07/08		94	%	60 - 130
			Chloroethane	2019/07/08		72	%	60 - 130
			Chloroform	2019/07/08		93	%	60 - 130
			Chloromethane	2019/07/08		56 (1)	%	60 - 130
			1,2-dibromoethane	2019/07/08		84	%	60 - 130
			1,2-dichlorobenzene	2019/07/08		99	%	60 - 130
			1,3-dichlorobenzene	2019/07/08		97	%	60 - 130
			1,4-dichlorobenzene	2019/07/08		94	%	60 - 130
			1,1-dichloroethane	2019/07/08		90	%	60 - 130
			1,2-dichloroethane	2019/07/08		93	%	60 - 130
			1,1-dichloroethene	2019/07/08		80	%	60 - 130
			cis-1,2-dichloroethene	2019/07/08		91	%	60 - 130
			trans-1,2-dichloroethene	2019/07/08		80	%	60 - 130
			Dichloromethane	2019/07/08		81	%	60 - 130
			1,2-dichloropropane	2019/07/08		96	%	60 - 130

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			cis-1,3-dichloropropene	2019/07/08		99	%	60 - 130
			trans-1,3-dichloropropene	2019/07/08		110	%	60 - 130
			Ethylbenzene	2019/07/08		86	%	60 - 130
			Methyl methacrylate	2019/07/08		96	%	60 - 130
			Methyl-tert-butylether (MTBE)	2019/07/08		92	%	60 - 130
			Styrene	2019/07/08		91	%	60 - 130
			1,1,1,2-tetrachloroethane	2019/07/08		89	%	60 - 130
			1,1,2,2-tetrachloroethane	2019/07/08		90	%	60 - 130
			Tetrachloroethene	2019/07/08		81	%	60 - 130
			Toluene	2019/07/08		84	%	60 - 130
			1,2,3-trichlorobenzene	2019/07/08		90	%	60 - 130
			1,2,4-trichlorobenzene	2019/07/08		92	%	60 - 130
			1,3,5-trichlorobenzene	2019/07/08		92	%	60 - 130
			1,1,1-trichloroethane	2019/07/08		95	%	60 - 130
			1,1,2-trichloroethane	2019/07/08		96	%	60 - 130
			Trichloroethene	2019/07/08		97	%	60 - 130
			Trichlorofluoromethane	2019/07/08		76	%	60 - 130
			1,2,4-trimethylbenzene	2019/07/08		99	%	60 - 130
			1,3,5-trimethylbenzene	2019/07/08		102	%	60 - 130
			Vinyl chloride	2019/07/08		62	%	60 - 130
			m & p-Xylene	2019/07/08		83	%	60 - 130
			o-Xylene	2019/07/08		82	%	60 - 130
9495873	GP4	Method Blank	1,4-Difluorobenzene (sur.)	2019/07/08		98	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/08		98	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/08		93	%	50 - 140
			Benzene	2019/07/08	<0.00040		mg/L	
			Bromodichloromethane	2019/07/08	<0.00050		mg/L	
			Bromoform	2019/07/08	<0.00050		mg/L	
			Bromomethane	2019/07/08	<0.0020		mg/L	
			Carbon tetrachloride	2019/07/08	<0.00050		mg/L	
			Chlorobenzene	2019/07/08	<0.00050		mg/L	
			Chlorodibromomethane	2019/07/08	<0.0010		mg/L	
			Chloroethane	2019/07/08	<0.0010		mg/L	
			Chloroform	2019/07/08	<0.00050		mg/L	
			Chloromethane	2019/07/08	<0.0020		mg/L	
			1,2-dibromoethane	2019/07/08	<0.00020		mg/L	
			1,2-dichlorobenzene	2019/07/08	<0.00050		mg/L	
			1,3-dichlorobenzene	2019/07/08	<0.00050		mg/L	
			1,4-dichlorobenzene	2019/07/08	<0.00050		mg/L	
			1,1-dichloroethane	2019/07/08	<0.00050		mg/L	
			1,2-dichloroethane	2019/07/08	<0.00050		mg/L	
			1,1-dichloroethene	2019/07/08	<0.00050		mg/L	
			cis-1,2-dichloroethene	2019/07/08	<0.00050		mg/L	
			trans-1,2-dichloroethene	2019/07/08	<0.00050		mg/L	
			Dichloromethane	2019/07/08	<0.0020		mg/L	
			1,2-dichloropropane	2019/07/08	<0.00050		mg/L	
			cis-1,3-dichloropropene	2019/07/08	<0.00050		mg/L	
			trans-1,3-dichloropropene	2019/07/08	<0.00050		mg/L	
			Ethylbenzene	2019/07/08	<0.00040		mg/L	
			Methyl methacrylate	2019/07/08	<0.00050		mg/L	
			Methyl-tert-butylether (MTBE)	2019/07/08	<0.00050		mg/L	
			Styrene	2019/07/08	<0.00050		mg/L	
			1,1,1,2-tetrachloroethane	2019/07/08	<0.0010		mg/L	
			1,1,2,2-tetrachloroethane	2019/07/08	<0.0020		mg/L	

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B953196
Report Date: 2019/07/10

CLIFTON ASSOCIATES LTD.
Client Project #: CG24301. E37
Sampler Initials: MM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Tetrachloroethene	2019/07/08	<0.00050		mg/L	
			Toluene	2019/07/08	<0.00040		mg/L	
			1,2,3-trichlorobenzene	2019/07/08	<0.0010		mg/L	
			1,2,4-trichlorobenzene	2019/07/08	<0.0010		mg/L	
			1,3,5-trichlorobenzene	2019/07/08	<0.00050		mg/L	
			1,1,1-trichloroethane	2019/07/08	<0.00050		mg/L	
			1,1,2-trichloroethane	2019/07/08	<0.00050		mg/L	
			Trichloroethene	2019/07/08	<0.00050		mg/L	
			Trichlorofluoromethane	2019/07/08	<0.00050		mg/L	
			1,2,4-trimethylbenzene	2019/07/08	<0.00050		mg/L	
			1,3,5-trimethylbenzene	2019/07/08	<0.00050		mg/L	
			Vinyl chloride	2019/07/08	<0.00050		mg/L	
			Xylenes (Total)	2019/07/08	<0.00080		mg/L	
			m & p-Xylene	2019/07/08	<0.00080		mg/L	
			o-Xylene	2019/07/08	<0.00040		mg/L	
9495873	GP4	RPD	Bromodichloromethane	2019/07/08	NC		%	30
			Bromoform	2019/07/08	NC		%	30
			Bromomethane	2019/07/08	NC		%	30
			Carbon tetrachloride	2019/07/08	NC		%	30
			Chlorobenzene	2019/07/08	NC		%	30
			Chlorodibromomethane	2019/07/08	NC		%	30
			Chloroethane	2019/07/08	NC		%	30
			Chloroform	2019/07/08	NC		%	30
			Chloromethane	2019/07/08	NC		%	30
			1,2-dibromoethane	2019/07/08	NC		%	30
			1,2-dichlorobenzene	2019/07/08	NC		%	30
			1,3-dichlorobenzene	2019/07/08	NC		%	30
			1,4-dichlorobenzene	2019/07/08	NC		%	30
			1,1-dichloroethane	2019/07/08	NC		%	30
			1,2-dichloroethane	2019/07/08	NC		%	30
			1,1-dichloroethene	2019/07/08	NC		%	30
			cis-1,2-dichloroethene	2019/07/08	NC		%	30
			trans-1,2-dichloroethene	2019/07/08	NC		%	30
			Dichloromethane	2019/07/08	NC		%	30
			1,2-dichloropropane	2019/07/08	NC		%	30
			cis-1,3-dichloropropene	2019/07/08	NC		%	30
			trans-1,3-dichloropropene	2019/07/08	NC		%	30
			Methyl methacrylate	2019/07/08	NC		%	30
			Methyl-tert-butylether (MTBE)	2019/07/08	NC		%	30
			Styrene	2019/07/08	NC		%	30
			1,1,1,2-tetrachloroethane	2019/07/08	NC		%	30
			1,1,2,2-tetrachloroethane	2019/07/08	NC		%	30
			Tetrachloroethene	2019/07/08	NC		%	30
			1,2,3-trichlorobenzene	2019/07/08	NC		%	30
			1,2,4-trichlorobenzene	2019/07/08	NC		%	30
			1,3,5-trichlorobenzene	2019/07/08	NC		%	30
			1,1,1-trichloroethane	2019/07/08	NC		%	30
			1,1,2-trichloroethane	2019/07/08	NC		%	30
			Trichloroethene	2019/07/08	NC		%	30
			Trichlorofluoromethane	2019/07/08	NC		%	30
			1,2,4-trimethylbenzene	2019/07/08	NC		%	30
			1,3,5-trimethylbenzene	2019/07/08	NC		%	30

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BV Labs Job #: B953196
Report Date: 2019/07/10

CLIFTON ASSOCIATES LTD.
Client Project #: CG24301. E37
Sampler Initials: MM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Vinyl chloride	2019/07/08	NC		%	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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NOTIFICATION LOG

No Reportable Regulation Exceedences Noted.

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BV Labs Job #: B953196
Report Date: 2019/07/10

CLIFTON ASSOCIATES LTD.
Client Project #: CG24301. E37
Sampler Initials: MM

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Dennis Ngondu, B.Sc., P.Chem., QP, Supervisor, Organics

Gita Pokhrel, Senior Analyst

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Calgary: 4000 19th St. NE, T2E 6P8. Toll Free (800) 386-7247
Edmonton: 9331-48 St. T6B 2R4. Toll Free (800) 386-7247
maxxam.ca

CHAIN OF CUSTODY RECORD

0076
M 083884

Invoice Information		Report Information (if differs from invoice)		Project Information		Turnaround Time (TAT) Required	
Company:	Clifton	Company:		Quotation #:		☑ 5-7 Days Regular (Most analyses)	
Contact Name:	Stephen d'Abadie	Contact Name:		P.O. #/ AFE#:		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS	
Address:	2222 - 30 Ave NE Calgary, AB	Address:		Project #:	CG2430.1 E37	Rush TAT (Surcharges will be applied)	
Phone:	403-701-8226	Phone:		Site Location:		☐ Same Day ☐ 1 Day	☐ 2 Days ☐ 3-4 Days
Email:	stephen_dabadie@clifton.ca	Email:		Site #:		Date Required:	
Copies:		Copies:		Sampled By:	mm	Rush Confirmation #:	

Laboratory Use Only

	YES	NO	Cooler ID			
Seal Present		✓				
Seal Intact		✓	Temp	15	15	15
Cooling Media	✓					
	YES	NO	Cooler ID			
Seal Present						
Seal Intact			Temp			
Cooling Media						
	YES	NO	Cooler ID			
Seal Present						
Seal Intact			Temp			
Cooling Media						

Depot Reception

Analysis Requested

	Sample Identification	Depth (Unit)	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	# of containers	BTEX F1 ☑ VOC ☑	BTEX F1-F2	BTEX F1-F4	Routine Water	Regulated Metals ☐ Tot ☐ Diss	Mercury Total ☐ Dissolved	Salinity 4	Sieve (75 micron)	Texture (% Sand, Silt, Clay)	Basic Class II Landfill	PAH	VOC	HOLD - DO NOT ANALYZE
1	BH4002		2019/07/3	12:50	GW	10	x	X	X								x		
2	BH4004B		2019/07/03	13:48	GW	10	x	X	X								x		
3	BH4003B		2019/07/03	13:15	GW	10	x	X	X								x		
4	BH4005		2019/07/03	14:44	GW	10	x	X	X								x		
5	TRIP BLANK		2019/07/03	—	GW	1												x	
6																			
7																			
8																			
9																			
10																			

Please indicate Filtered, Preserved or Both (F, P, F/P)

Regulatory Criteria

- ☑ AT1
- ☐ CCME
- ☐ Drinking Water
- ☐ D50 (Drilling Waste)
- ☐ Saskatchewan
- ☐ Other:

Special Instructions

Relinquished by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)	Received by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)
Melanie Maloney	2019/07/03	3:47	Sara Bischoff	2019/07/03	16:06

03-Jul-19 16:06
Linsay Sunderman
B953196
SBZ INS-0245

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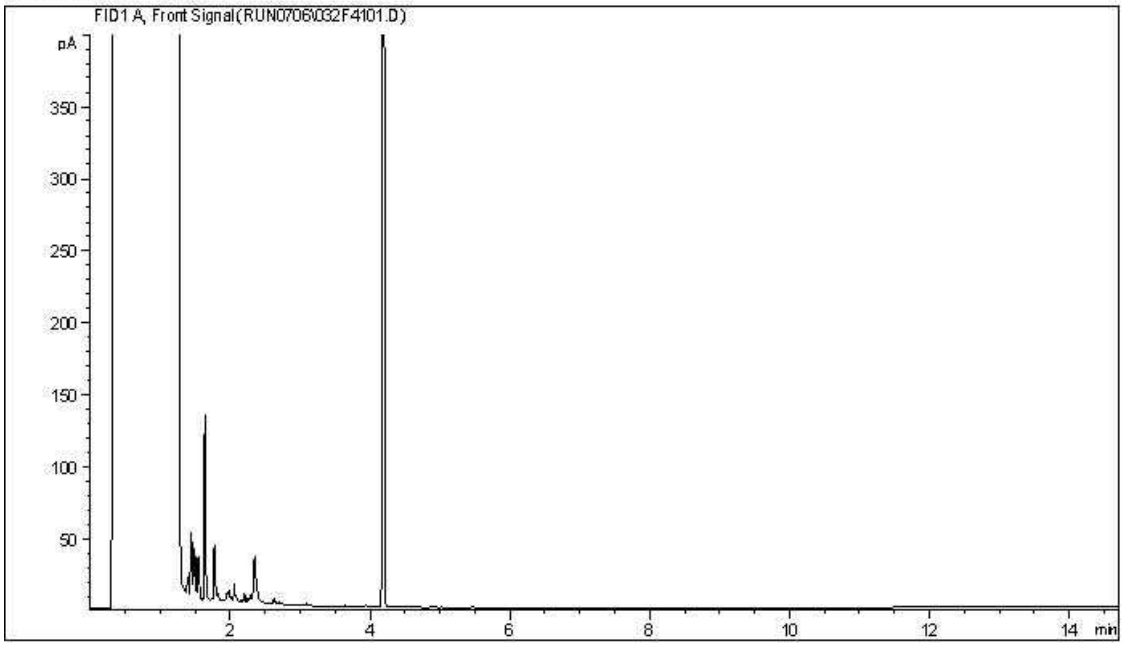
AB FCD-00331/7

BV Labs Job #: B953196
Report Date: 2019/07/10
BV Labs Sample: WA2888

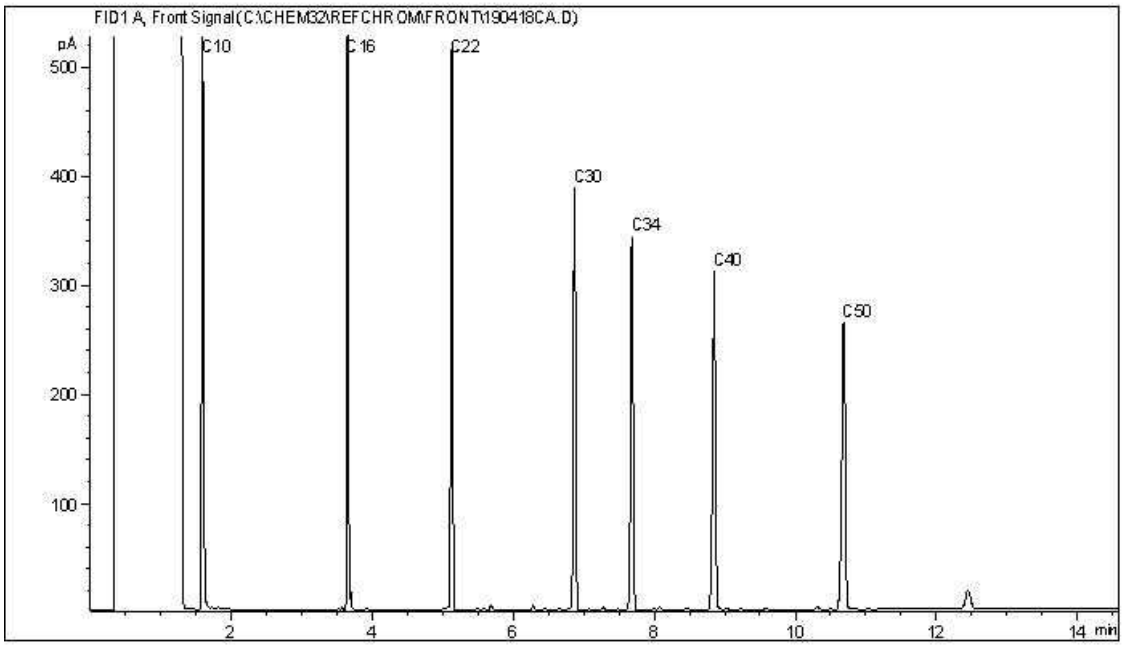
CLIFTON ASSOCIATES LTD.
Client Project #: CG24301. E37
Client ID: BH4002

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC13



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

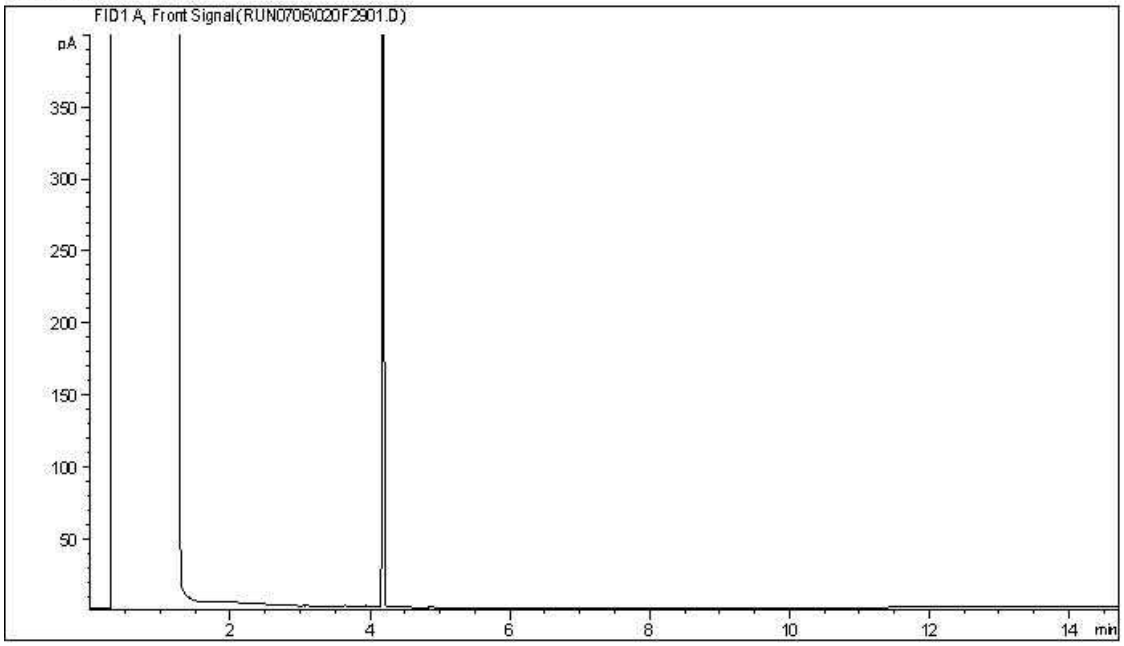
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B953196
Report Date: 2019/07/10
BV Labs Sample: WA2889

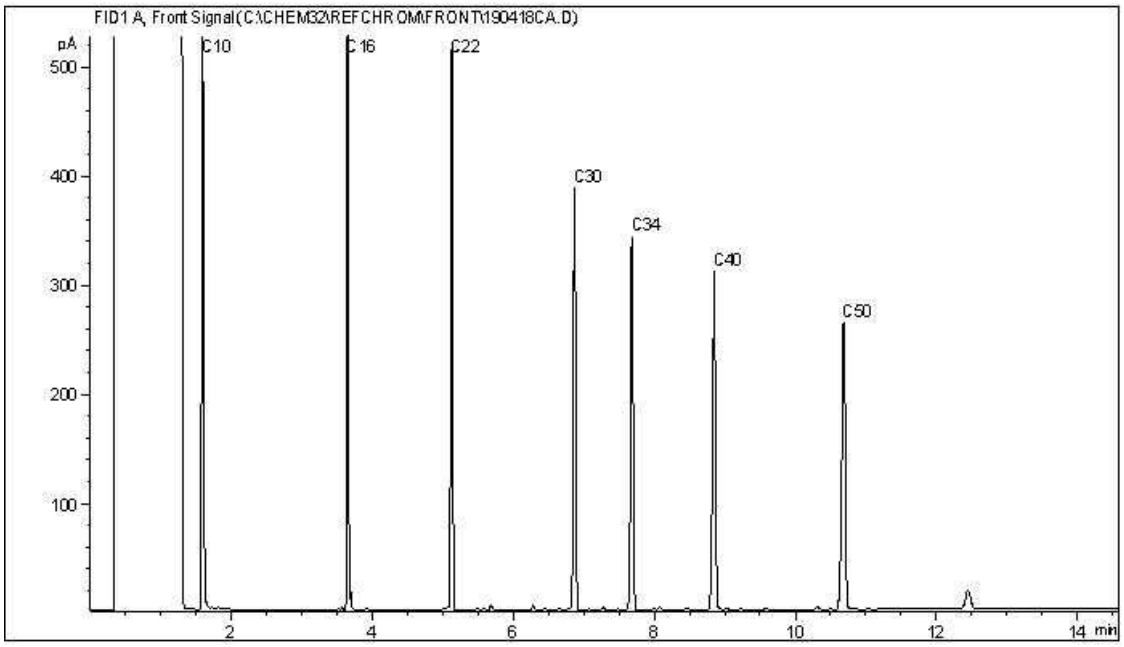
CLIFTON ASSOCIATES LTD.
Client Project #: CG24301. E37
Client ID: BH4004B

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC13



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

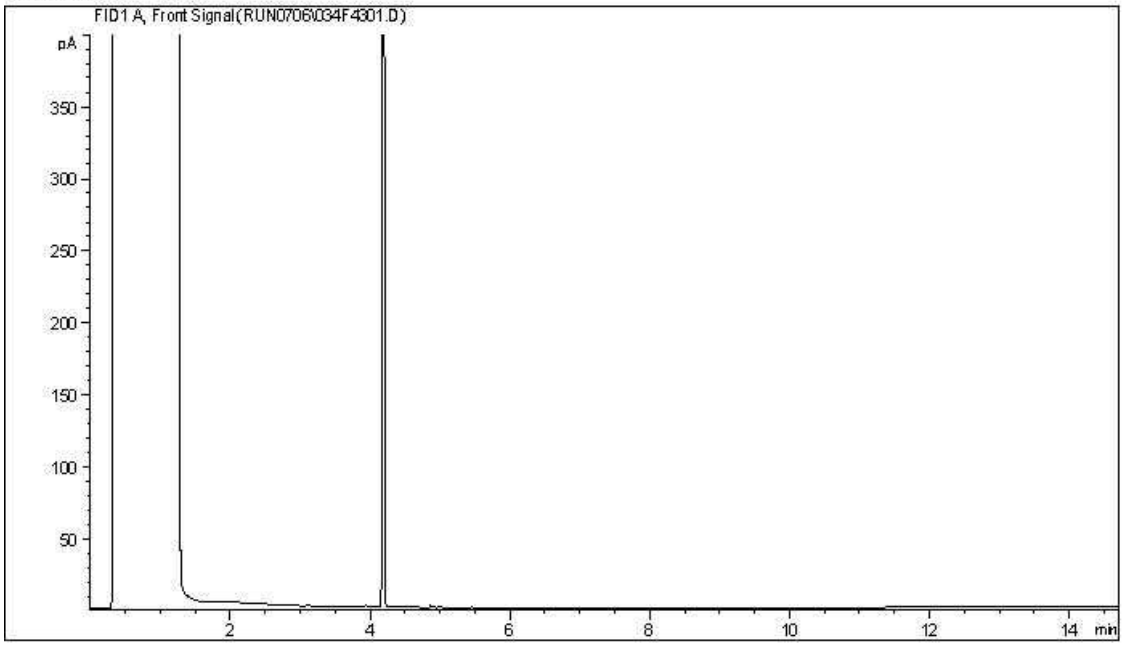
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B953196
Report Date: 2019/07/10
BV Labs Sample: WA2890

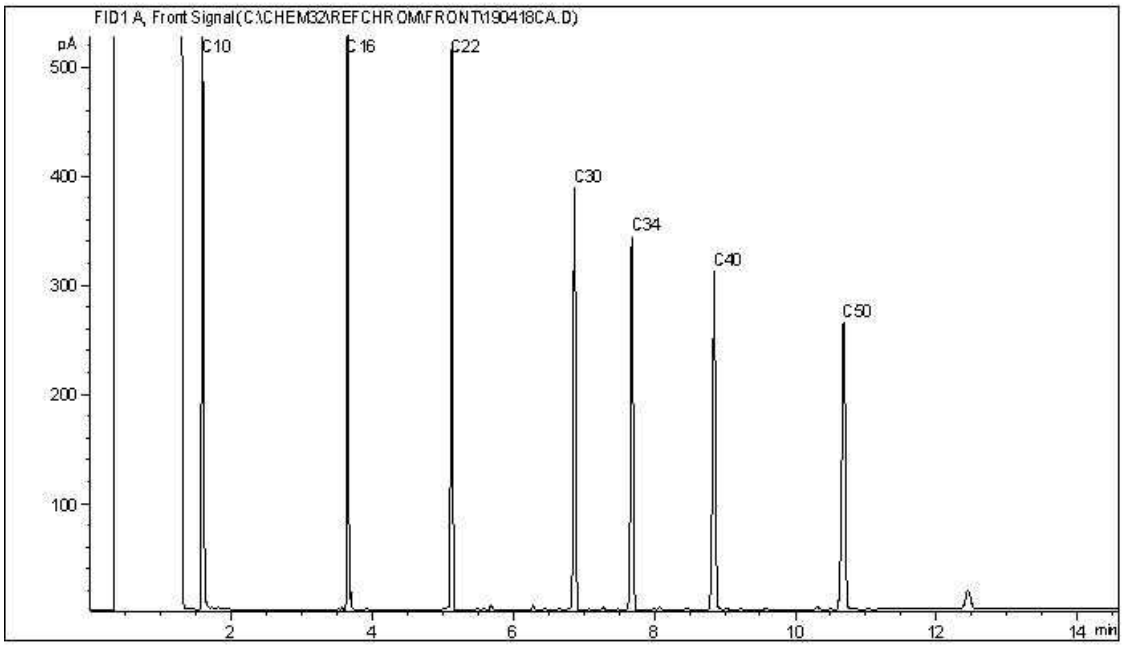
CLIFTON ASSOCIATES LTD.
Client Project #: CG24301. E37
Client ID: BH4003B

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC13



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

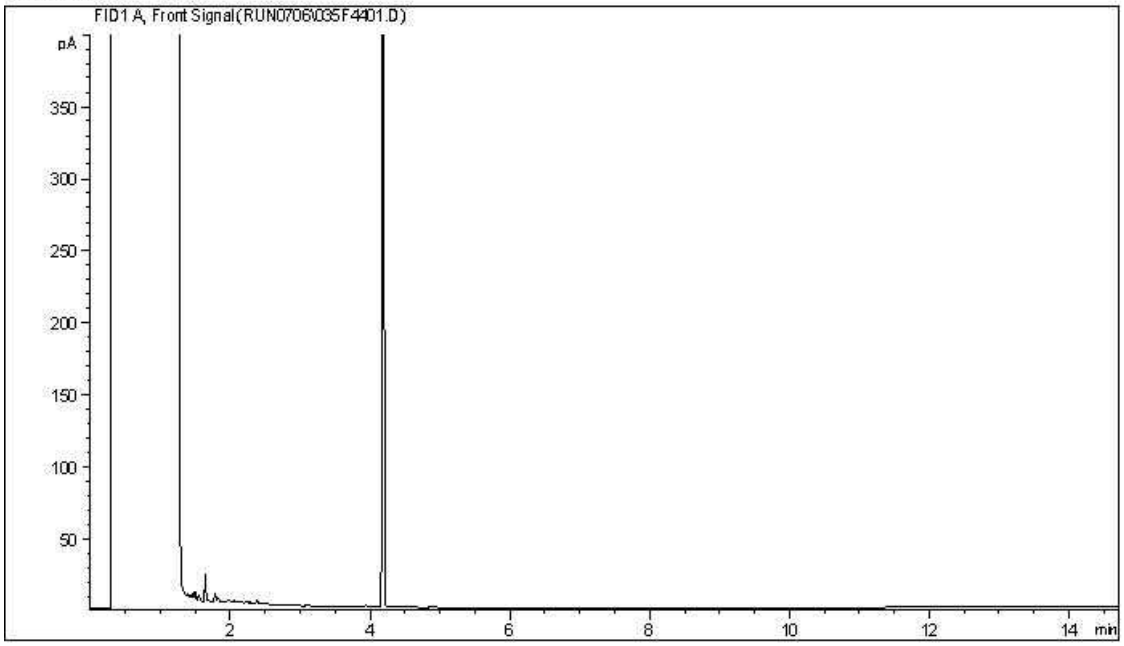
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B953196
Report Date: 2019/07/10
BV Labs Sample: WA2891

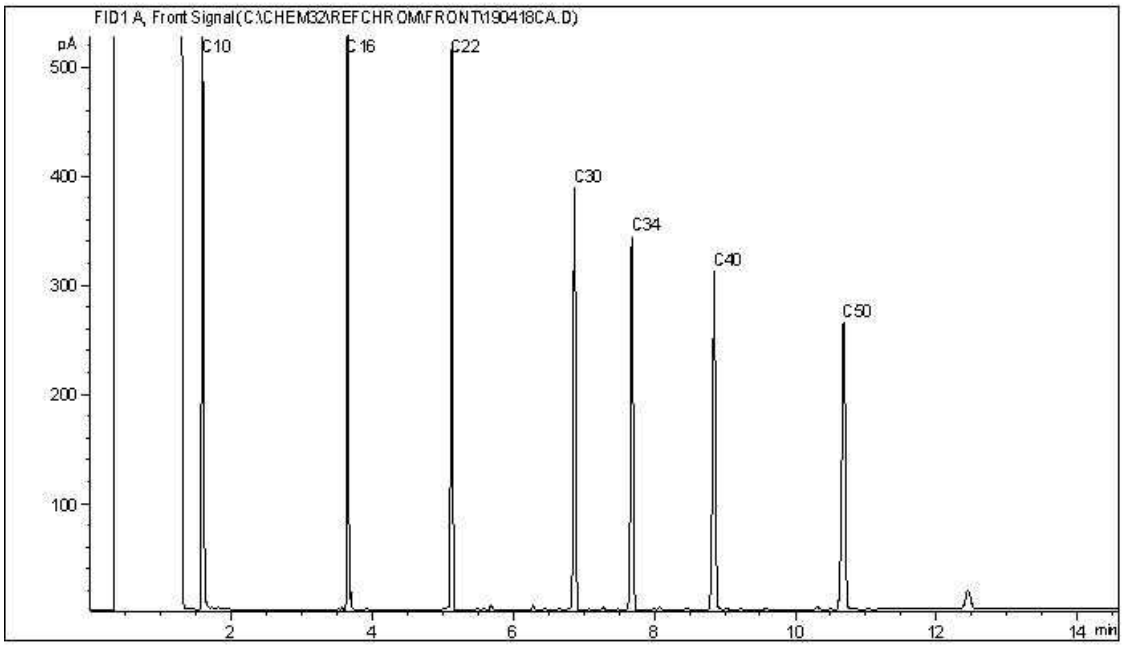
CLIFTON ASSOCIATES LTD.
Client Project #: CG24301. E37
Client ID: BH4005

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC13



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: CG2430.1-E37
Your C.O.C. #: M083886

Attention: Stephen D'Abadie

CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
CANADA T2E 7K9

Report Date: 2019/07/10
Report #: R2750149
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B953676
Received: 2019/07/04, 12:00

Sample Matrix: Ground Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 in Water by HS GC/MS/FID	2	N/A	2019/07/08	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX	2	N/A	2019/07/09		Auto Calc
CCME Hydrocarbons in Water (F2; C10-C16) (1)	2	2019/07/06	2019/07/07	AB SOP-00037 AB SOP-00040	CCME PHC-CWS m
Benzo[a]pyrene Equivalency (2)	2	N/A	2019/07/09		Auto Calc
PAH in Water by GC/MS	2	2019/07/06	2019/07/09	AB SOP-00037 / AB SOP-00003	EPA 3510C/8270E m
Total Trihalomethanes Calculation	3	N/A	2019/07/09		Auto Calc
VOCs in Water by HS GC/MS (Std List)	3	N/A	2019/07/08	AB SOP-00056	EPA 5021a/8260d m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
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Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Silica gel clean up employed.
(2) B[a]P TPE is calculated using 1/2 of the RDL for non detect results as per Alberta Environment instructions. This protocol may not apply in other jurisdictions.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

Your Project #: CG2430.1-E37
Your C.O.C. #: M083886

Attention: Stephen D'Abadie

CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
CANADA T2E 7K9

Report Date: 2019/07/10
Report #: R2750149
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B953676
Received: 2019/07/04, 12:00

Encryption Key

AUTHORIZED REPORT
RAPPORT AUTORISÉ

Bureau Veritas Laboratories
10 Jul 2019 11:44:13

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Linsay Sunderman, Key Account Specialist
Email: Lsunderman@bvlabs.com
Phone# (403)735-2237 Ext:2237

==========

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BV Labs Job #: B953676
Report Date: 2019/07/10

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1-E37
Sampler Initials: MM

AT1 BTEX AND F1-F2 IN WATER (GROUND WATER)

BV Labs ID		WA4798	WA4799		
Sampling Date		2019/07/04 10:09	2019/07/04 10:36		
COC Number		M083886	M083886		
	UNITS	**BH4007**	**BH4006**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon					
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	0.13	0.10	9494654
Volatiles					
Benzene	mg/L	0.76	0.49	0.00040	9495876
Toluene	mg/L	0.0014	0.0064	0.00040	9495876
Ethylbenzene	mg/L	<0.00040	<0.00040	0.00040	9495876
m & p-Xylene	mg/L	0.00094	0.012	0.00080	9495876
o-Xylene	mg/L	0.012	0.24	0.00040	9495876
Xylenes (Total)	mg/L	0.013	0.26	0.00089	9492909
F1 (C6-C10) - BTEX	mg/L	0.39	0.64	0.10	9492909
F1 (C6-C10)	mg/L	1.2	1.4	0.10	9495876
Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	101	101	N/A	9495876
4-Bromofluorobenzene (sur.)	%	101	104	N/A	9495876
D4-1,2-Dichloroethane (sur.)	%	120	111	N/A	9495876
O-TERPHENYL (sur.)	%	101	97	N/A	9494654

RDL = Reportable Detection Limit
N/A = Not Applicable

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BV Labs Job #: B953676
Report Date: 2019/07/10

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1-E37
Sampler Initials: MM

SEMIVOLATILE ORGANICS BY GC-MS (GROUND WATER)

BV Labs ID		WA4798	WA4799		
Sampling Date		2019/07/04 10:09	2019/07/04 10:36		
COC Number		M083886	M083886		
	UNITS	**BH4007**	**BH4006**	**RDL**	**QC Batch**
Polycyclic Aromatics					
B[a]P TPE Total Potency Equivalents	mg/L	<0.000010	<0.000010	0.000010	9493005
Acenaphthene	mg/L	<0.00010	<0.00010	0.00010	9494643
Acenaphthylene	mg/L	<0.00010	<0.00010	0.00010	9494643
Acridine	mg/L	<0.000040	<0.000040	0.000040	9494643
Anthracene	mg/L	<0.000010	<0.000010	0.000010	9494643
Benzo(a)anthracene	mg/L	<0.0000085	<0.0000085	0.0000085	9494643
Benzo(b&j)fluoranthene	mg/L	<0.0000085	<0.0000085	0.0000085	9494643
Benzo(k)fluoranthene	mg/L	<0.0000085	<0.0000085	0.0000085	9494643
Benzo(g,h,i)perylene	mg/L	<0.0000085	<0.0000085	0.0000085	9494643
Benzo(c)phenanthrene	mg/L	<0.000050	<0.000050	0.000050	9494643
Benzo(a)pyrene	mg/L	<0.0000075	<0.0000075	0.0000075	9494643
Benzo[e]pyrene	mg/L	<0.000050	<0.000050	0.000050	9494643
Chrysene	mg/L	<0.0000085	<0.0000085	0.0000085	9494643
Dibenz(a,h)anthracene	mg/L	<0.0000075	<0.0000075	0.0000075	9494643
Fluoranthene	mg/L	<0.000010	<0.000010	0.000010	9494643
Fluorene	mg/L	<0.000050	<0.000050	0.000050	9494643
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	<0.0000085	0.0000085	9494643
1-Methylnaphthalene	mg/L	<0.00010	0.0017	0.00010	9494643
2-Methylnaphthalene	mg/L	<0.00010	0.0029	0.00010	9494643
Naphthalene	mg/L	0.0028	0.014	0.00010	9494643
Phenanthrene	mg/L	<0.000050	<0.000050	0.000050	9494643
Perylene	mg/L	<0.000050	<0.000050	0.000050	9494643
Pyrene	mg/L	<0.000020	<0.000020	0.000020	9494643
Quinoline	mg/L	<0.00020	<0.00020	0.00020	9494643
Surrogate Recovery (%)					
D10-ANTHRACENE (sur.)	%	113	108	N/A	9494643
D8-ACENAPHTHYLENE (sur.)	%	90	92	N/A	9494643
D8-NAPHTHALENE (sur.)	%	61	66	N/A	9494643
TERPHENYL-D14 (sur.)	%	106	102	N/A	9494643

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B953676
Report Date: 2019/07/10

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1-E37
Sampler Initials: MM

VOLATILE ORGANICS BY GC-MS (GROUND WATER)

BV Labs ID		WA4798		WA4799		WA4800		
Sampling Date		2019/07/04 10:09		2019/07/04 10:36		2019/07/04		
COC Number		M083886		M083886		M083886		
	UNITS	**BH4007**	**RDL**	**BH4006**	**RDL**	**TRIP BLANK**	**RDL**	**QC Batch**
Volatiles								
Total Trihalomethanes	mg/L	<0.0013	0.0013	0.0025	0.0013	<0.0013	0.0013	9491630
Benzene	mg/L	N/A	N/A	N/A	0.00040	<0.00040	0.00040	9495873
Bromodichloromethane	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
Bromoform	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
Bromomethane	mg/L	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	9495873
Carbon tetrachloride	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
Chlorobenzene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
Chlorodibromomethane	mg/L	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	9495873
Chloroethane	mg/L	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	9495873
Chloroform	mg/L	<0.00050	0.00050	0.0025	0.00050	<0.00050	0.00050	9495873
Chloromethane	mg/L	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	9495873
1,2-dibromoethane	mg/L	<0.00020	0.00020	<0.00020	0.00020	<0.00020	0.00020	9495873
1,2-dichlorobenzene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
1,3-dichlorobenzene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
1,4-dichlorobenzene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
1,1-dichloroethane	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
1,2-dichloroethane	mg/L	0.039	0.00050	0.033	0.00050	<0.00050	0.00050	9495873
1,1-dichloroethene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
cis-1,2-dichloroethene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
trans-1,2-dichloroethene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
Dichloromethane	mg/L	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	9495873
1,2-dichloropropane	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
cis-1,3-dichloropropene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
trans-1,3-dichloropropene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
Ethylbenzene	mg/L	N/A	N/A	N/A	0.00040	<0.00040	0.00040	9495873
Methyl methacrylate	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
Methyl-tert-butylether (MTBE)	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
Styrene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
1,1,1,2-tetrachloroethane	mg/L	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	9495873
1,1,2,2-tetrachloroethane	mg/L	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	9495873
Tetrachloroethene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873

RDL = Reportable Detection Limit
N/A = Not Applicable

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BV Labs Job #: B953676
Report Date: 2019/07/10

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1-E37
Sampler Initials: MM

VOLATILE ORGANICS BY GC-MS (GROUND WATER)

BV Labs ID		WA4798		WA4799		WA4800		
Sampling Date		2019/07/04 10:09		2019/07/04 10:36		2019/07/04		
COC Number		M083886		M083886		M083886		
	UNITS	**BH4007**	**RDL**	**BH4006**	**RDL**	**TRIP BLANK**	**RDL**	**QC Batch**
Toluene	mg/L	N/A	N/A	N/A	0.00040	<0.00040	0.00040	9495873
1,2,3-trichlorobenzene	mg/L	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	9495873
1,2,4-trichlorobenzene	mg/L	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	9495873
1,3,5-trichlorobenzene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
1,1,1-trichloroethane	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
1,1,2-trichloroethane	mg/L	<0.0015 (1)	0.0015	<0.0020 (1)	0.0020	<0.00050	0.00050	9495873
Trichloroethene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
Trichlorofluoromethane	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
1,2,4-trimethylbenzene	mg/L	<0.00050	0.00050	0.0063	0.00050	<0.00050	0.00050	9495873
1,3,5-trimethylbenzene	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
Vinyl chloride	mg/L	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	9495873
Xylenes (Total)	mg/L	N/A	N/A	N/A	N/A	<0.00080	0.00080	9495873
m & p-Xylene	mg/L	N/A	N/A	N/A	N/A	<0.00080	0.00080	9495873
o-Xylene	mg/L	N/A	N/A	N/A	N/A	<0.00040	0.00040	9495873
Surrogate Recovery (%)								
1,4-Difluorobenzene (sur.)	%	101	N/A	101	N/A	98	N/A	9495873
4-Bromofluorobenzene (sur.)	%	98	N/A	95	N/A	99	N/A	9495873
D4-1,2-Dichloroethane (sur.)	%	133	N/A	113	N/A	95	N/A	9495873

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Detection limits raised due to matrix interference.

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	7.7°C

Results relate only to the items tested.

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BV Labs Job #: B953676
Report Date: 2019/07/10

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1-E37
Sampler Initials: MM

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9494643	NK3	Matrix Spike [WA4798-01]	D10-ANTHRACENE (sur.)	2019/07/09		104	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/07/09		85	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/07/09		65	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/07/09		100	%	50 - 130
			Acenaphthene	2019/07/09		88	%	50 - 130
			Acenaphthylene	2019/07/09		91	%	50 - 130
			Acridine	2019/07/09		84	%	50 - 130
			Anthracene	2019/07/09		91	%	50 - 130
			Benzo(a)anthracene	2019/07/09		100	%	50 - 130
			Benzo(b&j)fluoranthene	2019/07/09		92	%	50 - 130
			Benzo(k)fluoranthene	2019/07/09		98	%	50 - 130
			Benzo(g,h,i)perylene	2019/07/09		86	%	50 - 130
			Benzo(c)phenanthrene	2019/07/09		102	%	50 - 130
			Benzo(a)pyrene	2019/07/09		96	%	50 - 130
			Benzo[e]pyrene	2019/07/09		95	%	50 - 130
			Chrysene	2019/07/09		99	%	50 - 130
			Dibenz(a,h)anthracene	2019/07/09		83	%	50 - 130
			Fluoranthene	2019/07/09		85	%	50 - 130
			Fluorene	2019/07/09		92	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/07/09		80	%	50 - 130
			1-Methylnaphthalene	2019/07/09		89	%	50 - 130
			2-Methylnaphthalene	2019/07/09		84	%	50 - 130
			Naphthalene	2019/07/09		84	%	50 - 130
			Phenanthrene	2019/07/09		90	%	50 - 130
			Perylene	2019/07/09		92	%	50 - 130
			Pyrene	2019/07/09		87	%	50 - 130
			Quinoline	2019/07/09		105	%	50 - 130
9494643	NK3	Spiked Blank	D10-ANTHRACENE (sur.)	2019/07/09		104	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/07/09		91	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/07/09		76	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/07/09		99	%	50 - 130
			Acenaphthene	2019/07/09		92	%	50 - 130
			Acenaphthylene	2019/07/09		93	%	50 - 130
			Acridine	2019/07/09		88	%	50 - 130
			Anthracene	2019/07/09		92	%	50 - 130
			Benzo(a)anthracene	2019/07/09		100	%	50 - 130
			Benzo(b&j)fluoranthene	2019/07/09		93	%	50 - 130
			Benzo(k)fluoranthene	2019/07/09		99	%	50 - 130
			Benzo(g,h,i)perylene	2019/07/09		91	%	50 - 130
			Benzo(c)phenanthrene	2019/07/09		101	%	50 - 130
			Benzo(a)pyrene	2019/07/09		98	%	50 - 130
			Benzo[e]pyrene	2019/07/09		97	%	50 - 130
			Chrysene	2019/07/09		100	%	50 - 130
			Dibenz(a,h)anthracene	2019/07/09		88	%	50 - 130
			Fluoranthene	2019/07/09		85	%	50 - 130
			Fluorene	2019/07/09		91	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/07/09		84	%	50 - 130
			1-Methylnaphthalene	2019/07/09		95	%	50 - 130
			2-Methylnaphthalene	2019/07/09		90	%	50 - 130
			Naphthalene	2019/07/09		90	%	50 - 130
			Phenanthrene	2019/07/09		91	%	50 - 130
			Perylene	2019/07/09		95	%	50 - 130
			Pyrene	2019/07/09		93	%	50 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Quinoline	2019/07/09		105	%	50 - 130
9494643	NK3	Method Blank	D10-ANTHRACENE (sur.)	2019/07/09		101	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/07/09		77	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/07/09		54	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/07/09		95	%	50 - 130
			Acenaphthene	2019/07/09	<0.00010		mg/L	
			Acenaphthylene	2019/07/09	<0.00010		mg/L	
			Acridine	2019/07/09	<0.000040		mg/L	
			Anthracene	2019/07/09	<0.000010		mg/L	
			Benzo(a)anthracene	2019/07/09	<0.0000085		mg/L	
			Benzo(b&j)fluoranthene	2019/07/09	<0.0000085		mg/L	
			Benzo(k)fluoranthene	2019/07/09	<0.0000085		mg/L	
			Benzo(g,h,i)perylene	2019/07/09	<0.0000085		mg/L	
			Benzo(c)phenanthrene	2019/07/09	<0.000050		mg/L	
			Benzo(a)pyrene	2019/07/09	<0.0000075		mg/L	
			Benzo[e]pyrene	2019/07/09	<0.000050		mg/L	
			Chrysene	2019/07/09	<0.0000085		mg/L	
			Dibenz(a,h)anthracene	2019/07/09	<0.0000075		mg/L	
			Fluoranthene	2019/07/09	<0.000010		mg/L	
			Fluorene	2019/07/09	<0.000050		mg/L	
			Indeno(1,2,3-cd)pyrene	2019/07/09	<0.0000085		mg/L	
			1-Methylnaphthalene	2019/07/09	<0.00010		mg/L	
			2-Methylnaphthalene	2019/07/09	<0.00010		mg/L	
			Naphthalene	2019/07/09	<0.00010		mg/L	
			Phenanthrene	2019/07/09	<0.000050		mg/L	
			Perylene	2019/07/09	<0.000050		mg/L	
			Pyrene	2019/07/09	<0.000020		mg/L	
			Quinoline	2019/07/09	<0.00020		mg/L	
9494643	NK3	RPD	Acenaphthene	2019/07/09	NC		%	30
			Acenaphthylene	2019/07/09	NC		%	30
			Acridine	2019/07/09	NC		%	30
			Anthracene	2019/07/09	NC		%	30
			Benzo(a)anthracene	2019/07/09	NC		%	30
			Benzo(b&j)fluoranthene	2019/07/09	NC		%	30
			Benzo(k)fluoranthene	2019/07/09	NC		%	30
			Benzo(g,h,i)perylene	2019/07/09	NC		%	30
			Benzo(c)phenanthrene	2019/07/09	NC		%	30
			Benzo(a)pyrene	2019/07/09	NC		%	30
			Benzo[e]pyrene	2019/07/09	NC		%	30
			Chrysene	2019/07/09	NC		%	30
			Dibenz(a,h)anthracene	2019/07/09	NC		%	30
			Fluoranthene	2019/07/09	NC		%	30
			Fluorene	2019/07/09	NC		%	30
			Indeno(1,2,3-cd)pyrene	2019/07/09	NC		%	30
			1-Methylnaphthalene	2019/07/09	NC		%	30
			2-Methylnaphthalene	2019/07/09	NC		%	30
			Naphthalene	2019/07/09	NC		%	30
			Phenanthrene	2019/07/09	NC		%	30
			Perylene	2019/07/09	NC		%	30
			Pyrene	2019/07/09	NC		%	30
			Quinoline	2019/07/09	NC		%	30
9494654	MHF	Matrix Spike [WA4799-01]	O-TERPHENYL (sur.)	2019/07/07		96	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/07/07		114	%	60 - 140

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BV Labs Job #: B953676
Report Date: 2019/07/10

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1-E37
Sampler Initials: MM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9494654	MHF	Spiked Blank	O-TERPHENYL (sur.)	2019/07/07		96	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/07/07		113	%	60 - 140
9494654	MHF	Method Blank	O-TERPHENYL (sur.)	2019/07/07		94	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/07/07	<0.10		mg/L	
9494654	MHF	RPD	F2 (C10-C16 Hydrocarbons)	2019/07/07	NC		%	30
9495873	GP4	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/07/08		101	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/08		104	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/08		111	%	50 - 140
			Benzene	2019/07/08		67	%	50 - 140
			Bromodichloromethane	2019/07/08		80	%	50 - 140
			Bromoform	2019/07/08		74	%	50 - 140
			Bromomethane	2019/07/08		57	%	50 - 140
			Carbon tetrachloride	2019/07/08		72	%	50 - 140
			Chlorobenzene	2019/07/08		70	%	50 - 140
			Chlorodibromomethane	2019/07/08		77	%	50 - 140
			Chloroethane	2019/07/08		59	%	50 - 140
			Chloroform	2019/07/08		73	%	50 - 140
			Chloromethane	2019/07/08		47 (1)	%	50 - 140
			1,2-dibromoethane	2019/07/08		71	%	50 - 140
			1,2-dichlorobenzene	2019/07/08		79	%	50 - 140
			1,3-dichlorobenzene	2019/07/08		77	%	50 - 140
			1,4-dichlorobenzene	2019/07/08		75	%	50 - 140
			1,1-dichloroethane	2019/07/08		72	%	50 - 140
			1,2-dichloroethane	2019/07/08		76	%	50 - 140
			1,1-dichloroethene	2019/07/08		63	%	50 - 140
			cis-1,2-dichloroethene	2019/07/08		72	%	50 - 140
			trans-1,2-dichloroethene	2019/07/08		64	%	50 - 140
			Dichloromethane	2019/07/08		67	%	50 - 140
			1,2-dichloropropane	2019/07/08		77	%	50 - 140
			cis-1,3-dichloropropene	2019/07/08		80	%	50 - 140
			trans-1,3-dichloropropene	2019/07/08		90	%	50 - 140
			Ethylbenzene	2019/07/08		68	%	50 - 140
			Methyl methacrylate	2019/07/08		80	%	50 - 140
			Methyl-tert-butylether (MTBE)	2019/07/08		75	%	50 - 140
			Styrene	2019/07/08		73	%	50 - 140
			1,1,1,2-tetrachloroethane	2019/07/08		72	%	50 - 140
			1,1,2,2-tetrachloroethane	2019/07/08		76	%	50 - 140
			Tetrachloroethene	2019/07/08		63	%	50 - 140
			Toluene	2019/07/08		68	%	50 - 140
			1,2,3-trichlorobenzene	2019/07/08		75	%	50 - 140
			1,2,4-trichlorobenzene	2019/07/08		75	%	50 - 140
			1,3,5-trichlorobenzene	2019/07/08		74	%	50 - 140
			1,1,1-trichloroethane	2019/07/08		73	%	50 - 140
			1,1,2-trichloroethane	2019/07/08		78	%	50 - 140
			Trichloroethene	2019/07/08		74	%	50 - 140
			Trichlorofluoromethane	2019/07/08		61	%	50 - 140
			1,2,4-trimethylbenzene	2019/07/08		78	%	50 - 140
			1,3,5-trimethylbenzene	2019/07/08		79	%	50 - 140
			Vinyl chloride	2019/07/08		51	%	50 - 140
			m & p-Xylene	2019/07/08		66	%	50 - 140
			o-Xylene	2019/07/08		66	%	50 - 140
9495873	GP4	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/07/08		105	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/08		105	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/08		111	%	50 - 140

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BV Labs Job #: B953676
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CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1-E37
Sampler Initials: MM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Benzene	2019/07/08		85	%	60 - 130
			Bromodichloromethane	2019/07/08		102	%	60 - 130
			Bromoform	2019/07/08		89	%	60 - 130
			Bromomethane	2019/07/08		67	%	60 - 130
			Carbon tetrachloride	2019/07/08		94	%	60 - 130
			Chlorobenzene	2019/07/08		88	%	60 - 130
			Chlorodibromomethane	2019/07/08		94	%	60 - 130
			Chloroethane	2019/07/08		72	%	60 - 130
			Chloroform	2019/07/08		93	%	60 - 130
			Chloromethane	2019/07/08		56 (1)	%	60 - 130
			1,2-dibromoethane	2019/07/08		84	%	60 - 130
			1,2-dichlorobenzene	2019/07/08		99	%	60 - 130
			1,3-dichlorobenzene	2019/07/08		97	%	60 - 130
			1,4-dichlorobenzene	2019/07/08		94	%	60 - 130
			1,1-dichloroethane	2019/07/08		90	%	60 - 130
			1,2-dichloroethane	2019/07/08		93	%	60 - 130
			1,1-dichloroethene	2019/07/08		80	%	60 - 130
			cis-1,2-dichloroethene	2019/07/08		91	%	60 - 130
			trans-1,2-dichloroethene	2019/07/08		80	%	60 - 130
			Dichloromethane	2019/07/08		81	%	60 - 130
			1,2-dichloropropane	2019/07/08		96	%	60 - 130
			cis-1,3-dichloropropene	2019/07/08		99	%	60 - 130
			trans-1,3-dichloropropene	2019/07/08		110	%	60 - 130
			Ethylbenzene	2019/07/08		86	%	60 - 130
			Methyl methacrylate	2019/07/08		96	%	60 - 130
			Methyl-tert-butylether (MTBE)	2019/07/08		92	%	60 - 130
			Styrene	2019/07/08		91	%	60 - 130
			1,1,1,2-tetrachloroethane	2019/07/08		89	%	60 - 130
			1,1,2,2-tetrachloroethane	2019/07/08		90	%	60 - 130
			Tetrachloroethene	2019/07/08		81	%	60 - 130
			Toluene	2019/07/08		84	%	60 - 130
			1,2,3-trichlorobenzene	2019/07/08		90	%	60 - 130
			1,2,4-trichlorobenzene	2019/07/08		92	%	60 - 130
			1,3,5-trichlorobenzene	2019/07/08		92	%	60 - 130
			1,1,1-trichloroethane	2019/07/08		95	%	60 - 130
			1,1,2-trichloroethane	2019/07/08		96	%	60 - 130
			Trichloroethene	2019/07/08		97	%	60 - 130
			Trichlorofluoromethane	2019/07/08		76	%	60 - 130
			1,2,4-trimethylbenzene	2019/07/08		99	%	60 - 130
			1,3,5-trimethylbenzene	2019/07/08		102	%	60 - 130
			Vinyl chloride	2019/07/08		62	%	60 - 130
			m & p-Xylene	2019/07/08		83	%	60 - 130
			o-Xylene	2019/07/08		82	%	60 - 130
9495873	GP4	Method Blank	1,4-Difluorobenzene (sur.)	2019/07/08		98	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/08		98	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/08		93	%	50 - 140
			Benzene	2019/07/08	<0.00040		mg/L	
			Bromodichloromethane	2019/07/08	<0.00050		mg/L	
			Bromoform	2019/07/08	<0.00050		mg/L	
			Bromomethane	2019/07/08	<0.0020		mg/L	
			Carbon tetrachloride	2019/07/08	<0.00050		mg/L	
			Chlorobenzene	2019/07/08	<0.00050		mg/L	
			Chlorodibromomethane	2019/07/08	<0.0010		mg/L	
			Chloroethane	2019/07/08	<0.0010		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Chloroform	2019/07/08	<0.00050		mg/L	
			Chloromethane	2019/07/08	<0.0020		mg/L	
			1,2-dibromoethane	2019/07/08	<0.00020		mg/L	
			1,2-dichlorobenzene	2019/07/08	<0.00050		mg/L	
			1,3-dichlorobenzene	2019/07/08	<0.00050		mg/L	
			1,4-dichlorobenzene	2019/07/08	<0.00050		mg/L	
			1,1-dichloroethane	2019/07/08	<0.00050		mg/L	
			1,2-dichloroethane	2019/07/08	<0.00050		mg/L	
			1,1-dichloroethene	2019/07/08	<0.00050		mg/L	
			cis-1,2-dichloroethene	2019/07/08	<0.00050		mg/L	
			trans-1,2-dichloroethene	2019/07/08	<0.00050		mg/L	
			Dichloromethane	2019/07/08	<0.0020		mg/L	
			1,2-dichloropropane	2019/07/08	<0.00050		mg/L	
			cis-1,3-dichloropropene	2019/07/08	<0.00050		mg/L	
			trans-1,3-dichloropropene	2019/07/08	<0.00050		mg/L	
			Ethylbenzene	2019/07/08	<0.00040		mg/L	
			Methyl methacrylate	2019/07/08	<0.00050		mg/L	
			Methyl-tert-butylether (MTBE)	2019/07/08	<0.00050		mg/L	
			Styrene	2019/07/08	<0.00050		mg/L	
			1,1,1,2-tetrachloroethane	2019/07/08	<0.0010		mg/L	
			1,1,2,2-tetrachloroethane	2019/07/08	<0.0020		mg/L	
			Tetrachloroethene	2019/07/08	<0.00050		mg/L	
			Toluene	2019/07/08	<0.00040		mg/L	
			1,2,3-trichlorobenzene	2019/07/08	<0.0010		mg/L	
			1,2,4-trichlorobenzene	2019/07/08	<0.0010		mg/L	
			1,3,5-trichlorobenzene	2019/07/08	<0.00050		mg/L	
			1,1,1-trichloroethane	2019/07/08	<0.00050		mg/L	
			1,1,2-trichloroethane	2019/07/08	<0.00050		mg/L	
			Trichloroethene	2019/07/08	<0.00050		mg/L	
			Trichlorofluoromethane	2019/07/08	<0.00050		mg/L	
			1,2,4-trimethylbenzene	2019/07/08	<0.00050		mg/L	
			1,3,5-trimethylbenzene	2019/07/08	<0.00050		mg/L	
			Vinyl chloride	2019/07/08	<0.00050		mg/L	
			Xylenes (Total)	2019/07/08	<0.00080		mg/L	
			m & p-Xylene	2019/07/08	<0.00080		mg/L	
			o-Xylene	2019/07/08	<0.00040		mg/L	
9495873	GP4	RPD	Bromodichloromethane	2019/07/08	NC		%	30
			Bromoform	2019/07/08	NC		%	30
			Bromomethane	2019/07/08	NC		%	30
			Carbon tetrachloride	2019/07/08	NC		%	30
			Chlorobenzene	2019/07/08	NC		%	30
			Chlorodibromomethane	2019/07/08	NC		%	30
			Chloroethane	2019/07/08	NC		%	30
			Chloroform	2019/07/08	NC		%	30
			Chloromethane	2019/07/08	NC		%	30
			1,2-dibromoethane	2019/07/08	NC		%	30
			1,2-dichlorobenzene	2019/07/08	NC		%	30
			1,3-dichlorobenzene	2019/07/08	NC		%	30
			1,4-dichlorobenzene	2019/07/08	NC		%	30
			1,1-dichloroethane	2019/07/08	NC		%	30
			1,2-dichloroethane	2019/07/08	NC		%	30
			1,1-dichloroethene	2019/07/08	NC		%	30
			cis-1,2-dichloroethene	2019/07/08	NC		%	30
			trans-1,2-dichloroethene	2019/07/08	NC		%	30

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BV Labs Job #: B953676
Report Date: 2019/07/10

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1-E37
Sampler Initials: MM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dichloromethane	2019/07/08	NC		%	30
			1,2-dichloropropane	2019/07/08	NC		%	30
			cis-1,3-dichloropropene	2019/07/08	NC		%	30
			trans-1,3-dichloropropene	2019/07/08	NC		%	30
			Methyl methacrylate	2019/07/08	NC		%	30
			Methyl-tert-butylether (MTBE)	2019/07/08	NC		%	30
			Styrene	2019/07/08	NC		%	30
			1,1,1,2-tetrachloroethane	2019/07/08	NC		%	30
			1,1,2,2-tetrachloroethane	2019/07/08	NC		%	30
			Tetrachloroethene	2019/07/08	NC		%	30
			1,2,3-trichlorobenzene	2019/07/08	NC		%	30
			1,2,4-trichlorobenzene	2019/07/08	NC		%	30
			1,3,5-trichlorobenzene	2019/07/08	NC		%	30
			1,1,1-trichloroethane	2019/07/08	NC		%	30
			1,1,2-trichloroethane	2019/07/08	NC		%	30
			Trichloroethene	2019/07/08	NC		%	30
			Trichlorofluoromethane	2019/07/08	NC		%	30
			1,2,4-trimethylbenzene	2019/07/08	NC		%	30
			1,3,5-trimethylbenzene	2019/07/08	NC		%	30
			Vinyl chloride	2019/07/08	NC		%	30
9495876	RSU	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/07/08		95	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/08		106	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/08		106	%	50 - 140
			Benzene	2019/07/08		96	%	50 - 140
			Toluene	2019/07/08		91	%	50 - 140
			Ethylbenzene	2019/07/08		96	%	50 - 140
			m & p-Xylene	2019/07/08		94	%	50 - 140
			o-Xylene	2019/07/08		94	%	50 - 140
			F1 (C6-C10)	2019/07/08		92	%	60 - 140
9495876	RSU	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/07/08		99	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/08		104	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/08		90	%	50 - 140
			Benzene	2019/07/08		99	%	60 - 130
			Toluene	2019/07/08		97	%	60 - 130
			Ethylbenzene	2019/07/08		104	%	60 - 130
			m & p-Xylene	2019/07/08		103	%	60 - 130
			o-Xylene	2019/07/08		100	%	60 - 130
			F1 (C6-C10)	2019/07/08		79	%	60 - 140
9495876	RSU	Method Blank	1,4-Difluorobenzene (sur.)	2019/07/08		99	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/08		102	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/08		88	%	50 - 140
			Benzene	2019/07/08	<0.00040		mg/L	
			Toluene	2019/07/08	<0.00040		mg/L	
			Ethylbenzene	2019/07/08	<0.00040		mg/L	
			m & p-Xylene	2019/07/08	<0.00080		mg/L	
			o-Xylene	2019/07/08	<0.00040		mg/L	
			F1 (C6-C10)	2019/07/08	<0.10		mg/L	
9495876	RSU	RPD	Benzene	2019/07/08	NC		%	30
			Toluene	2019/07/08	NC		%	30
			Ethylbenzene	2019/07/08	NC		%	30
			m & p-Xylene	2019/07/08	NC		%	30
			o-Xylene	2019/07/08	NC		%	30

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BV Labs Job #: B953676
Report Date: 2019/07/10

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1-E37
Sampler Initials: MM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			F1 (C6-C10)	2019/07/08	NC		%	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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NOTIFICATION LOG

No Reportable Regulation Exceedences Noted.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B953676
Report Date: 2019/07/10

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1-E37
Sampler Initials: MM

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Dennis Ngondu, B.Sc., P.Chem., QP, Supervisor, Organics

Gita Pokhrel, Senior Analyst

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam
A Bureau Veritas Group Company

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Edmonton: 9331-48 St. T6B 2R4. Toll Free (800) 386-7247
maxxam.ca

123

CHAIN OF CUSTODY RECORD

M 083886

Page 1 of 1

Invoice Information		Report Information (if differs from invoice)		Project Information		Turnaround Time (TAT) Required
Company:	Clifton	Company:		Quotation #:		☑ 5 - 7 Days Regular (Most analyses)
Contact Name:	Stephen d'Abadie	Contact Name:		P.O. #/ AFE#:		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address:	2222 - 30 Ave NE Calgary, AB	Address:		Project #:	CG2430.1-E37	Rush TAT (Surcharges will be applied): ☐ Same Day ☐ 2 Days ☐ 1 Day ☐ 3-4 Days
Phone:	403-701-8226	Phone:		Site Location:		
Email:	Stephen_dabadie@clifton.ca	Email:		Site #:		Date Required:
Copies:		Copies:		Sampled By:	mm	Rush Confirmation #:

Laboratory Use Only

	YES	NO	Cooler ID			
Seal Present		✓	Temp	5	10	8
Seal Intact		✓				
Cooling Media	✓					
	YES	NO	Cooler ID			
Seal Present			Temp			
Seal Intact						
Cooling Media						
	YES	NO	Cooler ID			
Seal Present			Temp			
Seal Intact						
Cooling Media						

Depot Reception

Analysis Requested

	Sample Identification	Depth (Unit)	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	# of containers	BTEX F1 ☒ VOC ☒	BTEX F1-F2	BTEX F1-F4	Routine Water	Regulated Metals Tot ☐ Diss ☐	Mercury Total ☐ Dissolved ☐	Salinity 4	Sieve (75 micron)	Texture (% Sand, Silt, Clay)	Basic Class II Landfill	PAH	VOC								HOLD - DO NOT ANALYZE
1	BH4007		2019/07/04	10:09	GW	10	X	X									X									
2	BH4006		2019/07/04	10:36	GW	10	X	X									X									
3	TRIP BLANK		2019/07/04	—	GW	1												X								
4																										
5																										
6																										
7																										
8																										
9																										
10																										

Please indicate Filtered, Preserved or Both (F, P, F/P)

Regulatory Criteria

- ☑ AT1
- ☐ CCME
- ☐ Drinking Water
- ☐ D50 (Drilling Waste)
- ☐ Saskatchewan
- ☐ Other:

Special Instructions

Relinquished by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)	Received by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)
Melanie Molony	2019/07/04	12:00	Jessica McIntyre, JENNIFER MCINTYRE	2019/07/04	12:00

04-Jul-19 12:00
Linsay Sunderman
B953676
SBZ INS-0126

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Maxxam's standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms which are available for viewing at www.maxxa

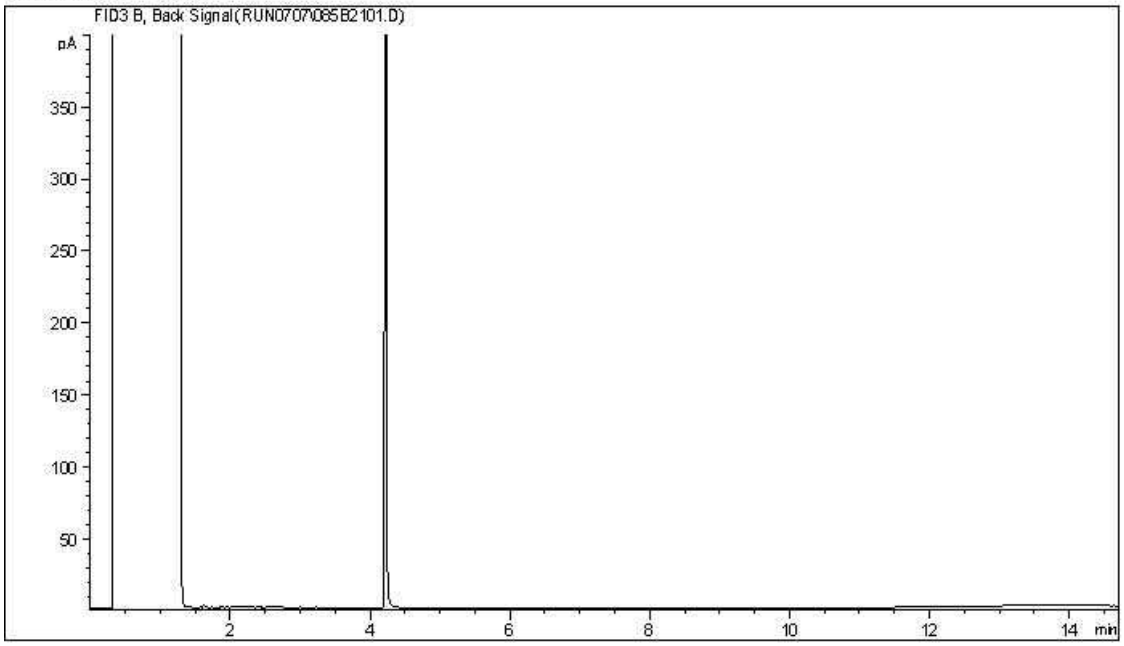
AB FCD-00331/7

BV Labs Job #: B953676
Report Date: 2019/07/10
BV Labs Sample: WA4798

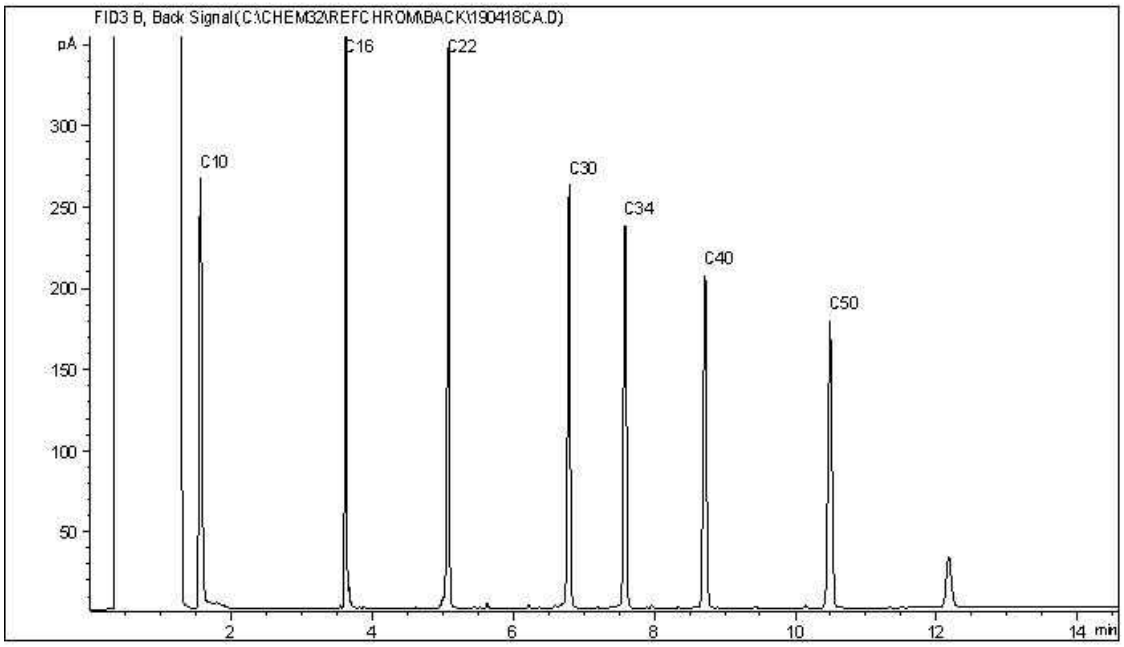
CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1-E37
Client ID: BH4007

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC13



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

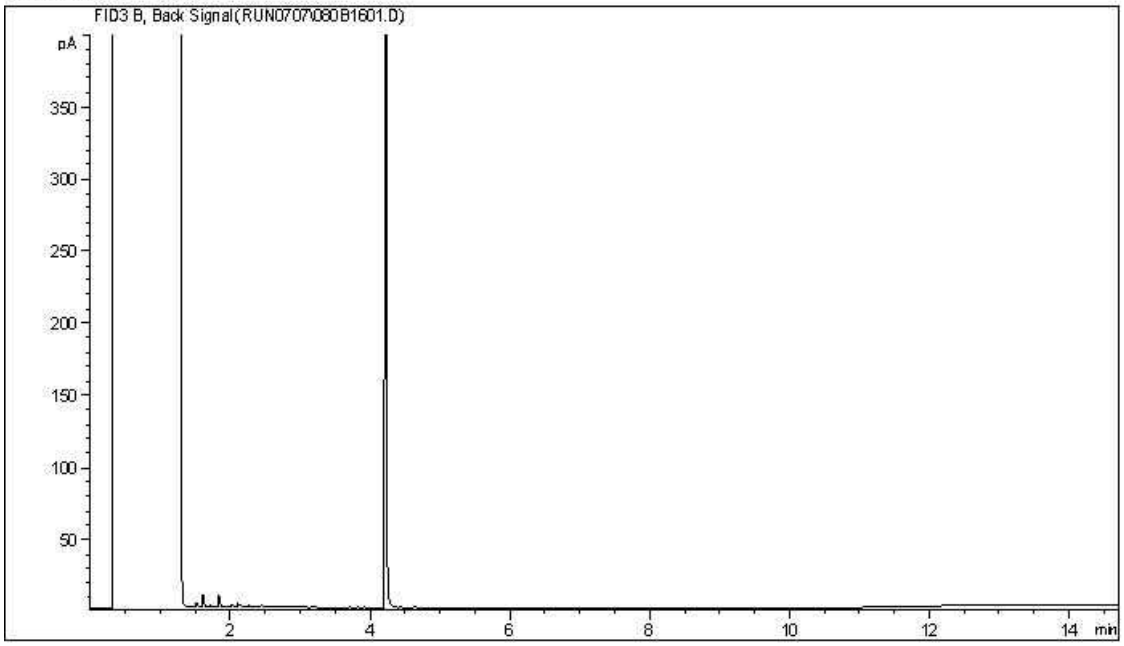
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B953676
Report Date: 2019/07/10
BV Labs Sample: WA4799

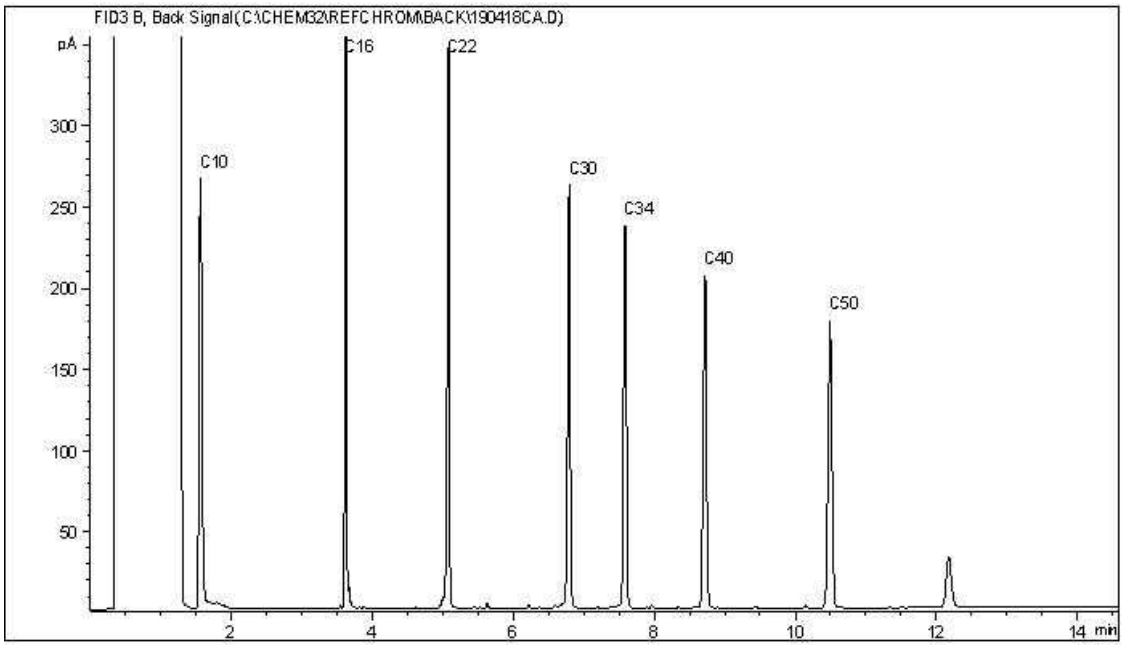
CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1-E37
Client ID: BH4006

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC13



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: C2430.1-E37
Site Location: NORTH HILL MALL
Your C.O.C. #: A112867

Attention: MATTHEW FOULKES

CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
CANADA T2E 7K9

Report Date: 2019/07/12
Report #: R2751678
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B954316
Received: 2019/07/07, 11:58

Sample Matrix: Ground Water
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 in Water by HS GC/MS/FID	4	N/A	2019/07/08	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX	4	N/A	2019/07/09		Auto Calc
CCME Hydrocarbons in Water (F2; C10-C16) (1)	1	2019/07/09	2019/07/09	AB SOP-00037 AB SOP-00040	CCME PHC-CWS m
CCME Hydrocarbons in Water (F2; C10-C16) (1)	3	2019/07/09	2019/07/10	AB SOP-00037 AB SOP-00040	CCME PHC-CWS m
Benzo[a]pyrene Equivalency (2)	4	N/A	2019/07/11		Auto Calc
PAH in Water by GC/MS	4	2019/07/09	2019/07/11	AB SOP-00037 / AB SOP-00003	EPA 3510C/8270E m
Total Trihalomethanes Calculation	5	N/A	2019/07/09		Auto Calc
VOCs in Water by HS GC/MS (Std List)	5	N/A	2019/07/09	AB SOP-00056	EPA 5021a/8260d m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
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Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Silica gel clean up employed.
(2) B[a]P TPE is calculated using 1/2 of the RDL for non detect results as per Alberta Environment instructions. This protocol may not apply in other jurisdictions.

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Your Project #: C2430.1-E37
Site Location: NORTH HILL MALL
Your C.O.C. #: A112867

Attention: MATTHEW FOULKES

CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
CANADA T2E 7K9

Report Date: 2019/07/12
Report #: R2751678
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B954316
Received: 2019/07/07, 11:58

Encryption Key

AUTHORIZED REPORT
RAPPORT AUTORISÉ

Bureau Veritas Laboratories
12 Jul 2019 14:43:13

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Linsay Sunderman, Key Account Specialist
Email: Lsunderman@bvlabs.com
Phone# (403)735-2237 Ext:2237
==========
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BV Labs Job #: B954316
Report Date: 2019/07/12

CLIFTON ASSOCIATES LTD.
Client Project #: C2430.1-E37
Site Location: NORTH HILL MALL
Sampler Initials: MM

AT1 BTEX AND F1-F2 IN WATER (GROUND WATER)

BV Labs ID		WA8840	WA8841	WA8842	WA8843	WA8843		
Sampling Date		2019/07/07 09:05	2019/07/07 09:10	2019/07/07 09:30	2019/07/07 09:35	2019/07/07 09:35		
COC Number		A112867	A112867	A112867	A112867	A112867		
	UNITS	**BH4004A**	**BH94004A**	**BH4003A**	**BH94003A**	**BH94003A Lab-Dup**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	<0.10	0.34	0.32	0.32	0.10	9496858
Volatiles								
Benzene	mg/L	<0.00040	<0.00040	0.74	0.73	N/A	0.00040	9497125
Toluene	mg/L	<0.00040	<0.00040	0.024	0.024	N/A	0.00040	9497125
Ethylbenzene	mg/L	<0.00040	<0.00040	0.0021	0.0022	N/A	0.00040	9497125
m & p-Xylene	mg/L	<0.00080	<0.00080	0.21	0.22	N/A	0.00080	9497125
o-Xylene	mg/L	<0.00040	<0.00040	0.91	0.92	N/A	0.00040	9497125
Xylenes (Total)	mg/L	<0.00089	<0.00089	1.1	1.1	N/A	0.00089	9496015
F1 (C6-C10) - BTEX	mg/L	<0.10	<0.10	1.3	1.3	N/A	0.10	9496015
F1 (C6-C10)	mg/L	<0.10	<0.10	3.2	3.2	N/A	0.10	9497125
Surrogate Recovery (%)								
1,4-Difluorobenzene (sur.)	%	93	97	98	99	N/A	N/A	9497125
4-Bromofluorobenzene (sur.)	%	100	102	102	103	N/A	N/A	9497125
D4-1,2-Dichloroethane (sur.)	%	95	95	108	109	N/A	N/A	9497125
O-TERPHENYL (sur.)	%	84	85	84	83	83	N/A	9496858

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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BV Labs Job #: B954316
Report Date: 2019/07/12

CLIFTON ASSOCIATES LTD.
Client Project #: C2430.1-E37
Site Location: NORTH HILL MALL
Sampler Initials: MM

SEMIVOLATILE ORGANICS BY GC-MS (GROUND WATER)

BV Labs ID		WA8840		WA8841	WA8842	WA8843		
Sampling Date		2019/07/07 09:05		2019/07/07 09:10	2019/07/07 09:30	2019/07/07 09:35		
COC Number		A112867		A112867	A112867	A112867		
	UNITS	**BH4004A**	**QC Batch**	**BH94004A**	**BH4003A**	**BH94003A**	**RDL**	**QC Batch**
Polycyclic Aromatics								
B[a]P TPE Total Potency Equivalents	mg/L	<0.000010	9496023	<0.000010	<0.000010	<0.000010	0.000010	9496140
Acenaphthene	mg/L	<0.00010	9496861	<0.00010	<0.00010	<0.00010	0.00010	9496861
Acenaphthylene	mg/L	<0.00010	9496861	<0.00010	<0.00010	<0.00010	0.00010	9496861
Acridine	mg/L	<0.000040	9496861	<0.000040	<0.000040	<0.000040	0.000040	9496861
Anthracene	mg/L	<0.000010	9496861	<0.000010	<0.000010	<0.000010	0.000010	9496861
Benzo(a)anthracene	mg/L	<0.0000085	9496861	<0.0000085	<0.0000085	<0.0000085	0.0000085	9496861
Benzo(b&j)fluoranthene	mg/L	<0.0000085	9496861	<0.0000085	<0.0000085	<0.0000085	0.0000085	9496861
Benzo(k)fluoranthene	mg/L	<0.0000085	9496861	<0.0000085	<0.0000085	<0.0000085	0.0000085	9496861
Benzo(g,h,i)perylene	mg/L	<0.0000085	9496861	<0.0000085	<0.0000085	<0.0000085	0.0000085	9496861
Benzo(c)phenanthrene	mg/L	<0.000050	9496861	<0.000050	<0.000050	<0.000050	0.000050	9496861
Benzo(a)pyrene	mg/L	<0.0000075	9496861	<0.0000075	<0.0000075	<0.0000075	0.0000075	9496861
Benzo[e]pyrene	mg/L	<0.000050	9496861	<0.000050	<0.000050	<0.000050	0.000050	9496861
Chrysene	mg/L	<0.0000085	9496861	<0.0000085	<0.0000085	<0.0000085	0.0000085	9496861
Dibenz(a,h)anthracene	mg/L	<0.0000075	9496861	<0.0000075	<0.0000075	<0.0000075	0.0000075	9496861
Fluoranthene	mg/L	<0.000010	9496861	<0.000010	<0.000010	<0.000010	0.000010	9496861
Fluorene	mg/L	<0.000050	9496861	<0.000050	<0.000050	<0.000050	0.000050	9496861
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	9496861	<0.0000085	<0.0000085	<0.0000085	0.0000085	9496861
1-Methylnaphthalene	mg/L	<0.00010	9496861	<0.00010	<0.00010	<0.00010	0.00010	9496861
2-Methylnaphthalene	mg/L	<0.00010	9496861	<0.00010	<0.00010	<0.00010	0.00010	9496861
Naphthalene	mg/L	<0.00010	9496861	<0.00010	0.013	0.012	0.00010	9496861
Phenanthrene	mg/L	<0.000050	9496861	<0.000050	<0.000050	<0.000050	0.000050	9496861
Perylene	mg/L	<0.000050	9496861	<0.000050	<0.000050	<0.000050	0.000050	9496861
Pyrene	mg/L	<0.000020	9496861	<0.000020	<0.000020	<0.000020	0.000020	9496861
Quinoline	mg/L	<0.00020	9496861	<0.00020	<0.00020	<0.00020	0.00020	9496861
Surrogate Recovery (%)								
D10-ANTHRACENE (sur.)	%	120	9496861	116	118	119	N/A	9496861
D8-ACENAPHTHYLENE (sur.)	%	110	9496861	106	105	106	N/A	9496861
D8-NAPHTHALENE (sur.)	%	94	9496861	91	88	86	N/A	9496861
TERPHENYL-D14 (sur.)	%	112	9496861	109	109	109	N/A	9496861

RDL = Reportable Detection Limit
N/A = Not Applicable

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BV Labs Job #: B954316
Report Date: 2019/07/12

CLIFTON ASSOCIATES LTD.
Client Project #: C2430.1-E37
Site Location: NORTH HILL MALL
Sampler Initials: MM

SEMIVOLATILE ORGANICS BY GC-MS (GROUND WATER)

BV Labs ID		WA8843		
Sampling Date		2019/07/07 09:35		
COC Number		A112867		
	UNITS	**BH94003A Lab-Dup**	**RDL**	**QC Batch**
Polycyclic Aromatics				
Acenaphthene	mg/L	<0.00010	0.00010	9496861
Acenaphthylene	mg/L	<0.00010	0.00010	9496861
Acridine	mg/L	<0.000040	0.000040	9496861
Anthracene	mg/L	<0.000010	0.000010	9496861
Benzo(a)anthracene	mg/L	<0.0000085	0.0000085	9496861
Benzo(b&j)fluoranthene	mg/L	<0.0000085	0.0000085	9496861
Benzo(k)fluoranthene	mg/L	<0.0000085	0.0000085	9496861
Benzo(g,h,i)perylene	mg/L	<0.0000085	0.0000085	9496861
Benzo(c)phenanthrene	mg/L	<0.000050	0.000050	9496861
Benzo(a)pyrene	mg/L	<0.0000075	0.0000075	9496861
Benzo[e]pyrene	mg/L	<0.000050	0.000050	9496861
Chrysene	mg/L	<0.0000085	0.0000085	9496861
Dibenz(a,h)anthracene	mg/L	<0.0000075	0.0000075	9496861
Fluoranthene	mg/L	<0.000010	0.000010	9496861
Fluorene	mg/L	<0.000050	0.000050	9496861
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	0.0000085	9496861
1-Methylnaphthalene	mg/L	<0.00010	0.00010	9496861
2-Methylnaphthalene	mg/L	<0.00010	0.00010	9496861
Naphthalene	mg/L	0.013	0.00010	9496861
Phenanthrene	mg/L	<0.000050	0.000050	9496861
Perylene	mg/L	<0.000050	0.000050	9496861
Pyrene	mg/L	<0.000020	0.000020	9496861
Quinoline	mg/L	<0.00020	0.00020	9496861
Surrogate Recovery (%)				
D10-ANTHRACENE (sur.)	%	119	N/A	9496861
D8-ACENAPHTHYLENE (sur.)	%	107	N/A	9496861
D8-NAPHTHALENE (sur.)	%	87	N/A	9496861
TERPHENYL-D14 (sur.)	%	107	N/A	9496861

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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BV Labs Job #: B954316
Report Date: 2019/07/12

CLIFTON ASSOCIATES LTD.
Client Project #: C2430.1-E37
Site Location: NORTH HILL MALL
Sampler Initials: MM

VOLATILE ORGANICS BY GC-MS (GROUND WATER)

BV Labs ID		WA8840	WA8841		WA8842	WA8843		
Sampling Date		2019/07/07 09:05	2019/07/07 09:10		2019/07/07 09:30	2019/07/07 09:35		
COC Number		A112867	A112867		A112867	A112867		
	UNITS	**BH4004A**	**BH94004A**	**RDL**	**BH4003A**	**BH94003A**	**RDL**	**QC Batch**
Volatiles								
Total Trihalomethanes	mg/L	<0.0013	<0.0013	0.0013	<0.0013	<0.0013	0.0013	9496142
Bromodichloromethane	mg/L	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	0.00050	9496246
Bromoform	mg/L	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	0.00050	9496246
Bromomethane	mg/L	<0.0020	<0.0020	0.0020	<0.0020	<0.0020	0.0020	9496246
Carbon tetrachloride	mg/L	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	0.00050	9496246
Chlorobenzene	mg/L	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	0.00050	9496246
Chlorodibromomethane	mg/L	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	0.0010	9496246
Chloroethane	mg/L	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	0.0010	9496246
Chloroform	mg/L	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	0.00050	9496246
Chloromethane	mg/L	<0.0020	<0.0020	0.0020	<0.0020	<0.0020	0.0020	9496246
1,2-dibromoethane	mg/L	<0.00020	<0.00020	0.00020	0.00090	0.00088	0.00020	9496246
1,2-dichlorobenzene	mg/L	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	0.00050	9496246
1,3-dichlorobenzene	mg/L	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	0.00050	9496246
1,4-dichlorobenzene	mg/L	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	0.00050	9496246
1,1-dichloroethane	mg/L	<0.00050	<0.00050	0.00050	<0.00050	0.00074 (1)	0.00050	9496246
1,2-dichloroethane	mg/L	<0.00050	<0.00050	0.00050	0.088	0.088	0.00050	9496246
1,1-dichloroethene	mg/L	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	0.00050	9496246
cis-1,2-dichloroethene	mg/L	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	0.00050	9496246
trans-1,2-dichloroethene	mg/L	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	0.00050	9496246
Dichloromethane	mg/L	<0.0020	<0.0020	0.0020	<0.0020	<0.0020	0.0020	9496246
1,2-dichloropropane	mg/L	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	0.00050	9496246
cis-1,3-dichloropropene	mg/L	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	0.00050	9496246
trans-1,3-dichloropropene	mg/L	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	0.00050	9496246
Methyl methacrylate	mg/L	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	0.00050	9496246
Methyl-tert-butylether (MTBE)	mg/L	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	0.00050	9496246
Styrene	mg/L	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	0.00050	9496246
1,1,1,2-tetrachloroethane	mg/L	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	0.0010	9496246
1,1,2,2-tetrachloroethane	mg/L	<0.0020	<0.0020	0.0020	<0.0020	<0.0020	0.0020	9496246
Tetrachloroethene	mg/L	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	0.00050	9496246
1,2,3-trichlorobenzene	mg/L	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	0.0010	9496246

RDL = Reportable Detection Limit
(1) Qualifying ion outside of acceptance criteria. Results are tentatively identified and potentially biased high.

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BV Labs Job #: B954316
Report Date: 2019/07/12

CLIFTON ASSOCIATES LTD.
Client Project #: C2430.1-E37
Site Location: NORTH HILL MALL
Sampler Initials: MM

VOLATILE ORGANICS BY GC-MS (GROUND WATER)

BV Labs ID		WA8840	WA8841		WA8842	WA8843		
Sampling Date		2019/07/07 09:05	2019/07/07 09:10		2019/07/07 09:30	2019/07/07 09:35		
COC Number		A112867	A112867		A112867	A112867		
	UNITS	**BH4004A**	**BH94004A**	**RDL**	**BH4003A**	**BH94003A**	**RDL**	**QC Batch**
1,2,4-trichlorobenzene	mg/L	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	0.0010	9496246
1,3,5-trichlorobenzene	mg/L	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	0.00050	9496246
1,1,1-trichloroethane	mg/L	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	0.00050	9496246
1,1,2-trichloroethane	mg/L	<0.00050	<0.00050	0.00050	<0.00080 (1)	<0.00080 (1)	0.00080	9496246
Trichloroethene	mg/L	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	0.00050	9496246
Trichlorofluoromethane	mg/L	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	0.00050	9496246
1,2,4-trimethylbenzene	mg/L	<0.00050	<0.00050	0.00050	0.025	0.027	0.00050	9496246
1,3,5-trimethylbenzene	mg/L	<0.00050	<0.00050	0.00050	0.0045	0.0050	0.00050	9496246
Vinyl chloride	mg/L	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	0.00050	9496246
Surrogate Recovery (%)								
1,4-Difluorobenzene (sur.)	%	104	105	N/A	104	104	N/A	9496246
4-Bromofluorobenzene (sur.)	%	89	90	N/A	91	90	N/A	9496246
D4-1,2-Dichloroethane (sur.)	%	111	112	N/A	119	104	N/A	9496246

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Detection limits raised due to matrix interference.

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BV Labs Job #: B954316
Report Date: 2019/07/12

CLIFTON ASSOCIATES LTD.
Client Project #: C2430.1-E37
Site Location: NORTH HILL MALL
Sampler Initials: MM

VOLATILE ORGANICS BY GC-MS (GROUND WATER)

BV Labs ID		WA8844		
Sampling Date		2019/07/07		
COC Number		A112867		
	UNITS	**TRIP BLANK 7**	**RDL**	**QC Batch**
Volatiles				
Total Trihalomethanes	mg/L	<0.0013	0.0013	9496142
Benzene	mg/L	<0.00040	0.00040	9496246
Bromodichloromethane	mg/L	<0.00050	0.00050	9496246
Bromoform	mg/L	<0.00050	0.00050	9496246
Bromomethane	mg/L	<0.0020	0.0020	9496246
Carbon tetrachloride	mg/L	<0.00050	0.00050	9496246
Chlorobenzene	mg/L	<0.00050	0.00050	9496246
Chlorodibromomethane	mg/L	<0.0010	0.0010	9496246
Chloroethane	mg/L	<0.0010	0.0010	9496246
Chloroform	mg/L	<0.00050	0.00050	9496246
Chloromethane	mg/L	<0.0020	0.0020	9496246
1,2-dibromoethane	mg/L	<0.00020	0.00020	9496246
1,2-dichlorobenzene	mg/L	<0.00050	0.00050	9496246
1,3-dichlorobenzene	mg/L	<0.00050	0.00050	9496246
1,4-dichlorobenzene	mg/L	<0.00050	0.00050	9496246
1,1-dichloroethane	mg/L	<0.00050	0.00050	9496246
1,2-dichloroethane	mg/L	<0.00050	0.00050	9496246
1,1-dichloroethene	mg/L	<0.00050	0.00050	9496246
cis-1,2-dichloroethene	mg/L	<0.00050	0.00050	9496246
trans-1,2-dichloroethene	mg/L	<0.00050	0.00050	9496246
Dichloromethane	mg/L	<0.0020	0.0020	9496246
1,2-dichloropropane	mg/L	<0.00050	0.00050	9496246
cis-1,3-dichloropropene	mg/L	<0.00050	0.00050	9496246
trans-1,3-dichloropropene	mg/L	<0.00050	0.00050	9496246
Ethylbenzene	mg/L	<0.00040	0.00040	9496246
Methyl methacrylate	mg/L	<0.00050	0.00050	9496246
Methyl-tert-butylether (MTBE)	mg/L	<0.00050	0.00050	9496246
Styrene	mg/L	<0.00050	0.00050	9496246
1,1,1,2-tetrachloroethane	mg/L	<0.0010	0.0010	9496246
1,1,2,2-tetrachloroethane	mg/L	<0.0020	0.0020	9496246
RDL = Reportable Detection Limit				

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B954316
Report Date: 2019/07/12

CLIFTON ASSOCIATES LTD.
Client Project #: C2430.1-E37
Site Location: NORTH HILL MALL
Sampler Initials: MM

VOLATILE ORGANICS BY GC-MS (GROUND WATER)

BV Labs ID		WA8844		
Sampling Date		2019/07/07		
COC Number		A112867		
	UNITS	**TRIP BLANK 7**	**RDL**	**QC Batch**
Tetrachloroethene	mg/L	<0.00050	0.00050	9496246
Toluene	mg/L	<0.00040	0.00040	9496246
1,2,3-trichlorobenzene	mg/L	<0.0010	0.0010	9496246
1,2,4-trichlorobenzene	mg/L	<0.0010	0.0010	9496246
1,3,5-trichlorobenzene	mg/L	<0.00050	0.00050	9496246
1,1,1-trichloroethane	mg/L	<0.00050	0.00050	9496246
1,1,2-trichloroethane	mg/L	<0.00050	0.00050	9496246
Trichloroethene	mg/L	<0.00050	0.00050	9496246
Trichlorofluoromethane	mg/L	<0.00050	0.00050	9496246
1,2,4-trimethylbenzene	mg/L	<0.00050	0.00050	9496246
1,3,5-trimethylbenzene	mg/L	<0.00050	0.00050	9496246
Vinyl chloride	mg/L	<0.00050	0.00050	9496246
Xylenes (Total)	mg/L	<0.00080	0.00080	9496246
m & p-Xylene	mg/L	<0.00080	0.00080	9496246
o-Xylene	mg/L	<0.00040	0.00040	9496246
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	103	N/A	9496246
4-Bromofluorobenzene (sur.)	%	90	N/A	9496246
D4-1,2-Dichloroethane (sur.)	%	110	N/A	9496246

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B954316
Report Date: 2019/07/12

CLIFTON ASSOCIATES LTD.
Client Project #: C2430.1-E37
Site Location: NORTH HILL MALL
Sampler Initials: MM

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	7.3°C

Results relate only to the items tested.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B954316
Report Date: 2019/07/12

CLIFTON ASSOCIATES LTD.
Client Project #: C2430.1-E37
Site Location: NORTH HILL MALL
Sampler Initials: MM

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9496246	QW1	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/07/09		104	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/09		89	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/09		103	%	50 - 140
			Benzene	2019/07/09		101	%	50 - 140
			Bromodichloromethane	2019/07/09		114	%	50 - 140
			Bromoform	2019/07/09		122	%	50 - 140
			Bromomethane	2019/07/09		102	%	50 - 140
			Carbon tetrachloride	2019/07/09		119	%	50 - 140
			Chlorobenzene	2019/07/09		108	%	50 - 140
			Chlorodibromomethane	2019/07/09		117	%	50 - 140
			Chloroethane	2019/07/09		92	%	50 - 140
			Chloroform	2019/07/09		109	%	50 - 140
			Chloromethane	2019/07/09		79	%	50 - 140
			1,2-dibromoethane	2019/07/09		110	%	50 - 140
			1,2-dichlorobenzene	2019/07/09		102	%	50 - 140
			1,3-dichlorobenzene	2019/07/09		102	%	50 - 140
			1,4-dichlorobenzene	2019/07/09		99	%	50 - 140
			1,1-dichloroethane	2019/07/09		99	%	50 - 140
			1,2-dichloroethane	2019/07/09		115	%	50 - 140
			1,1-dichloroethene	2019/07/09		101	%	50 - 140
			cis-1,2-dichloroethene	2019/07/09		107	%	50 - 140
			trans-1,2-dichloroethene	2019/07/09		105	%	50 - 140
			Dichloromethane	2019/07/09		95	%	50 - 140
			1,2-dichloropropane	2019/07/09		97	%	50 - 140
			cis-1,3-dichloropropene	2019/07/09		117	%	50 - 140
			trans-1,3-dichloropropene	2019/07/09		121	%	50 - 140
			Ethylbenzene	2019/07/09		107	%	50 - 140
			Methyl methacrylate	2019/07/09		105	%	50 - 140
			Methyl-tert-butylether (MTBE)	2019/07/09		102	%	50 - 140
			Styrene	2019/07/09		110	%	50 - 140
			1,1,1,2-tetrachloroethane	2019/07/09		112	%	50 - 140
			1,1,2,2-tetrachloroethane	2019/07/09		104	%	50 - 140
			Tetrachloroethene	2019/07/09		112	%	50 - 140
			Toluene	2019/07/09		101	%	50 - 140
			1,2,3-trichlorobenzene	2019/07/09		104	%	50 - 140
			1,2,4-trichlorobenzene	2019/07/09		104	%	50 - 140
			1,3,5-trichlorobenzene	2019/07/09		102	%	50 - 140
			1,1,1-trichloroethane	2019/07/09		113	%	50 - 140
			1,1,2-trichloroethane	2019/07/09		110	%	50 - 140
			Trichloroethene	2019/07/09		111	%	50 - 140
			Trichlorofluoromethane	2019/07/09		111	%	50 - 140
			1,2,4-trimethylbenzene	2019/07/09		95	%	50 - 140
			1,3,5-trimethylbenzene	2019/07/09		96	%	50 - 140
			Vinyl chloride	2019/07/09		89	%	50 - 140
			m & p-Xylene	2019/07/09		110	%	50 - 140
			o-Xylene	2019/07/09		108	%	50 - 140
9496246	QW1	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/07/09		104	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/09		88	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/09		106	%	50 - 140
			Benzene	2019/07/09		102	%	60 - 130
			Bromodichloromethane	2019/07/09		116	%	60 - 130
			Bromoform	2019/07/09		127	%	60 - 130
			Bromomethane	2019/07/09		105	%	60 - 130

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BV Labs Job #: B954316
Report Date: 2019/07/12

CLIFTON ASSOCIATES LTD.
Client Project #: C2430.1-E37
Site Location: NORTH HILL MALL
Sampler Initials: MM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Carbon tetrachloride	2019/07/09		119	%	60 - 130
			Chlorobenzene	2019/07/09		110	%	60 - 130
			Chlorodibromomethane	2019/07/09		120	%	60 - 130
			Chloroethane	2019/07/09		93	%	60 - 130
			Chloroform	2019/07/09		110	%	60 - 130
			Chloromethane	2019/07/09		82	%	60 - 130
			1,2-dibromoethane	2019/07/09		114	%	60 - 130
			1,2-dichlorobenzene	2019/07/09		103	%	60 - 130
			1,3-dichlorobenzene	2019/07/09		103	%	60 - 130
			1,4-dichlorobenzene	2019/07/09		101	%	60 - 130
			1,1-dichloroethane	2019/07/09		99	%	60 - 130
			1,2-dichloroethane	2019/07/09		118	%	60 - 130
			1,1-dichloroethene	2019/07/09		100	%	60 - 130
			cis-1,2-dichloroethene	2019/07/09		108	%	60 - 130
			trans-1,2-dichloroethene	2019/07/09		105	%	60 - 130
			Dichloromethane	2019/07/09		98	%	60 - 130
			1,2-dichloropropane	2019/07/09		98	%	60 - 130
			cis-1,3-dichloropropene	2019/07/09		121	%	60 - 130
			trans-1,3-dichloropropene	2019/07/09		122	%	60 - 130
			Ethylbenzene	2019/07/09		107	%	60 - 130
			Methyl methacrylate	2019/07/09		110	%	60 - 130
			Methyl-tert-butylether (MTBE)	2019/07/09		103	%	60 - 130
			Styrene	2019/07/09		111	%	60 - 130
			1,1,1,2-tetrachloroethane	2019/07/09		113	%	60 - 130
			1,1,2,2-tetrachloroethane	2019/07/09		108	%	60 - 130
			Tetrachloroethene	2019/07/09		112	%	60 - 130
			Toluene	2019/07/09		102	%	60 - 130
			1,2,3-trichlorobenzene	2019/07/09		106	%	60 - 130
			1,2,4-trichlorobenzene	2019/07/09		105	%	60 - 130
			1,3,5-trichlorobenzene	2019/07/09		103	%	60 - 130
			1,1,1-trichloroethane	2019/07/09		114	%	60 - 130
			1,1,2-trichloroethane	2019/07/09		113	%	60 - 130
			Trichloroethene	2019/07/09		115	%	60 - 130
			Trichlorofluoromethane	2019/07/09		110	%	60 - 130
			1,2,4-trimethylbenzene	2019/07/09		96	%	60 - 130
			1,3,5-trimethylbenzene	2019/07/09		95	%	60 - 130
			Vinyl chloride	2019/07/09		92	%	60 - 130
			m & p-Xylene	2019/07/09		110	%	60 - 130
			o-Xylene	2019/07/09		108	%	60 - 130
9496246	QW1	Method Blank	1,4-Difluorobenzene (sur.)	2019/07/09		104	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/09		91	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/09		111	%	50 - 140
			Benzene	2019/07/09	<0.00040		mg/L	
			Bromodichloromethane	2019/07/09	<0.00050		mg/L	
			Bromoform	2019/07/09	<0.00050		mg/L	
			Bromomethane	2019/07/09	<0.0020		mg/L	
			Carbon tetrachloride	2019/07/09	<0.00050		mg/L	
			Chlorobenzene	2019/07/09	<0.00050		mg/L	
			Chlorodibromomethane	2019/07/09	<0.0010		mg/L	
			Chloroethane	2019/07/09	<0.0010		mg/L	
			Chloroform	2019/07/09	<0.00050		mg/L	
			Chloromethane	2019/07/09	<0.0020		mg/L	
			1,2-dibromoethane	2019/07/09	<0.00020		mg/L	

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BV Labs Job #: B954316
Report Date: 2019/07/12

CLIFTON ASSOCIATES LTD.
Client Project #: C2430.1-E37
Site Location: NORTH HILL MALL
Sampler Initials: MM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,2-dichlorobenzene	2019/07/09	<0.00050		mg/L	
			1,3-dichlorobenzene	2019/07/09	<0.00050		mg/L	
			1,4-dichlorobenzene	2019/07/09	<0.00050		mg/L	
			1,1-dichloroethane	2019/07/09	<0.00050		mg/L	
			1,2-dichloroethane	2019/07/09	<0.00050		mg/L	
			1,1-dichloroethene	2019/07/09	<0.00050		mg/L	
			cis-1,2-dichloroethene	2019/07/09	<0.00050		mg/L	
			trans-1,2-dichloroethene	2019/07/09	<0.00050		mg/L	
			Dichloromethane	2019/07/09	<0.0020		mg/L	
			1,2-dichloropropane	2019/07/09	<0.00050		mg/L	
			cis-1,3-dichloropropene	2019/07/09	<0.00050		mg/L	
			trans-1,3-dichloropropene	2019/07/09	<0.00050		mg/L	
			Ethylbenzene	2019/07/09	<0.00040		mg/L	
			Methyl methacrylate	2019/07/09	<0.00050		mg/L	
			Methyl-tert-butylether (MTBE)	2019/07/09	<0.00050		mg/L	
			Styrene	2019/07/09	<0.00050		mg/L	
			1,1,1,2-tetrachloroethane	2019/07/09	<0.0010		mg/L	
			1,1,2,2-tetrachloroethane	2019/07/09	<0.0020		mg/L	
			Tetrachloroethene	2019/07/09	<0.00050		mg/L	
			Toluene	2019/07/09	<0.00040		mg/L	
			1,2,3-trichlorobenzene	2019/07/09	<0.0010		mg/L	
			1,2,4-trichlorobenzene	2019/07/09	<0.0010		mg/L	
			1,3,5-trichlorobenzene	2019/07/09	<0.00050		mg/L	
			1,1,1-trichloroethane	2019/07/09	<0.00050		mg/L	
			1,1,2-trichloroethane	2019/07/09	<0.00050		mg/L	
			Trichloroethene	2019/07/09	<0.00050		mg/L	
			Trichlorofluoromethane	2019/07/09	<0.00050		mg/L	
			1,2,4-trimethylbenzene	2019/07/09	<0.00050		mg/L	
			1,3,5-trimethylbenzene	2019/07/09	<0.00050		mg/L	
			Vinyl chloride	2019/07/09	<0.00050		mg/L	
			Xylenes (Total)	2019/07/09	<0.00080		mg/L	
			m & p-Xylene	2019/07/09	<0.00080		mg/L	
			o-Xylene	2019/07/09	<0.00040		mg/L	
9496246	QW1	RPD	Benzene	2019/07/09	NC		%	30
			Bromodichloromethane	2019/07/09	NC		%	30
			Bromoform	2019/07/09	NC		%	30
			Bromomethane	2019/07/09	NC		%	30
			Carbon tetrachloride	2019/07/09	NC		%	30
			Chlorobenzene	2019/07/09	NC		%	30
			Chlorodibromomethane	2019/07/09	NC		%	30
			Chloroethane	2019/07/09	NC		%	30
			Chloroform	2019/07/09	NC		%	30
			Chloromethane	2019/07/09	NC		%	30
			1,2-dibromoethane	2019/07/09	NC		%	30
			1,2-dichlorobenzene	2019/07/09	NC		%	30
			1,3-dichlorobenzene	2019/07/09	NC		%	30
			1,4-dichlorobenzene	2019/07/09	NC		%	30
			1,1-dichloroethane	2019/07/09	0.80		%	30
			1,2-dichloroethane	2019/07/09	NC		%	30
			1,1-dichloroethene	2019/07/09	0.73		%	30
			cis-1,2-dichloroethene	2019/07/09	NC		%	30
			trans-1,2-dichloroethene	2019/07/09	NC		%	30
			Dichloromethane	2019/07/09	NC		%	30

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BV Labs Job #: B954316
Report Date: 2019/07/12

CLIFTON ASSOCIATES LTD.
Client Project #: C2430.1-E37
Site Location: NORTH HILL MALL
Sampler Initials: MM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,2-dichloropropane	2019/07/09	NC		%	30
			cis-1,3-dichloropropene	2019/07/09	NC		%	30
			trans-1,3-dichloropropene	2019/07/09	NC		%	30
			Ethylbenzene	2019/07/09	NC		%	30
			Methyl methacrylate	2019/07/09	NC		%	30
			Methyl-tert-butylether (MTBE)	2019/07/09	NC		%	30
			Styrene	2019/07/09	NC		%	30
			1,1,1,2-tetrachloroethane	2019/07/09	NC		%	30
			1,1,2,2-tetrachloroethane	2019/07/09	NC		%	30
			Tetrachloroethene	2019/07/09	NC		%	30
			Toluene	2019/07/09	NC		%	30
			1,2,3-trichlorobenzene	2019/07/09	NC		%	30
			1,2,4-trichlorobenzene	2019/07/09	NC		%	30
			1,3,5-trichlorobenzene	2019/07/09	NC		%	30
			1,1,1-trichloroethane	2019/07/09	1.8		%	30
			1,1,2-trichloroethane	2019/07/09	NC		%	30
			Trichloroethene	2019/07/09	NC		%	30
			Trichlorofluoromethane	2019/07/09	NC		%	30
			1,2,4-trimethylbenzene	2019/07/09	NC		%	30
			1,3,5-trimethylbenzene	2019/07/09	NC		%	30
			Vinyl chloride	2019/07/09	NC		%	30
			Xylenes (Total)	2019/07/09	NC		%	30
			m & p-Xylene	2019/07/09	NC		%	30
			o-Xylene	2019/07/09	NC		%	30
9496858	VP4	Matrix Spike	O-TERPHENYL (sur.)	2019/07/09		81	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/07/09		98	%	60 - 140
9496858	VP4	Spiked Blank	O-TERPHENYL (sur.)	2019/07/09		87	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/07/09		100	%	60 - 140
9496858	VP4	Method Blank	O-TERPHENYL (sur.)	2019/07/09		82	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/07/09	<0.10		mg/L	
9496858	VP4	RPD [WA8843-01]	F2 (C10-C16 Hydrocarbons)	2019/07/09	0.85		%	30
9496861	NK3	Matrix Spike	D10-ANTHRACENE (sur.)	2019/07/11		120	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/07/11		109	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/07/11		92	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/07/11		115	%	50 - 130
			Acenaphthene	2019/07/11		95	%	50 - 130
			Acenaphthylene	2019/07/11		100	%	50 - 130
			Acridine	2019/07/11		97	%	50 - 130
			Anthracene	2019/07/11		95	%	50 - 130
			Benzo(a)anthracene	2019/07/11		99	%	50 - 130
			Benzo(b&j)fluoranthene	2019/07/11		90	%	50 - 130
			Benzo(k)fluoranthene	2019/07/11		95	%	50 - 130
			Benzo(g,h,i)perylene	2019/07/11		88	%	50 - 130
			Benzo(c)phenanthrene	2019/07/11		104	%	50 - 130
			Benzo(a)pyrene	2019/07/11		97	%	50 - 130
			Benzo[e]pyrene	2019/07/11		93	%	50 - 130
			Chrysene	2019/07/11		96	%	50 - 130
			Dibenz(a,h)anthracene	2019/07/11		90	%	50 - 130
			Fluoranthene	2019/07/11		92	%	50 - 130
			Fluorene	2019/07/11		99	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/07/11		85	%	50 - 130
			1-Methylnaphthalene	2019/07/11		99	%	50 - 130
			2-Methylnaphthalene	2019/07/11		91	%	50 - 130

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BV Labs Job #: B954316
Report Date: 2019/07/12

CLIFTON ASSOCIATES LTD.
Client Project #: C2430.1-E37
Site Location: NORTH HILL MALL
Sampler Initials: MM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Naphthalene	2019/07/11		97	%	50 - 130
			Phenanthrene	2019/07/11		96	%	50 - 130
			Perylene	2019/07/11		90	%	50 - 130
			Pyrene	2019/07/11		93	%	50 - 130
			Quinoline	2019/07/11		101	%	50 - 130
9496861	NK3	Spiked Blank	D10-ANTHRACENE (sur.)	2019/07/11		112	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/07/11		102	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/07/11		85	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/07/11		108	%	50 - 130
			Acenaphthene	2019/07/11		84	%	50 - 130
			Acenaphthylene	2019/07/11		88	%	50 - 130
			Acridine	2019/07/11		85	%	50 - 130
			Anthracene	2019/07/11		86	%	50 - 130
			Benzo(a)anthracene	2019/07/11		98	%	50 - 130
			Benzo(b&j)fluoranthene	2019/07/11		92	%	50 - 130
			Benzo(k)fluoranthene	2019/07/11		101	%	50 - 130
			Benzo(g,h,i)perylene	2019/07/11		88	%	50 - 130
			Benzo(c)phenanthrene	2019/07/11		99	%	50 - 130
			Benzo(a)pyrene	2019/07/11		97	%	50 - 130
			Benzo[e]pyrene	2019/07/11		93	%	50 - 130
			Chrysene	2019/07/11		96	%	50 - 130
			Dibenz(a,h)anthracene	2019/07/11		90	%	50 - 130
			Fluoranthene	2019/07/11		84	%	50 - 130
			Fluorene	2019/07/11		87	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/07/11		86	%	50 - 130
			1-Methylnaphthalene	2019/07/11		86	%	50 - 130
			2-Methylnaphthalene	2019/07/11		80	%	50 - 130
			Naphthalene	2019/07/11		83	%	50 - 130
			Phenanthrene	2019/07/11		85	%	50 - 130
			Perylene	2019/07/11		90	%	50 - 130
			Pyrene	2019/07/11		86	%	50 - 130
			Quinoline	2019/07/11		95	%	50 - 130
9496861	NK3	Method Blank	D10-ANTHRACENE (sur.)	2019/07/11		125	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/07/11		111	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/07/11		88	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/07/11		116	%	50 - 130
			Acenaphthene	2019/07/11	<0.00010		mg/L	
			Acenaphthylene	2019/07/11	<0.00010		mg/L	
			Acridine	2019/07/11	<0.000040		mg/L	
			Anthracene	2019/07/11	<0.000010		mg/L	
			Benzo(a)anthracene	2019/07/11	<0.0000085		mg/L	
			Benzo(b&j)fluoranthene	2019/07/11	<0.0000085		mg/L	
			Benzo(k)fluoranthene	2019/07/11	<0.0000085		mg/L	
			Benzo(g,h,i)perylene	2019/07/11	<0.0000085		mg/L	
			Benzo(c)phenanthrene	2019/07/11	<0.000050		mg/L	
			Benzo(a)pyrene	2019/07/11	<0.0000075		mg/L	
			Benzo[e]pyrene	2019/07/11	<0.000050		mg/L	
			Chrysene	2019/07/11	<0.0000085		mg/L	
			Dibenz(a,h)anthracene	2019/07/11	<0.0000075		mg/L	
			Fluoranthene	2019/07/11	<0.000010		mg/L	
			Fluorene	2019/07/11	<0.000050		mg/L	
			Indeno(1,2,3-cd)pyrene	2019/07/11	<0.0000085		mg/L	
			1-Methylnaphthalene	2019/07/11	<0.00010		mg/L	

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BV Labs Job #: B954316
Report Date: 2019/07/12

CLIFTON ASSOCIATES LTD.
Client Project #: C2430.1-E37
Site Location: NORTH HILL MALL
Sampler Initials: MM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			2-Methylnaphthalene	2019/07/11	<0.00010		mg/L	
			Naphthalene	2019/07/11	<0.00010		mg/L	
			Phenanthrene	2019/07/11	<0.000050		mg/L	
			Perylene	2019/07/11	<0.000050		mg/L	
			Pyrene	2019/07/11	<0.000020		mg/L	
			Quinoline	2019/07/11	<0.00020		mg/L	
9496861	NK3	RPD [WA8843-01]	Acenaphthene	2019/07/11	NC		%	30
			Acenaphthylene	2019/07/11	NC		%	30
			Acridine	2019/07/11	NC		%	30
			Anthracene	2019/07/11	NC		%	30
			Benzo(a)anthracene	2019/07/11	NC		%	30
			Benzo(b&j)fluoranthene	2019/07/11	NC		%	30
			Benzo(k)fluoranthene	2019/07/11	NC		%	30
			Benzo(g,h,i)perylene	2019/07/11	NC		%	30
			Benzo(c)phenanthrene	2019/07/11	NC		%	30
			Benzo(a)pyrene	2019/07/11	NC		%	30
			Benzo[e]pyrene	2019/07/11	NC		%	30
			Chrysene	2019/07/11	NC		%	30
			Dibenz(a,h)anthracene	2019/07/11	NC		%	30
			Fluoranthene	2019/07/11	NC		%	30
			Fluorene	2019/07/11	NC		%	30
			Indeno(1,2,3-cd)pyrene	2019/07/11	NC		%	30
			1-Methylnaphthalene	2019/07/11	NC		%	30
			2-Methylnaphthalene	2019/07/11	NC		%	30
			Naphthalene	2019/07/11	12		%	30
			Phenanthrene	2019/07/11	NC		%	30
			Perylene	2019/07/11	NC		%	30
			Pyrene	2019/07/11	NC		%	30
			Quinoline	2019/07/11	NC		%	30
9497125	DO1	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/07/08		97	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/08		104	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/08		98	%	50 - 140
			Benzene	2019/07/08		91	%	50 - 140
			Toluene	2019/07/08		92	%	50 - 140
			Ethylbenzene	2019/07/08		93	%	50 - 140
			m & p-Xylene	2019/07/08		96	%	50 - 140
			o-Xylene	2019/07/08		95	%	50 - 140
			F1 (C6-C10)	2019/07/08		95	%	60 - 140
9497125	DO1	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/07/08		99	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/08		103	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/08		96	%	50 - 140
			Benzene	2019/07/08		91	%	60 - 130
			Toluene	2019/07/08		93	%	60 - 130
			Ethylbenzene	2019/07/08		96	%	60 - 130
			m & p-Xylene	2019/07/08		98	%	60 - 130
			o-Xylene	2019/07/08		97	%	60 - 130
			F1 (C6-C10)	2019/07/08		97	%	60 - 140
9497125	DO1	Method Blank	1,4-Difluorobenzene (sur.)	2019/07/08		98	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/08		100	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/08		103	%	50 - 140
			Benzene	2019/07/08	<0.00040		mg/L	
			Toluene	2019/07/08	<0.00040		mg/L	
			Ethylbenzene	2019/07/08	<0.00040		mg/L	

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B954316
Report Date: 2019/07/12

CLIFTON ASSOCIATES LTD.
Client Project #: C2430.1-E37
Site Location: NORTH HILL MALL
Sampler Initials: MM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			m & p-Xylene	2019/07/08	<0.00080		mg/L	
			o-Xylene	2019/07/08	<0.00040		mg/L	
			F1 (C6-C10)	2019/07/08	<0.10		mg/L	
9497125	DO1	RPD	Benzene	2019/07/08	NC		%	30
			Toluene	2019/07/08	NC		%	30
			Ethylbenzene	2019/07/08	NC		%	30
			m & p-Xylene	2019/07/08	NC		%	30
			o-Xylene	2019/07/08	NC		%	30
			F1 (C6-C10)	2019/07/08	NC		%	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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NOTIFICATION LOG

No Reportable Regulation Exceedences Noted.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B954316
Report Date: 2019/07/12

CLIFTON ASSOCIATES LTD.
Client Project #: C2430.1-E37
Site Location: NORTH HILL MALL
Sampler Initials: MM

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Dennis Ngondu, B.Sc., P.Chem., QP, Supervisor, Organics

Gita Pokhrel, Senior Analyst

Jingyuan Song, QP, Organics – Senior Analyst

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

Maxxam

Calgary: 4000 19st St. NE, T2E 6P8. Ph: (403) 291-3077, Fax: (403) 735-2240, Toll free: (800) 386-7247 227

Edmonton: 9331 - 46 Street, T6B 2R4. Ph: (780) 577-7100, Fax: (780) 450-4187, Toll free: (877) 465-8889

www.maxxamanalytics.com

Chain of Custody

A112867

Page: 1 of 1

	Invoice To: C/O Report Address ☐	Report To: Same as Invoice ☑	Report Distribution (E-Mail):
Company:	Clifton		matthew_foulkes@clifton.ca
Contact:	Matthew Folkes		
Address:	2222 30 Ave NE		
	Prov: CALGARY AB	Prov: PC:	
Contact #s:	Ph: (403) 808-6410 Cell:	Ph: Cell:	

REGULATORY GUIDELINES:
- ☒ AT1
- ☐ CCME
- ☐ Regulated Drinking Water
- ☐ Other:

All samples are held for 60 calendar days after sample receipt, unless specified otherwise.

PO #:
Project # / Name: CG2430.1 -E37
Site Location: NorthHill Mall
Quote #:
Sampled By: MM.

SERVICE REQUESTED: ☐ RUSH (Contact lab to reserve) Date Required: ☑ REGULAR (5 to 7 Days)

See reverse for package specifics

	Sample ID	Depth (unit)	Matrix GW / SW Soil	Date/Time Sampled YY/MM/DD 24:00	SOIL: BTEX F1-F4	Sieve (75 micron)	Regulated Metals (CCME / AT1)	Salinity 4	Assessment ICP Metals	Basic Class II Landfill	WATER: ☒ BTEX F1 ☐ VOCs	☒ BTEX F1-F2 ☐ BTEX F1-F4	☐ Routine Water ☐ Turb ☐ F	☐ TOC ☐ DOC	Regulated Metals (CCME / AT1) Total	Dissolved	Mercury ☐ Total ☐ Dissolved	Other Analysis: PAH.	VOCs	HOLD - Do not Analyze	# of Containers Submitted
1	BH4004A		GW	19/07/07 9:05							X	X						X			7
2	BH94004A		GW	19/07/07 9:10							X	X						X			4
3	BH4003A		GW	19/07/07 9:30							X	X						X			7
4	BH94003A		GW	19/07/19 9:35							X	X						X			4
5	Trip Blank 7		GW.	19/07/19															X		1
6																					
7																					
8																					
9																					
10																					
11																					
12																					

Please indicate Filtered, Preserved or Both (F, P, F/P) → F/P

Relinquished By (Signature/Print):	Date (YY/MM/DD):	Time (24:00):
Melanie Maloney	2019/07/07	11:57
Relinquished By (Signature/Print):	Date (YY/MM/DD):	Time (24:00):

Special Instructions:

# of Jars Used & Not Submitted

LAB USE ONLY

Received By:	Date:	Time:	Maxxam Job #: B954316
Jenine McIntyre	2019/07/07	11:58	
JENINE MCINTYRE			

Lab Comments:

Custody Seal	Temperature	Ice
N	9,5,8	Y

AB FCD-00331 Rev3 2010/05

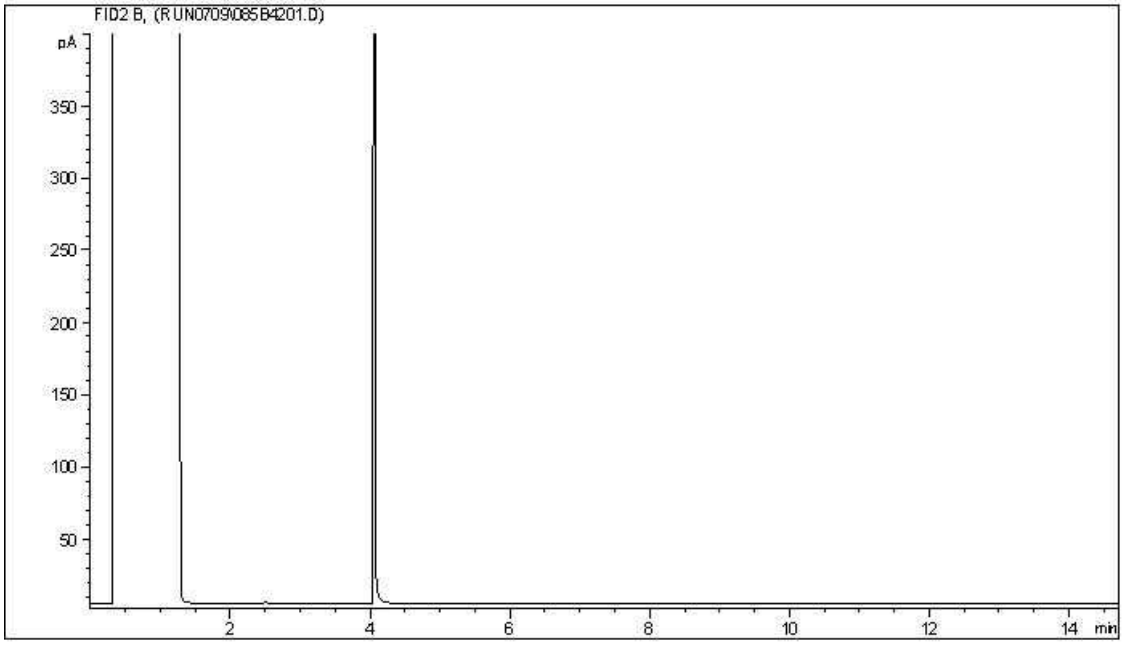
Maxxam Analytics International Corporation o/a Maxxam Analytics

BV Labs Job #: B954316
Report Date: 2019/07/12
BV Labs Sample: WA8840

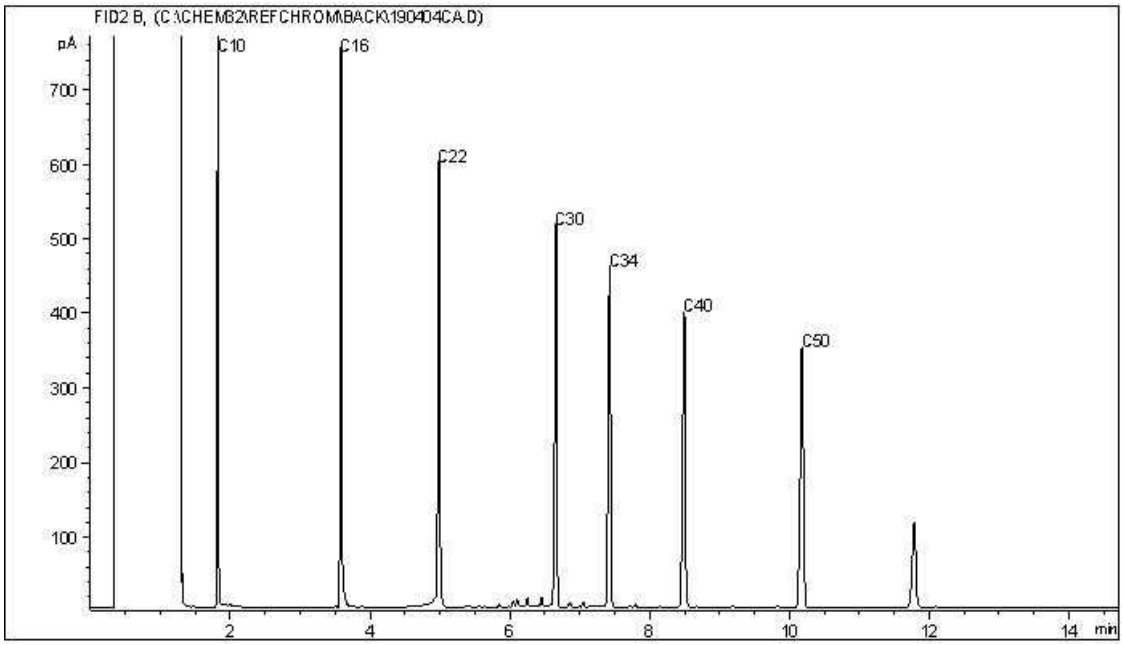
CLIFTON ASSOCIATES LTD.
Client Project #: C2430.1-E37
Site Reference: NORTH HILL MALL
Client ID: BH4004A

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC7



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

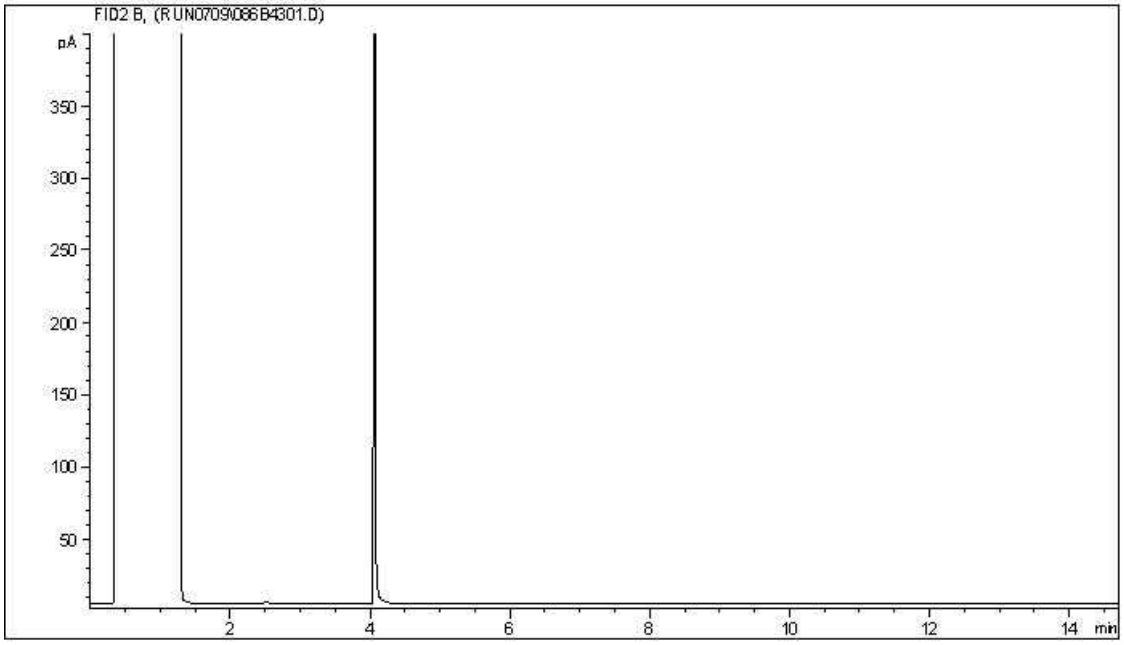
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B954316
Report Date: 2019/07/12
BV Labs Sample: WA8841

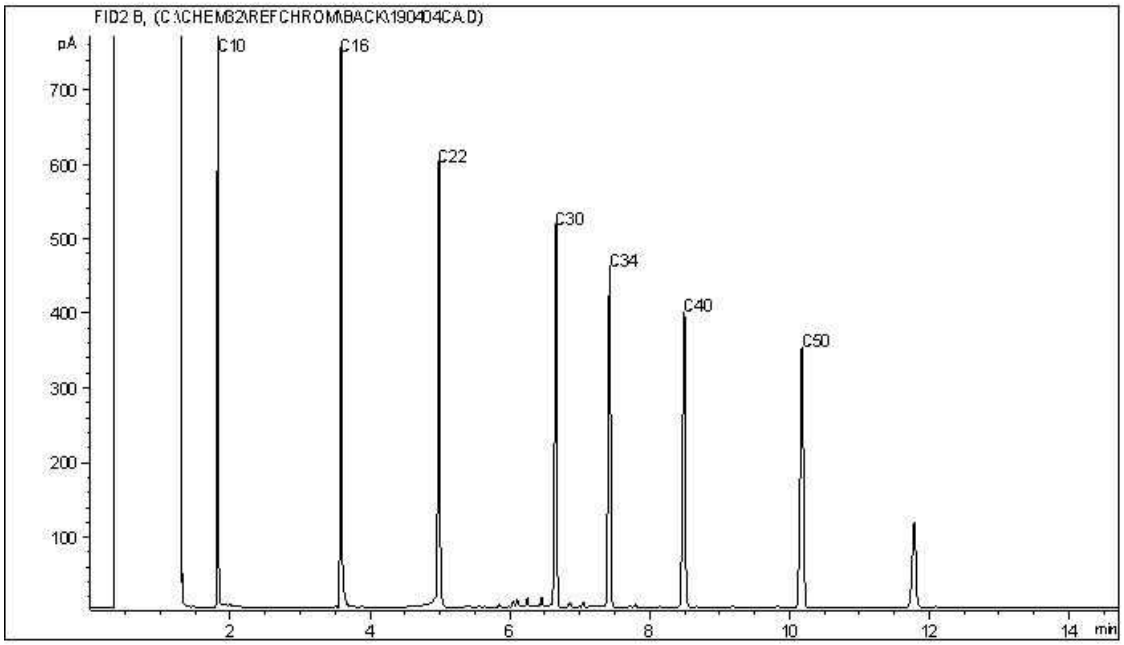
CLIFTON ASSOCIATES LTD.
Client Project #: C2430.1-E37
Site Reference: NORTH HILL MALL
Client ID: BH94004A

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC7



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

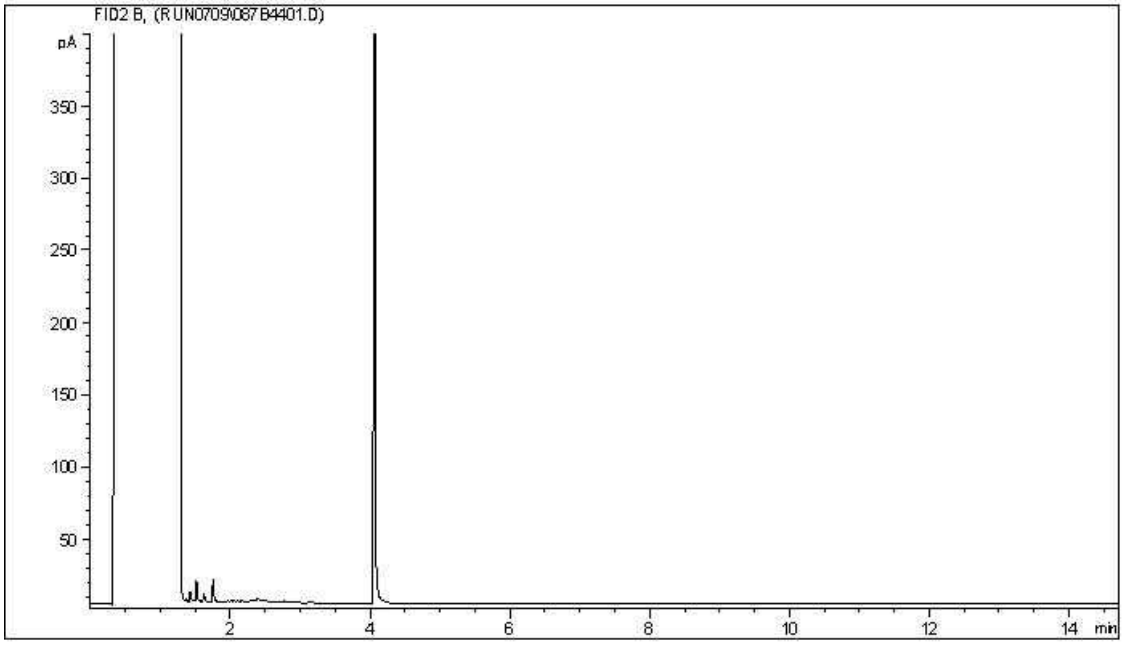
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B954316
Report Date: 2019/07/12
BV Labs Sample: WA8842

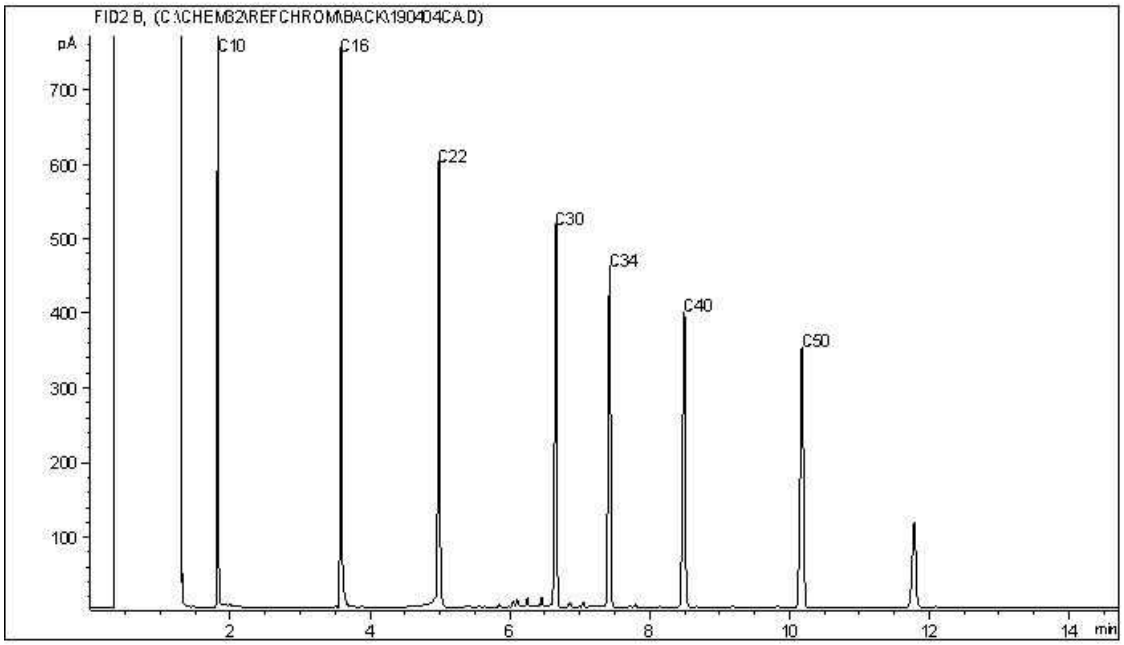
CLIFTON ASSOCIATES LTD.
Client Project #: C2430.1-E37
Site Reference: NORTH HILL MALL
Client ID: BH4003A

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC7



Carbon Range Distribution - Reference Chromatogram



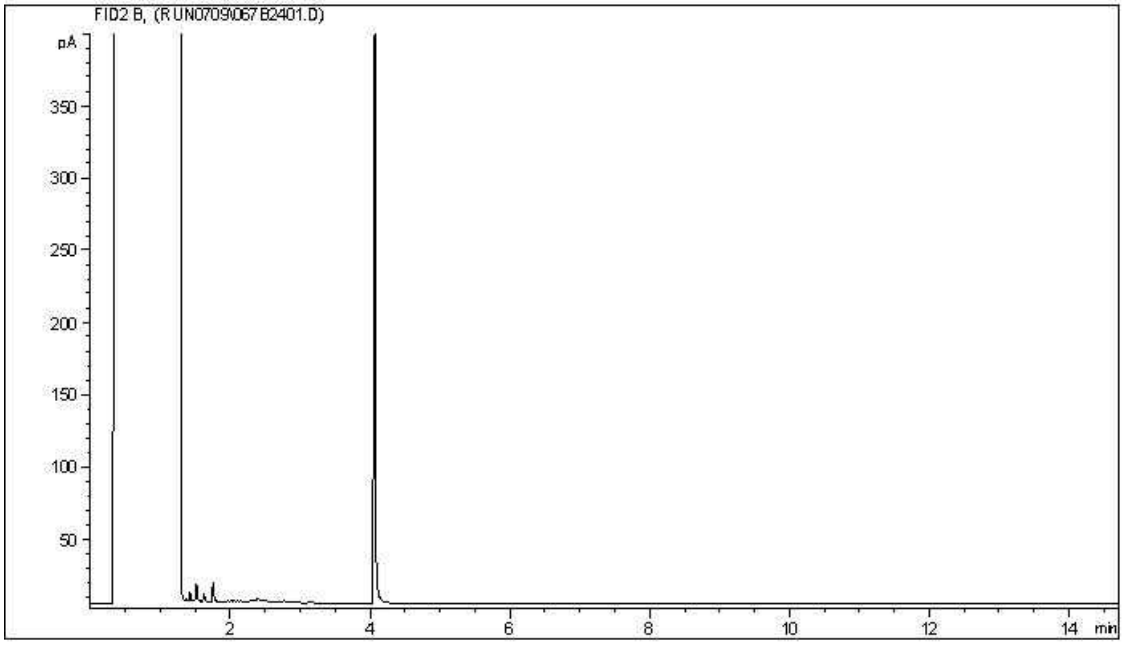
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

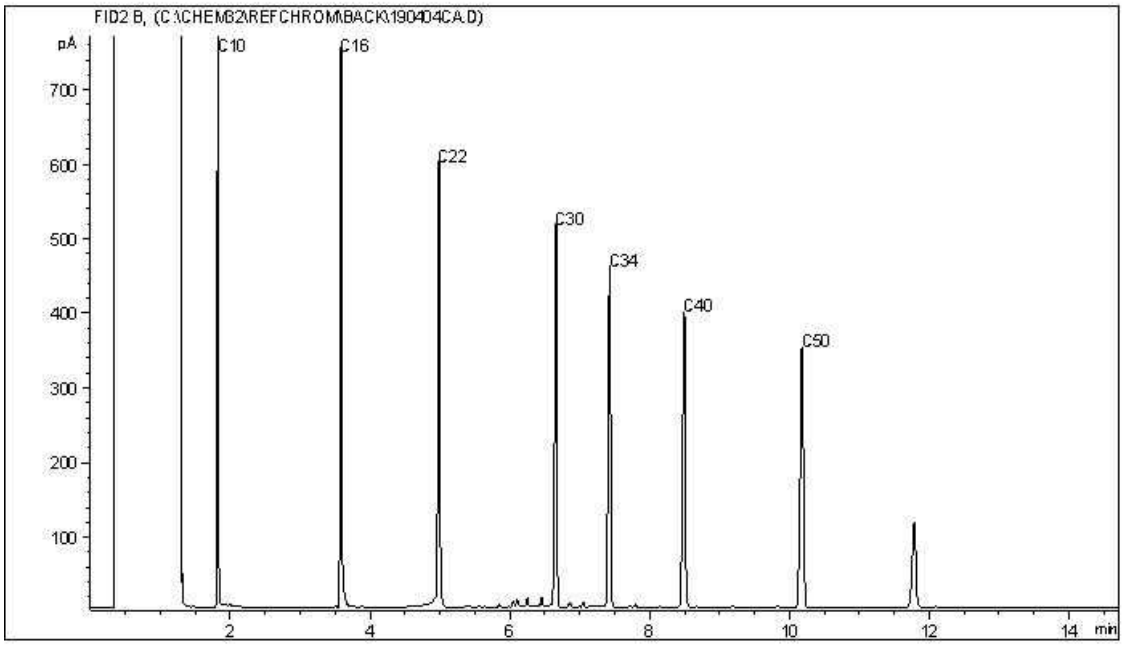
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC7



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

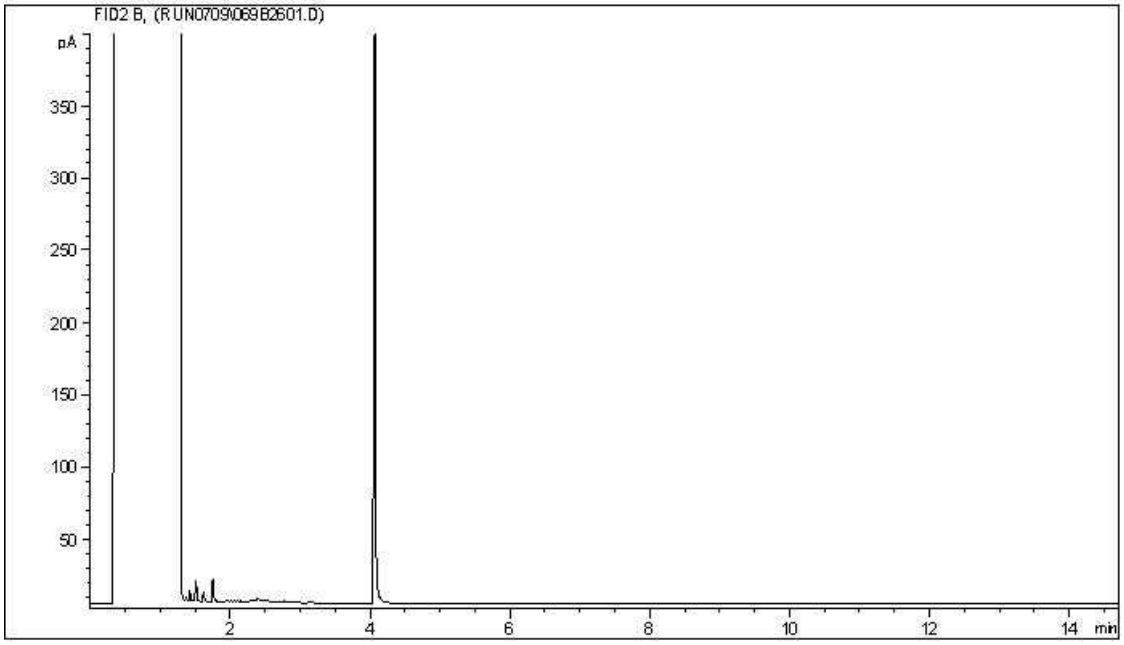
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B954316
Report Date: 2019/07/12
BV Labs Sample: WA8843 Lab-Dup

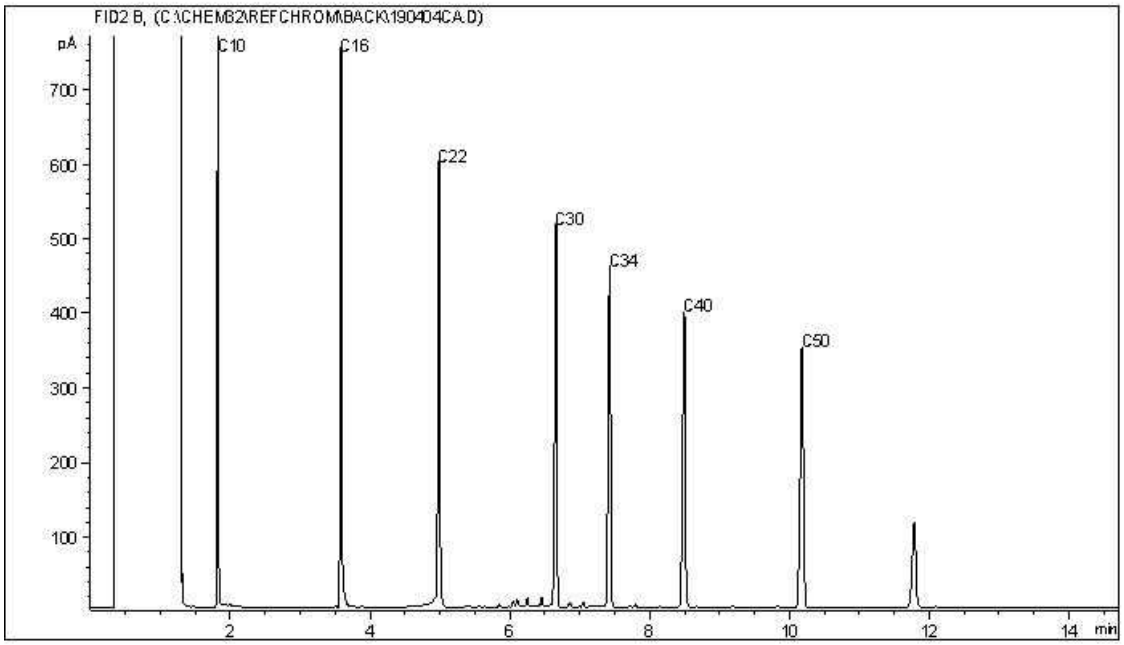
CLIFTON ASSOCIATES LTD.
Client Project #: C2430.1-E37
Site Reference: NORTH HILL MALL
Client ID: BH94003A

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC7



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

eCOC: W15680

Project Information: B958753
Job Received: 2019/07/19 12:05
Results Required By: 2019/07/23

Invoice Information

Attn: ACCOUNTS PAYABLE
CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
T2E 7K9 , CANADA
Email to:
vendor@clifton.ca

Report Information

Attn: Stephen D'Abadie
CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
T2E 7K9 , CANADA
Email to:
stephen_dabadie@clifton.ca

Project Information

Quote #: B90055
PO/AFE#:
Project #: CG2430.1 E37
Site Location:
Sampled By: MJ

Analytical Summary

A: Due On 2019/07/23

Client Sample ID	Sampling Date/Time	Matrix	Moisture	VOCs in Soil by HS GC/MS (Std List)
MJ-105	2019/06/27 09:00	SOIL	A	A

Submission Information

# of Samples: 1

Details: need results by tuesday morning

Parameter Summary

Package/Test	Parameter	RDL *	Unit	Samples
Moisture	Tin Number (% Moisture)	N/A	%	All
	Weight of Tin (% Moisture)	N/A	%	All
	Wet Weight	N/A	%	All
	Dry Weight	N/A	%	All
	Moisture	0.3	%	All
VOCs in Soil by HS GC/MS (Std List)	Bromodichloromethane	0.03	mg/kg	All
	Bromoform	0.05	mg/kg	All
	Bromomethane	0.02	mg/kg	All
	Carbon tetrachloride	0.0005	mg/kg	All
	Chlorobenzene	0.001	mg/kg	All
	Chlorodibromomethane	0.02	mg/kg	All
	Chloroethane	0.02	mg/kg	All
	Chloroform	0.01	mg/kg	All
	Chloromethane	0.03	mg/kg	All
	1,2-dibromoethane	0.002	mg/kg	All
	1,2-dichlorobenzene	0.02	mg/kg	All
	1,3-dichlorobenzene	0.02	mg/kg	All
	1,4-dichlorobenzene	0.02	mg/kg	All
	1,1-dichloroethane	0.02	mg/kg	All
	1,2-dichloroethane	0.002	mg/kg	All
	1,1-dichloroethene	0.02	mg/kg	All
	cis-1,2-dichloroethene	0.02	mg/kg	All
	trans-1,2-dichloroethene	0.02	mg/kg	All
	Dichloromethane	0.03	mg/kg	All
	1,2-dichloropropane	0.02	mg/kg	All
	cis-1,3-dichloropropene	0.02	mg/kg	All
	trans-1,3-dichloropropene	0.02	mg/kg	All
	Methyl methacrylate	0.04	mg/kg	All
	Methyl-tert-butylether (MTBE)	0.03	mg/kg	All
	Styrene	0.02	mg/kg	All
	1,1,1,2-tetrachloroethane	0.05	mg/kg	All
	1,1,2,2-tetrachloroethane	0.05	mg/kg	All
	Tetrachloroethene	0.01	mg/kg	All
	1,2,3-trichlorobenzene	0.04	mg/kg	All
	1,2,4-trichlorobenzene	0.04	mg/kg	All
	1,3,5-trichlorobenzene	0.04	mg/kg	All
	1,1,1-trichloroethane	0.02	mg/kg	All
	1,1,2-trichloroethane	0.02	mg/kg	All
	Trichloroethene	0.01	mg/kg	All
	Trichlorofluoromethane	0.02	mg/kg	All
	1,2,4-trimethylbenzene	0.5	mg/kg	All
	1,3,5-trimethylbenzene	0.5	mg/kg	All
	Vinyl chloride	0.0003	mg/kg	All

**RDLs are subject to change based on interferences present at the time of analysis.*

Cost Estimate

#	Description	Matrix	Quote #	Rate	Test Total
1	Moisture	SOIL	B90055	$ 0.00	$ 0.00
1	VOCs in Soil by HS GC/MS (Std List)	SOIL	B90055	$ 172.25	$ 172.25
				Total (excluding applicable taxes):	**$ 172.25**

Your Project #: CG2430.1 E37
Your C.O.C. #: 15680

Attention: Stephen D'Abadie

CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
CANADA T2E 7K9

Report Date: 2019/07/22
Report #: R2755709
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B958753
Received: 2019/07/19, 12:05

Sample Matrix: Soil
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Moisture	1	N/A	2019/07/20	AB SOP-00002	CCME PHC-CWS m
VOCs in Soil by HS GC/MS (Std List) (1)	1	N/A	2019/07/19	AB SOP-00056	EPA 5021a/8260d m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

Your Project #: CG2430.1 E37
Your C.O.C. #: 15680

Attention: Stephen D'Abadie

CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
CANADA T2E 7K9

Report Date: 2019/07/22
Report #: R2755709
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B958753
Received: 2019/07/19, 12:05

Encryption Key

AUTHORIZED REPORT
RAPPORT AUTORISÉ

Bureau Veritas Laboratories
22 Jul 2019 11:35:14

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Linsay Sunderman, Key Account Specialist
Email: Lsunderman@bvlabs.com
Phone# (403)735-2237 Ext:2237
==========
This report has been generated and distributed using a secure automated process.
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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BV Labs Job #: B958753
Report Date: 2019/07/22

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Sampler Initials: MJ

PHYSICAL TESTING (SOIL)

BV Labs ID		WD1855		
Sampling Date		2019/06/27 09:00		
COC Number		15680		
	UNITS	**MJ-105**	**RDL**	**QC Batch**
Physical Properties				
Moisture	%	18	0.30	9515490
RDL = Reportable Detection Limit				

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B958753
Report Date: 2019/07/22

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Sampler Initials: MJ

VOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		WD1855		
Sampling Date		2019/06/27 09:00		
COC Number		15680		
	UNITS	**MJ-105**	**RDL**	**QC Batch**
Field Preserved Volatiles				
Benzene	mg/kg	<0.0050	0.0050	9512875
Bromodichloromethane	mg/kg	<0.030	0.030	9512875
Bromoform	mg/kg	<0.050	0.050	9512875
Bromomethane	mg/kg	<0.020	0.020	9512875
Carbon tetrachloride	mg/kg	<0.00050	0.00050	9512875
Chlorobenzene	mg/kg	<0.0010	0.0010	9512875
Chlorodibromomethane	mg/kg	<0.020	0.020	9512875
Chloroethane	mg/kg	<0.020	0.020	9512875
Chloroform	mg/kg	<0.010	0.010	9512875
Chloromethane	mg/kg	<0.030	0.030	9512875
1,2-dibromoethane	mg/kg	<0.0020	0.0020	9512875
1,2-dichlorobenzene	mg/kg	<0.020	0.020	9512875
1,3-dichlorobenzene	mg/kg	<0.020	0.020	9512875
1,4-dichlorobenzene	mg/kg	<0.020	0.020	9512875
1,1-dichloroethane	mg/kg	<0.020	0.020	9512875
1,2-dichloroethane	mg/kg	<0.0020	0.0020	9512875
1,1-dichloroethene	mg/kg	<0.020	0.020	9512875
cis-1,2-dichloroethene	mg/kg	<0.020	0.020	9512875
trans-1,2-dichloroethene	mg/kg	<0.020	0.020	9512875
Dichloromethane	mg/kg	<0.030	0.030	9512875
1,2-dichloropropane	mg/kg	<0.020	0.020	9512875
cis-1,3-dichloropropene	mg/kg	<0.020	0.020	9512875
trans-1,3-dichloropropene	mg/kg	<0.020	0.020	9512875
Ethylbenzene	mg/kg	<0.010	0.010	9512875
Methyl methacrylate	mg/kg	<0.040	0.040	9512875
Methyl-tert-butylether (MTBE)	mg/kg	<0.030	0.030	9512875
Styrene	mg/kg	<0.020	0.020	9512875
1,1,1,2-tetrachloroethane	mg/kg	<0.050	0.050	9512875
1,1,2,2-tetrachloroethane	mg/kg	<0.050	0.050	9512875
Tetrachloroethene	mg/kg	<0.010	0.010	9512875
Toluene	mg/kg	<0.050	0.050	9512875
1,2,3-trichlorobenzene	mg/kg	<0.040	0.040	9512875
RDL = Reportable Detection Limit				

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BV Labs Job #: B958753
Report Date: 2019/07/22

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Sampler Initials: MJ

VOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		WD1855		
Sampling Date		2019/06/27 09:00		
COC Number		15680		
	UNITS	**MJ-105**	**RDL**	**QC Batch**
1,2,4-trichlorobenzene	mg/kg	<0.040	0.040	9512875
1,3,5-trichlorobenzene	mg/kg	<0.040	0.040	9512875
1,1,1-trichloroethane	mg/kg	<0.020	0.020	9512875
1,1,2-trichloroethane	mg/kg	<0.020	0.020	9512875
Trichloroethene	mg/kg	<0.010	0.010	9512875
Trichlorofluoromethane	mg/kg	<0.020	0.020	9512875
1,2,4-trimethylbenzene	mg/kg	<0.50	0.50	9512875
1,3,5-trimethylbenzene	mg/kg	<0.50	0.50	9512875
Vinyl chloride	mg/kg	<0.00030	0.00030	9512875
Xylenes (Total)	mg/kg	<0.040	0.040	9512875
m & p-Xylene	mg/kg	<0.040	0.040	9512875
o-Xylene	mg/kg	<0.020	0.020	9512875
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	100	N/A	9512875
4-Bromofluorobenzene (sur.)	%	98	N/A	9512875
D10-o-Xylene (sur.)	%	98	N/A	9512875
D4-1,2-Dichloroethane (sur.)	%	99	N/A	9512875

RDL = Reportable Detection Limit
N/A = Not Applicable

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.0°C

Results relate only to the items tested.

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BV Labs Job #: B958753
Report Date: 2019/07/22

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Sampler Initials: MJ

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9512875	MZ	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/07/19		103	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/19		100	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/19		108	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/19		115	%	50 - 140
			Benzene	2019/07/19		81	%	50 - 140
			Bromodichloromethane	2019/07/19		97	%	50 - 140
			Bromoform	2019/07/19		102	%	50 - 140
			Bromomethane	2019/07/19		70	%	50 - 140
			Carbon tetrachloride	2019/07/19		86	%	50 - 140
			Chlorobenzene	2019/07/19		84	%	50 - 140
			Chlorodibromomethane	2019/07/19		101	%	50 - 140
			Chloroethane	2019/07/19		76	%	50 - 140
			Chloroform	2019/07/19		86	%	50 - 140
			Chloromethane	2019/07/19		67	%	50 - 140
			1,2-dibromoethane	2019/07/19		92	%	50 - 140
			1,2-dichlorobenzene	2019/07/19		89	%	50 - 140
			1,3-dichlorobenzene	2019/07/19		87	%	50 - 140
			1,4-dichlorobenzene	2019/07/19		85	%	50 - 140
			1,1-dichloroethane	2019/07/19		86	%	50 - 140
			1,2-dichloroethane	2019/07/19		89	%	50 - 140
			1,1-dichloroethene	2019/07/19		81	%	50 - 140
			cis-1,2-dichloroethene	2019/07/19		89	%	50 - 140
			trans-1,2-dichloroethene	2019/07/19		81	%	50 - 140
			Dichloromethane	2019/07/19		81	%	50 - 140
			1,2-dichloropropane	2019/07/19		90	%	50 - 140
			cis-1,3-dichloropropene	2019/07/19		96	%	50 - 140
			trans-1,3-dichloropropene	2019/07/19		98	%	50 - 140
			Ethylbenzene	2019/07/19		87	%	50 - 140
			Methyl methacrylate	2019/07/19		100	%	50 - 140
			Methyl-tert-butylether (MTBE)	2019/07/19		87	%	50 - 140
			Styrene	2019/07/19		92	%	50 - 140
			1,1,1,2-tetrachloroethane	2019/07/19		91	%	50 - 140
			1,1,2,2-tetrachloroethane	2019/07/19		94	%	50 - 140
			Tetrachloroethene	2019/07/19		83	%	50 - 140
			Toluene	2019/07/19		84	%	50 - 140
			1,2,3-trichlorobenzene	2019/07/19		82	%	50 - 140
			1,2,4-trichlorobenzene	2019/07/19		82	%	50 - 140
			1,3,5-trichlorobenzene	2019/07/19		83	%	50 - 140
			1,1,1-trichloroethane	2019/07/19		88	%	50 - 140
			1,1,2-trichloroethane	2019/07/19		94	%	50 - 140
			Trichloroethene	2019/07/19		91	%	50 - 140
			Trichlorofluoromethane	2019/07/19		75	%	50 - 140
			1,2,4-trimethylbenzene	2019/07/19		86	%	50 - 140
			1,3,5-trimethylbenzene	2019/07/19		86	%	50 - 140
			Vinyl chloride	2019/07/19		71	%	50 - 140
			m & p-Xylene	2019/07/19		86	%	50 - 140
			o-Xylene	2019/07/19		86	%	50 - 140
9512875	MZ	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/07/19		103	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/19		102	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/19		106	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/19		98	%	50 - 140
			Benzene	2019/07/19		83	%	60 - 130
			Bromodichloromethane	2019/07/19		101	%	60 - 130
			Bromoform	2019/07/19		111	%	60 - 130

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BV Labs Job #: B958753
Report Date: 2019/07/22

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Bromomethane	2019/07/19		75	%	60 - 130
			Carbon tetrachloride	2019/07/19		91	%	60 - 130
			Chlorobenzene	2019/07/19		91	%	60 - 130
			Chlorodibromomethane	2019/07/19		110	%	60 - 130
			Chloroethane	2019/07/19		79	%	60 - 130
			Chloroform	2019/07/19		90	%	60 - 130
			Chloromethane	2019/07/19		68	%	60 - 130
			1,2-dibromoethane	2019/07/19		102	%	60 - 130
			1,2-dichlorobenzene	2019/07/19		95	%	60 - 130
			1,3-dichlorobenzene	2019/07/19		93	%	60 - 130
			1,4-dichlorobenzene	2019/07/19		91	%	60 - 130
			1,1-dichloroethane	2019/07/19		91	%	60 - 130
			1,2-dichloroethane	2019/07/19		94	%	60 - 130
			1,1-dichloroethene	2019/07/19		86	%	60 - 130
			cis-1,2-dichloroethene	2019/07/19		95	%	60 - 130
			trans-1,2-dichloroethene	2019/07/19		88	%	60 - 130
			Dichloromethane	2019/07/19		86	%	60 - 130
			1,2-dichloropropane	2019/07/19		95	%	60 - 130
			cis-1,3-dichloropropene	2019/07/19		108	%	60 - 130
			trans-1,3-dichloropropene	2019/07/19		98	%	60 - 130
			Ethylbenzene	2019/07/19		94	%	60 - 130
			Methyl methacrylate	2019/07/19		110	%	60 - 130
			Methyl-tert-butylether (MTBE)	2019/07/19		91	%	60 - 130
			Styrene	2019/07/19		100	%	60 - 130
			1,1,1,2-tetrachloroethane	2019/07/19		98	%	60 - 130
			1,1,2,2-tetrachloroethane	2019/07/19		103	%	60 - 130
			Tetrachloroethene	2019/07/19		92	%	60 - 130
			Toluene	2019/07/19		91	%	60 - 130
			1,2,3-trichlorobenzene	2019/07/19		94	%	60 - 130
			1,2,4-trichlorobenzene	2019/07/19		89	%	60 - 130
			1,3,5-trichlorobenzene	2019/07/19		89	%	60 - 130
			1,1,1-trichloroethane	2019/07/19		92	%	60 - 130
			1,1,2-trichloroethane	2019/07/19		99	%	60 - 130
			Trichloroethene	2019/07/19		96	%	60 - 130
			Trichlorofluoromethane	2019/07/19		77	%	60 - 130
			1,2,4-trimethylbenzene	2019/07/19		93	%	60 - 130
			1,3,5-trimethylbenzene	2019/07/19		93	%	60 - 130
			Vinyl chloride	2019/07/19		73	%	60 - 130
			m & p-Xylene	2019/07/19		95	%	60 - 130
			o-Xylene	2019/07/19		94	%	60 - 130
9512875	MZ	Method Blank	1,4-Difluorobenzene (sur.)	2019/07/19		101	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/07/19		99	%	50 - 140
			D10-o-Xylene (sur.)	2019/07/19		91	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/07/19		105	%	50 - 140
			Benzene	2019/07/19	<0.0050		mg/kg	
			Bromodichloromethane	2019/07/19	<0.030		mg/kg	
			Bromoform	2019/07/19	<0.050		mg/kg	
			Bromomethane	2019/07/19	<0.020		mg/kg	
			Carbon tetrachloride	2019/07/19	<0.00050		mg/kg	
			Chlorobenzene	2019/07/19	<0.0010		mg/kg	
			Chlorodibromomethane	2019/07/19	<0.020		mg/kg	
			Chloroethane	2019/07/19	<0.020		mg/kg	
			Chloroform	2019/07/19	<0.010		mg/kg	
			Chloromethane	2019/07/19	<0.030		mg/kg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,2-dibromoethane	2019/07/19	<0.0020		mg/kg	
			1,2-dichlorobenzene	2019/07/19	<0.020		mg/kg	
			1,3-dichlorobenzene	2019/07/19	<0.020		mg/kg	
			1,4-dichlorobenzene	2019/07/19	<0.020		mg/kg	
			1,1-dichloroethane	2019/07/19	<0.020		mg/kg	
			1,2-dichloroethane	2019/07/19	<0.0020		mg/kg	
			1,1-dichloroethene	2019/07/19	<0.020		mg/kg	
			cis-1,2-dichloroethene	2019/07/19	<0.020		mg/kg	
			trans-1,2-dichloroethene	2019/07/19	<0.020		mg/kg	
			Dichloromethane	2019/07/19	<0.030		mg/kg	
			1,2-dichloropropane	2019/07/19	<0.020		mg/kg	
			cis-1,3-dichloropropene	2019/07/19	<0.020		mg/kg	
			trans-1,3-dichloropropene	2019/07/19	<0.020		mg/kg	
			Ethylbenzene	2019/07/19	<0.010		mg/kg	
			Methyl methacrylate	2019/07/19	<0.040		mg/kg	
			Methyl-tert-butylether (MTBE)	2019/07/19	<0.030		mg/kg	
			Styrene	2019/07/19	<0.020		mg/kg	
			1,1,1,2-tetrachloroethane	2019/07/19	<0.050		mg/kg	
			1,1,2,2-tetrachloroethane	2019/07/19	<0.050		mg/kg	
			Tetrachloroethene	2019/07/19	<0.010		mg/kg	
			Toluene	2019/07/19	<0.050		mg/kg	
			1,2,3-trichlorobenzene	2019/07/19	<0.040		mg/kg	
			1,2,4-trichlorobenzene	2019/07/19	<0.040		mg/kg	
			1,3,5-trichlorobenzene	2019/07/19	<0.040		mg/kg	
			1,1,1-trichloroethane	2019/07/19	<0.020		mg/kg	
			1,1,2-trichloroethane	2019/07/19	<0.020		mg/kg	
			Trichloroethene	2019/07/19	<0.010		mg/kg	
			Trichlorofluoromethane	2019/07/19	<0.020		mg/kg	
			1,2,4-trimethylbenzene	2019/07/19	<0.50		mg/kg	
			1,3,5-trimethylbenzene	2019/07/19	<0.50		mg/kg	
			Vinyl chloride	2019/07/19	<0.00030		mg/kg	
			Xylenes (Total)	2019/07/19	<0.040		mg/kg	
			m & p-Xylene	2019/07/19	<0.040		mg/kg	
			o-Xylene	2019/07/19	<0.020		mg/kg	
9512875	MZ	RPD	Bromodichloromethane	2019/07/19	NC		%	50
			Bromoform	2019/07/19	NC		%	50
			Bromomethane	2019/07/19	NC		%	50
			Carbon tetrachloride	2019/07/19	NC		%	50
			Chlorobenzene	2019/07/19	NC		%	50
			Chlorodibromomethane	2019/07/19	NC		%	50
			Chloroethane	2019/07/19	NC		%	50
			Chloroform	2019/07/19	NC		%	50
			Chloromethane	2019/07/19	NC		%	50
			1,2-dibromoethane	2019/07/19	NC		%	50
			1,2-dichlorobenzene	2019/07/19	NC		%	50
			1,3-dichlorobenzene	2019/07/19	NC		%	50
			1,4-dichlorobenzene	2019/07/19	NC		%	50
			1,1-dichloroethane	2019/07/19	NC		%	50
			1,2-dichloroethane	2019/07/19	NC		%	50
			1,1-dichloroethene	2019/07/19	NC		%	50
			cis-1,2-dichloroethene	2019/07/19	NC		%	50
			trans-1,2-dichloroethene	2019/07/19	NC		%	50
			Dichloromethane	2019/07/19	NC		%	50
			1,2-dichloropropane	2019/07/19	NC		%	50

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BV Labs Job #: B958753
Report Date: 2019/07/22

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Sampler Initials: MJ

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			cis-1,3-dichloropropene	2019/07/19	NC		%	50
			trans-1,3-dichloropropene	2019/07/19	NC		%	50
			Methyl methacrylate	2019/07/19	NC		%	50
			Methyl-tert-butylether (MTBE)	2019/07/19	NC		%	50
			Styrene	2019/07/19	NC		%	50
			1,1,1,2-tetrachloroethane	2019/07/19	NC		%	50
			1,1,2,2-tetrachloroethane	2019/07/19	NC		%	50
			Tetrachloroethene	2019/07/19	NC		%	50
			1,2,3-trichlorobenzene	2019/07/19	NC		%	50
			1,2,4-trichlorobenzene	2019/07/19	NC		%	50
			1,3,5-trichlorobenzene	2019/07/19	NC		%	50
			1,1,1-trichloroethane	2019/07/19	NC		%	50
			1,1,2-trichloroethane	2019/07/19	NC		%	50
			Trichloroethene	2019/07/19	NC		%	50
			Trichlorofluoromethane	2019/07/19	NC		%	50
			1,2,4-trimethylbenzene	2019/07/19	NC		%	50
			1,3,5-trimethylbenzene	2019/07/19	NC		%	50
			Vinyl chloride	2019/07/19	NC		%	50
9515490	SRI	Method Blank	Moisture	2019/07/20	<0.30		%	
9515490	SRI	RPD	Moisture	2019/07/20	13		%	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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NOTIFICATION LOG

No Reportable Regulation Exceedences Noted.

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BV Labs Job #: B958753
Report Date: 2019/07/22

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E37
Sampler Initials: MJ

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Gita Pokhrel, Senior Analyst

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

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791

Custody Tracking Form

W15680

Please use this form for custody tracking when submitting the work instructions via eTR (electronic Test Requisition). Please ensure your form has a barcode or a BV Labs eTR confirmation number in the top right hand side. This number links your electronic submission to your samples.

First Sample: MJ-105
Last Sample: MJ-105
Sample Count: 1

Relinquished By				Received By			
Matt Foulke		Date	2019/7/19	Craig Choquette		Date	2019/07/19
		Time (24 HR)	12:00			Time (24 HR)	12:05
		Date				Date	
		Time (24 HR)				Time (24 HR)	
		Date				Date	
		Time (24 HR)				Time (24 HR)	

Submission Triage Information

Sampled By: Matt Johnson

# of Coolers/Pkgs: 1

Rush ☑ Immediate Test ☐ Food Residue ☐

Micro ☐ Food Chemistry ☐

*** LAB USE ONLY ***

Received At

Labeled By

Verified By

Comments:

19-Jul-19 12:05
Linsay Sunderman
B958753
SBZ INS-0019

Custody Seal		Cooling Media	Temperature °C		
Present (Y/N)	Intact (Y/N)		1	2	3
N	N	Y	1	2	3

Your Project #: CG2430.1639
Your C.O.C. #: M035723

Attention: STEPHEN D'ABADIE

CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
CANADA T2E 7K9

Report Date: 2019/10/23
Report #: R2800285
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B989129
Received: 2019/10/16, 10:09

Sample Matrix: Soil
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS/FID (MeOH extract) (1)	4	N/A	2019/10/19	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX	4	N/A	2019/10/23		Auto Calc
CCME Hydrocarbons (F2-F4 in soil) (2)	4	2019/10/18	2019/10/18	AB SOP-00036	CCME PHC-CWS m
Moisture	4	N/A	2019/10/19	AB SOP-00002	CCME PHC-CWS m
VOCs in Soil by HS GC/MS (Std List) (1)	5	N/A	2019/10/18	AB SOP-00056	EPA 5021a/8260d m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
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Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.
(2) All CCME results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following Alberta Environment’s Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods September 2003. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

Your Project #: CG2430.1639
Your C.O.C. #: M035723

Attention: STEPHEN D'ABADIE

CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
CANADA T2E 7K9

Report Date: 2019/10/23
Report #: R2800285
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B989129
Received: 2019/10/16, 10:09

Encryption Key

AUTHORIZED REPORT
RAPPORT AUTORISÉ

Bureau Veritas Laboratories
23 Oct 2019 14:29:17

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Linsay Sunderman, Key Account Specialist
Email: linsay.sunderman@bvlabs.com
Phone# (403)735-2237 Ext:2237
==========
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BV Labs Job #: B989129
Report Date: 2019/10/23

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1639
Sampler Initials: AM

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		WS4838	WS4839	WS4840	WS4841		
Sampling Date		2019/10/15 11:00	2019/10/15 14:00	2019/10/15 14:00	2019/10/15 14:00		
COC Number		M035723	M035723	M035723	M035723		
	UNITS	**4008-14**	**4008-18**	**4009-14**	**4009-17**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	<10	10	9631211
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	9631211
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	<50	50	9631211
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	9631211
Physical Properties							
Moisture	%	19	23	18	25	0.30	9633767
Volatiles							
Xylenes (Total)	mg/kg	6.9	<0.045	<0.045	<0.045	0.045	9631742
F1 (C6-C10) - BTEX	mg/kg	65	<10	<10	<10	10	9631742
Field Preserved Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	9633067
Toluene	mg/kg	0.11	<0.050	<0.050	<0.050	0.050	9633067
Ethylbenzene	mg/kg	0.16	<0.010	<0.010	<0.010	0.010	9633067
m & p-Xylene	mg/kg	3.0	<0.040	<0.040	<0.040	0.040	9633067
o-Xylene	mg/kg	3.9	<0.020	<0.020	<0.020	0.020	9633067
F1 (C6-C10)	mg/kg	72	<10	<10	<10	10	9633067
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	105	105	104	104	N/A	9633067
4-Bromofluorobenzene (sur.)	%	98	98	99	99	N/A	9633067
D10-o-Xylene (sur.)	%	106	111	111	106	N/A	9633067
D4-1,2-Dichloroethane (sur.)	%	97	98	98	99	N/A	9633067
O-TERPHENYL (sur.)	%	105	106	104	105	N/A	9631211

RDL = Reportable Detection Limit
N/A = Not Applicable

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BV Labs Job #: B989129
Report Date: 2019/10/23

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1639
Sampler Initials: AM

VOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		WS4838	WS4839	WS4840	WS4841	WS4842		
Sampling Date		2019/10/15 11:00	2019/10/15 14:00	2019/10/15 14:00	2019/10/15 14:00	2019/10/15		
COC Number		M035723	M035723	M035723	M035723	M035723		
	UNITS	**4008-14**	**4008-18**	**4009-14**	**4009-17**	**TRIP BLANK**	**RDL**	**QC Batch**
Field Preserved Volatiles								
Bromodichloromethane	mg/kg	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	9633090
Bromoform	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	9633090
Bromomethane	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9633090
Carbon tetrachloride	mg/kg	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9633090
Chlorobenzene	mg/kg	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	9633090
Chlorodibromomethane	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9633090
Chloroethane	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9633090
Chloroform	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	9633090
Chloromethane	mg/kg	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	9633090
1,2-dibromoethane	mg/kg	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	9633090
1,2-dichlorobenzene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9633090
1,3-dichlorobenzene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9633090
1,4-dichlorobenzene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9633090
1,1-dichloroethane	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9633090
1,2-dichloroethane	mg/kg	<0.0020	<0.0020	<0.0020	0.015	<0.0020	0.0020	9633090
1,1-dichloroethene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9633090
cis-1,2-dichloroethene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9633090
trans-1,2-dichloroethene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9633090
Dichloromethane	mg/kg	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	9633090
1,2-dichloropropane	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9633090
cis-1,3-dichloropropene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9633090
trans-1,3-dichloropropene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9633090
Methyl methacrylate	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	9633090
Methyl-tert-butylether (MTBE)	mg/kg	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	9633090
Styrene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9633090
1,1,1,2-tetrachloroethane	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	9633090
1,1,2,2-tetrachloroethane	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	9633090
Tetrachloroethene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	9633090
1,2,3-trichlorobenzene	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	9633090
1,2,4-trichlorobenzene	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	9633090
1,3,5-trichlorobenzene	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	9633090
1,1,1-trichloroethane	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9633090
RDL = Reportable Detection Limit								

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BV Labs Job #: B989129
Report Date: 2019/10/23

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1639
Sampler Initials: AM

VOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		WS4838	WS4839	WS4840	WS4841	WS4842		
Sampling Date		2019/10/15 11:00	2019/10/15 14:00	2019/10/15 14:00	2019/10/15 14:00	2019/10/15		
COC Number		M035723	M035723	M035723	M035723	M035723		
	UNITS	**4008-14**	**4008-18**	**4009-14**	**4009-17**	**TRIP BLANK**	**RDL**	**QC Batch**
1,1,2-trichloroethane	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9633090
Trichloroethene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	9633090
Trichlorofluoromethane	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	9633090
1,2,4-trimethylbenzene	mg/kg	3.9	<0.50	<0.50	<0.50	<0.50	0.50	9633090
1,3,5-trimethylbenzene	mg/kg	0.87	<0.50	<0.50	<0.50	<0.50	0.50	9633090
Vinyl chloride	mg/kg	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	0.00030	9633090
Surrogate Recovery (%)								
1,4-Difluorobenzene (sur.)	%	100	99	100	99	99	N/A	9633090
4-Bromofluorobenzene (sur.)	%	103	100	101	99	97	N/A	9633090
D10-o-Xylene (sur.)	%	102	107	105	108	104	N/A	9633090
D4-1,2-Dichloroethane (sur.)	%	98	93	96	94	97	N/A	9633090

RDL = Reportable Detection Limit
N/A = Not Applicable

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	9.3°C

Results relate only to the items tested.

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BV Labs Job #: B989129
Report Date: 2019/10/23

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1639
Sampler Initials: AM

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9631211	VP4	Matrix Spike	O-TERPHENYL (sur.)	2019/10/17		76	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/10/17		89	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2019/10/17		97	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2019/10/17		89	%	60 - 140
9631211	VP4	Spiked Blank	O-TERPHENYL (sur.)	2019/10/17		79	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/10/17		92	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2019/10/17		100	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2019/10/17		93	%	60 - 140
9631211	VP4	Method Blank	O-TERPHENYL (sur.)	2019/10/17		109	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/10/17	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2019/10/17	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2019/10/17	<50		mg/kg	
9631211	VP4	RPD	F2 (C10-C16 Hydrocarbons)	2019/10/17	NC		%	40
			F3 (C16-C34 Hydrocarbons)	2019/10/17	NC		%	40
			F4 (C34-C50 Hydrocarbons)	2019/10/17	NC		%	40
9633067	DO1	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/10/19		102	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/10/19		99	%	50 - 140
			D10-o-Xylene (sur.)	2019/10/19		106	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/10/19		104	%	50 - 140
			Benzene	2019/10/19		98	%	50 - 140
			Toluene	2019/10/19		89	%	50 - 140
			Ethylbenzene	2019/10/19		93	%	50 - 140
			m & p-Xylene	2019/10/19		92	%	50 - 140
			o-Xylene	2019/10/19		95	%	50 - 140
			F1 (C6-C10)	2019/10/19		85	%	60 - 140
9633067	DO1	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/10/19		106	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/10/19		98	%	50 - 140
			D10-o-Xylene (sur.)	2019/10/19		101	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/10/19		102	%	50 - 140
			Benzene	2019/10/19		103	%	60 - 130
			Toluene	2019/10/19		101	%	60 - 130
			Ethylbenzene	2019/10/19		99	%	60 - 130
			m & p-Xylene	2019/10/19		102	%	60 - 130
			o-Xylene	2019/10/19		102	%	60 - 130
			F1 (C6-C10)	2019/10/19		95	%	60 - 140
9633067	DO1	Method Blank	1,4-Difluorobenzene (sur.)	2019/10/19		105	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/10/19		98	%	50 - 140
			D10-o-Xylene (sur.)	2019/10/19		98	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/10/19		98	%	50 - 140
			Benzene	2019/10/19	<0.0050		mg/kg	
			Toluene	2019/10/19	<0.050		mg/kg	
			Ethylbenzene	2019/10/19	<0.010		mg/kg	
			m & p-Xylene	2019/10/19	<0.040		mg/kg	
			o-Xylene	2019/10/19	<0.020		mg/kg	
			F1 (C6-C10)	2019/10/19	<10		mg/kg	
9633067	DO1	RPD	Benzene	2019/10/19	NC		%	50
			Toluene	2019/10/19	NC		%	50
			Ethylbenzene	2019/10/19	NC		%	50
			m & p-Xylene	2019/10/19	NC		%	50
			o-Xylene	2019/10/19	NC		%	50
			F1 (C6-C10)	2019/10/19	NC		%	30
9633090	QW1	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/10/18		102	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/10/18		103	%	50 - 140
			D10-o-Xylene (sur.)	2019/10/18		103	%	50 - 140

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BV Labs Job #: B989129
Report Date: 2019/10/23

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1639
Sampler Initials: AM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			D4-1,2-Dichloroethane (sur.)	2019/10/18		115	%	50 - 140
			Bromodichloromethane	2019/10/18		103	%	50 - 140
			Bromoform	2019/10/18		93	%	50 - 140
			Bromomethane	2019/10/18		77	%	50 - 140
			Carbon tetrachloride	2019/10/18		94	%	50 - 140
			Chlorobenzene	2019/10/18		88	%	50 - 140
			Chlorodibromomethane	2019/10/18		101	%	50 - 140
			Chloroethane	2019/10/18		121	%	50 - 140
			Chloroform	2019/10/18		92	%	50 - 140
			Chloromethane	2019/10/18		91	%	50 - 140
			1,2-dibromoethane	2019/10/18		98	%	50 - 140
			1,2-dichlorobenzene	2019/10/18		92	%	50 - 140
			1,3-dichlorobenzene	2019/10/18		95	%	50 - 140
			1,4-dichlorobenzene	2019/10/18		92	%	50 - 140
			1,1-dichloroethane	2019/10/18		95	%	50 - 140
			1,2-dichloroethane	2019/10/18		99	%	50 - 140
			1,1-dichloroethene	2019/10/18		95	%	50 - 140
			cis-1,2-dichloroethene	2019/10/18		95	%	50 - 140
			trans-1,2-dichloroethene	2019/10/18		93	%	50 - 140
			Dichloromethane	2019/10/18		94	%	50 - 140
			1,2-dichloropropane	2019/10/18		100	%	50 - 140
			cis-1,3-dichloropropene	2019/10/18		76	%	50 - 140
			trans-1,3-dichloropropene	2019/10/18		60	%	50 - 140
			Methyl methacrylate	2019/10/18		104	%	50 - 140
			Methyl-tert-butylether (MTBE)	2019/10/18		94	%	50 - 140
			Styrene	2019/10/18		94	%	50 - 140
			1,1,1,2-tetrachloroethane	2019/10/18		93	%	50 - 140
			1,1,2,2-tetrachloroethane	2019/10/18		81	%	50 - 140
			Tetrachloroethene	2019/10/18		88	%	50 - 140
			1,2,3-trichlorobenzene	2019/10/18		84	%	50 - 140
			1,2,4-trichlorobenzene	2019/10/18		85	%	50 - 140
			1,3,5-trichlorobenzene	2019/10/18		88	%	50 - 140
			1,1,1-trichloroethane	2019/10/18		95	%	50 - 140
			1,1,2-trichloroethane	2019/10/18		105	%	50 - 140
			Trichloroethene	2019/10/18		96	%	50 - 140
			Trichlorofluoromethane	2019/10/18		94	%	50 - 140
			1,2,4-trimethylbenzene	2019/10/18		99	%	50 - 140
			1,3,5-trimethylbenzene	2019/10/18		95	%	50 - 140
			Vinyl chloride	2019/10/18		93	%	50 - 140
9633090	QW1	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/10/18		101	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/10/18		100	%	50 - 140
			D10-o-Xylene (sur.)	2019/10/18		101	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/10/18		93	%	50 - 140
			Bromodichloromethane	2019/10/18		100	%	60 - 130
			Bromoform	2019/10/18		102	%	60 - 130
			Bromomethane	2019/10/18		96	%	60 - 130
			Carbon tetrachloride	2019/10/18		93	%	60 - 130
			Chlorobenzene	2019/10/18		91	%	60 - 130
			Chlorodibromomethane	2019/10/18		102	%	60 - 130
			Chloroethane	2019/10/18		74	%	60 - 130
			Chloroform	2019/10/18		91	%	60 - 130
			Chloromethane	2019/10/18		90	%	60 - 130
			1,2-dibromoethane	2019/10/18		101	%	60 - 130
			1,2-dichlorobenzene	2019/10/18		93	%	60 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,3-dichlorobenzene	2019/10/18		93	%	60 - 130
			1,4-dichlorobenzene	2019/10/18		90	%	60 - 130
			1,1-dichloroethane	2019/10/18		93	%	60 - 130
			1,2-dichloroethane	2019/10/18		97	%	60 - 130
			1,1-dichloroethene	2019/10/18		94	%	60 - 130
			cis-1,2-dichloroethene	2019/10/18		93	%	60 - 130
			trans-1,2-dichloroethene	2019/10/18		93	%	60 - 130
			Dichloromethane	2019/10/18		90	%	60 - 130
			1,2-dichloropropane	2019/10/18		97	%	60 - 130
			cis-1,3-dichloropropene	2019/10/18		104	%	60 - 130
			trans-1,3-dichloropropene	2019/10/18		106	%	60 - 130
			Methyl methacrylate	2019/10/18		104	%	60 - 130
			Methyl-tert-butylether (MTBE)	2019/10/18		91	%	60 - 130
			Styrene	2019/10/18		96	%	60 - 130
			1,1,1,2-tetrachloroethane	2019/10/18		96	%	60 - 130
			1,1,2,2-tetrachloroethane	2019/10/18		102	%	60 - 130
			Tetrachloroethene	2019/10/18		92	%	60 - 130
			1,2,3-trichlorobenzene	2019/10/18		99	%	60 - 130
			1,2,4-trichlorobenzene	2019/10/18		93	%	60 - 130
			1,3,5-trichlorobenzene	2019/10/18		90	%	60 - 130
			1,1,1-trichloroethane	2019/10/18		94	%	60 - 130
			1,1,2-trichloroethane	2019/10/18		104	%	60 - 130
			Trichloroethene	2019/10/18		96	%	60 - 130
			Trichlorofluoromethane	2019/10/18		93	%	60 - 130
			1,2,4-trimethylbenzene	2019/10/18		92	%	60 - 130
			1,3,5-trimethylbenzene	2019/10/18		90	%	60 - 130
			Vinyl chloride	2019/10/18		90	%	60 - 130
9633090	QW1	Method Blank	1,4-Difluorobenzene (sur.)	2019/10/21		98	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/10/21		99	%	50 - 140
			D10-o-Xylene (sur.)	2019/10/21		103	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/10/21		100	%	50 - 140
			Bromodichloromethane	2019/10/21	<0.030		mg/kg	
			Bromoform	2019/10/21	<0.050		mg/kg	
			Bromomethane	2019/10/21	<0.020		mg/kg	
			Carbon tetrachloride	2019/10/21	<0.00050		mg/kg	
			Chlorobenzene	2019/10/21	<0.0010		mg/kg	
			Chlorodibromomethane	2019/10/21	<0.020		mg/kg	
			Chloroethane	2019/10/21	<0.020		mg/kg	
			Chloroform	2019/10/21	<0.010		mg/kg	
			Chloromethane	2019/10/21	<0.030		mg/kg	
			1,2-dibromoethane	2019/10/21	<0.0020		mg/kg	
			1,2-dichlorobenzene	2019/10/21	<0.020		mg/kg	
			1,3-dichlorobenzene	2019/10/21	<0.020		mg/kg	
			1,4-dichlorobenzene	2019/10/21	<0.020		mg/kg	
			1,1-dichloroethane	2019/10/21	<0.020		mg/kg	
			1,2-dichloroethane	2019/10/21	<0.0020		mg/kg	
			1,1-dichloroethene	2019/10/21	<0.020		mg/kg	
			cis-1,2-dichloroethene	2019/10/21	<0.020		mg/kg	
			trans-1,2-dichloroethene	2019/10/21	<0.020		mg/kg	
			Dichloromethane	2019/10/21	<0.030		mg/kg	
			1,2-dichloropropane	2019/10/21	<0.020		mg/kg	
			cis-1,3-dichloropropene	2019/10/21	<0.020		mg/kg	
			trans-1,3-dichloropropene	2019/10/21	<0.020		mg/kg	
			Methyl methacrylate	2019/10/21	<0.040		mg/kg	

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B989129
Report Date: 2019/10/23

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1639
Sampler Initials: AM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Methyl-tert-butylether (MTBE)	2019/10/21	<0.030		mg/kg	
			Styrene	2019/10/21	<0.020		mg/kg	
			1,1,1,2-tetrachloroethane	2019/10/21	<0.050		mg/kg	
			1,1,2,2-tetrachloroethane	2019/10/21	<0.050		mg/kg	
			Tetrachloroethene	2019/10/21	<0.010		mg/kg	
			1,2,3-trichlorobenzene	2019/10/21	<0.040		mg/kg	
			1,2,4-trichlorobenzene	2019/10/21	<0.040		mg/kg	
			1,3,5-trichlorobenzene	2019/10/21	<0.040		mg/kg	
			1,1,1-trichloroethane	2019/10/21	<0.020		mg/kg	
			1,1,2-trichloroethane	2019/10/21	<0.020		mg/kg	
			Trichloroethene	2019/10/21	<0.010		mg/kg	
			Trichlorofluoromethane	2019/10/21	<0.020		mg/kg	
			1,2,4-trimethylbenzene	2019/10/21	<0.50		mg/kg	
			1,3,5-trimethylbenzene	2019/10/21	<0.50		mg/kg	
			Vinyl chloride	2019/10/21	<0.00030		mg/kg	
9633090	QW1	RPD	Bromodichloromethane	2019/10/21	NC		%	50
			Bromoform	2019/10/21	NC		%	50
			Bromomethane	2019/10/21	NC		%	50
			Carbon tetrachloride	2019/10/21	NC		%	50
			Chlorobenzene	2019/10/21	NC		%	50
			Chlorodibromomethane	2019/10/21	NC		%	50
			Chloroethane	2019/10/21	NC		%	50
			Chloroform	2019/10/21	NC		%	50
			Chloromethane	2019/10/21	NC		%	50
			1,2-dibromoethane	2019/10/21	NC		%	50
			1,2-dichlorobenzene	2019/10/21	NC		%	50
			1,3-dichlorobenzene	2019/10/21	NC		%	50
			1,4-dichlorobenzene	2019/10/21	NC		%	50
			1,1-dichloroethane	2019/10/21	NC		%	50
			1,2-dichloroethane	2019/10/21	NC		%	50
			1,1-dichloroethene	2019/10/21	NC		%	50
			cis-1,2-dichloroethene	2019/10/21	NC		%	50
			trans-1,2-dichloroethene	2019/10/21	NC		%	50
			Dichloromethane	2019/10/21	NC		%	50
			1,2-dichloropropane	2019/10/21	NC		%	50
			cis-1,3-dichloropropene	2019/10/21	NC		%	50
			trans-1,3-dichloropropene	2019/10/21	NC		%	50
			Methyl methacrylate	2019/10/21	NC		%	50
			Methyl-tert-butylether (MTBE)	2019/10/21	NC		%	50
			Styrene	2019/10/21	NC		%	50
			1,1,1,2-tetrachloroethane	2019/10/21	NC		%	50
			1,1,2,2-tetrachloroethane	2019/10/21	14		%	50
			Tetrachloroethene	2019/10/21	NC		%	50
			1,2,3-trichlorobenzene	2019/10/21	NC		%	50
			1,2,4-trichlorobenzene	2019/10/21	NC		%	50
			1,3,5-trichlorobenzene	2019/10/21	NC		%	50
			1,1,1-trichloroethane	2019/10/21	NC		%	50
			1,1,2-trichloroethane	2019/10/21	NC		%	50
			Trichloroethene	2019/10/21	NC		%	50
			Trichlorofluoromethane	2019/10/21	NC		%	50
			1,2,4-trimethylbenzene	2019/10/21	NC		%	50
			1,3,5-trimethylbenzene	2019/10/21	NC		%	50
			Vinyl chloride	2019/10/21	NC		%	50
9633767	EHW	Method Blank	Moisture	2019/10/19	<0.30		%	

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B989129
Report Date: 2019/10/23

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1639
Sampler Initials: AM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9633767	EHW	RPD	Moisture	2019/10/19	3.4		%	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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NOTIFICATION LOG

No Reportable Regulation Exceedences Noted.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B989129
Report Date: 2019/10/23

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1639
Sampler Initials: AM

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Janet Gao, B.Sc., QP, Supervisor, Organics

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

Maxxam
A Bureau Veritas Group Company

Calgary: 4000 19th St. NE, T2E 6P8. Toll Free (800) 386-7247
Edmonton: 9331-48 St. T6B 2R4. Toll Free (800) 386-7247
maxxam.ca

5'46

CHAIN OF CUSTODY RECORD

M035723

Page 1 of 1

Invoice Information		Report Information (if differs from invoice)		Project Information		Turnaround Time (TAT) Required
Company:	Clifton Associates Ltd.	Company:		Quotation #:		☑ 5 - 7 Days Regular (Most analyses)
Contact Name:	Stephen d'Abadie	Contact Name:		P.O. #/ AFE#:		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address:	2222-30 Ave NE	Address:				Rush TAT (Surcharges will be applied)
				Project #:	CG2430.1639	☐ Same Day ☐ 2 Days
Phone:	403-707-8226	Phone:		Site Location:		☐ 1 Day ☐ 3-4 Days
Email:	stephen_dabadie@clifton.ca	Email:		Site #:		Date Required:
Copies:		Copies:		Sampled By:	Austin Mei	Rush Confirmation #:

Laboratory Use Only

	YES	NO	Cooler ID			
Seal Present		✓	Temp	8	10	10
Seal Intact		✓				
Cooling Media	✓					
	YES	NO	Cooler ID			
Seal Present			Temp			
Seal Intact						
Cooling Media						
	YES	NO	Cooler ID			
Seal Present			Temp			
Seal Intact						
Cooling Media						

Depot Reception

Analysis Requested

	Sample Identification	Depth (Unit)	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	# of containers	BTEX F1 ☐ VOC	BTEX F1-F2	BTEX F1-F4	Routine Water	Regulated Metals Tot ☐ Diss	Mercury Total ☐ Dissolved	Salinity 4	Sieve (75 micron)	Texture (% Sand, Silt, Clay)	Basic Class II Landfill	HOLD - DO NOT ANALYZE
1	4008-14		19/10/15	10am	Soil	3	X		X								
2	4008-18		19/10/15	"	Soil	3	X		X								
3	4009-14		19/10/15	2pm	Soil	3	X		X								
4	4009-17		19/10/15	2pm	Soil	3	X		X								
5	Trip Blank		19/10/15			2	X										
6																	
7																	
8																	
9																	
10																	

Please indicate Filtered, Preserved or Both (F, P, F/P)

Regulatory Criteria

- ☑ AT1
- ☐ CCME
- ☐ Drinking Water
- ☐ D50 (Drilling Waste)
- ☐ Saskatchewan
- ☐ Other:

Special Instructions

Relinquished by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)	Received by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)
Stephen d'Abadie	19/10/16	10:08am	TINA WHITE	2019/10/16	10:09

16-Oct-19 10:09
Linsay Sunderman
B989129
JK4 INS-0158

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Maxxam's standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms which are available for viewing at www.maxx

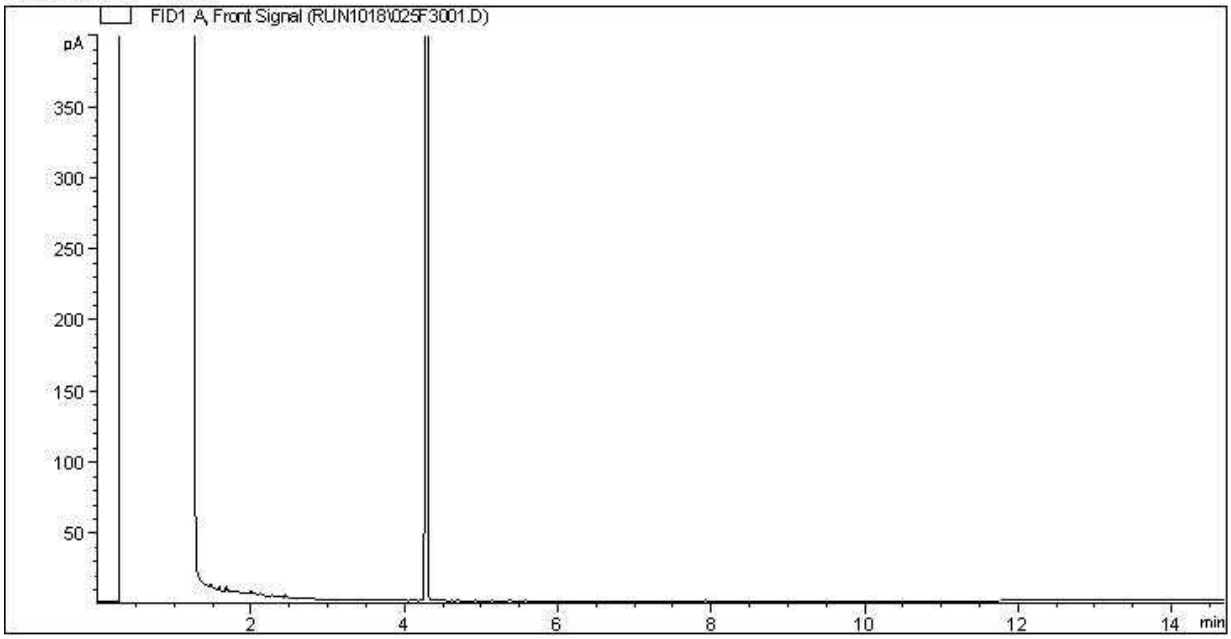
AB FCD-00331/7

BV Labs Job #: B989129
Report Date: 2019/10/23
BV Labs Sample: WS4838

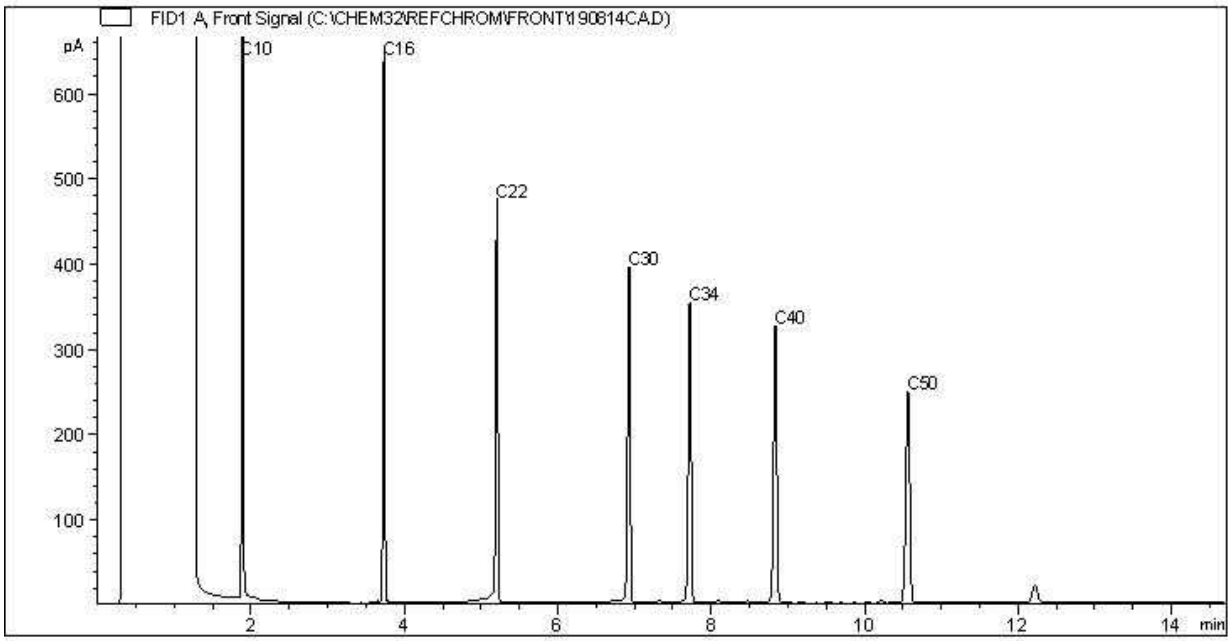
CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1639
Client ID: 4008-14

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC15



Carbon Range Distribution - Reference Chromatogram



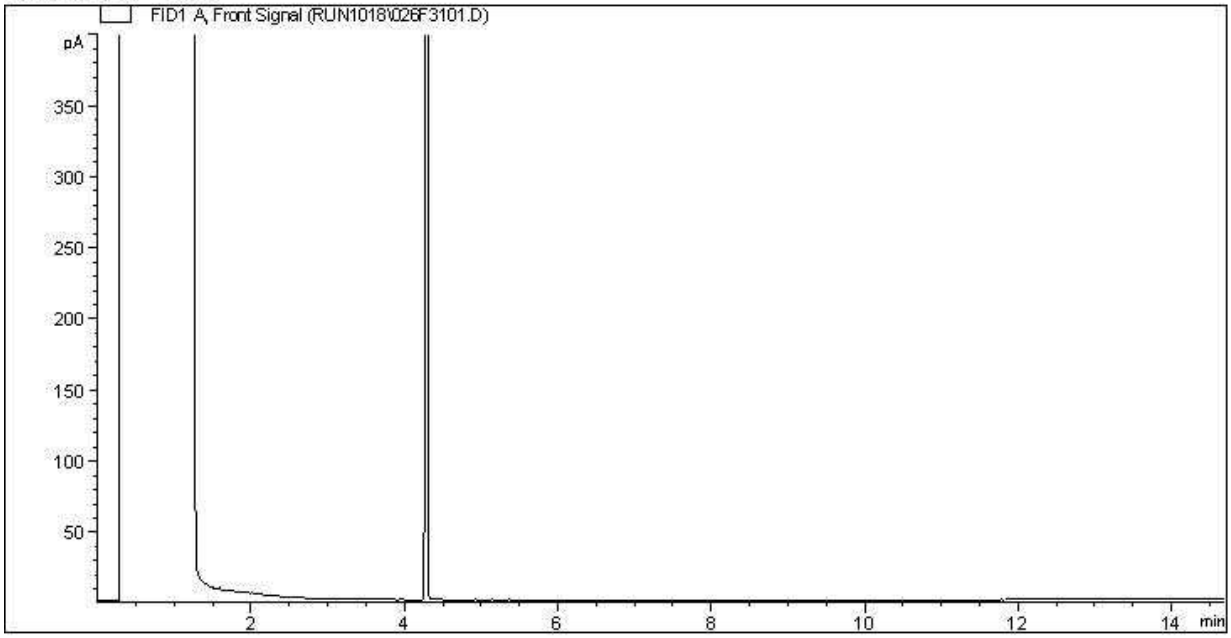
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

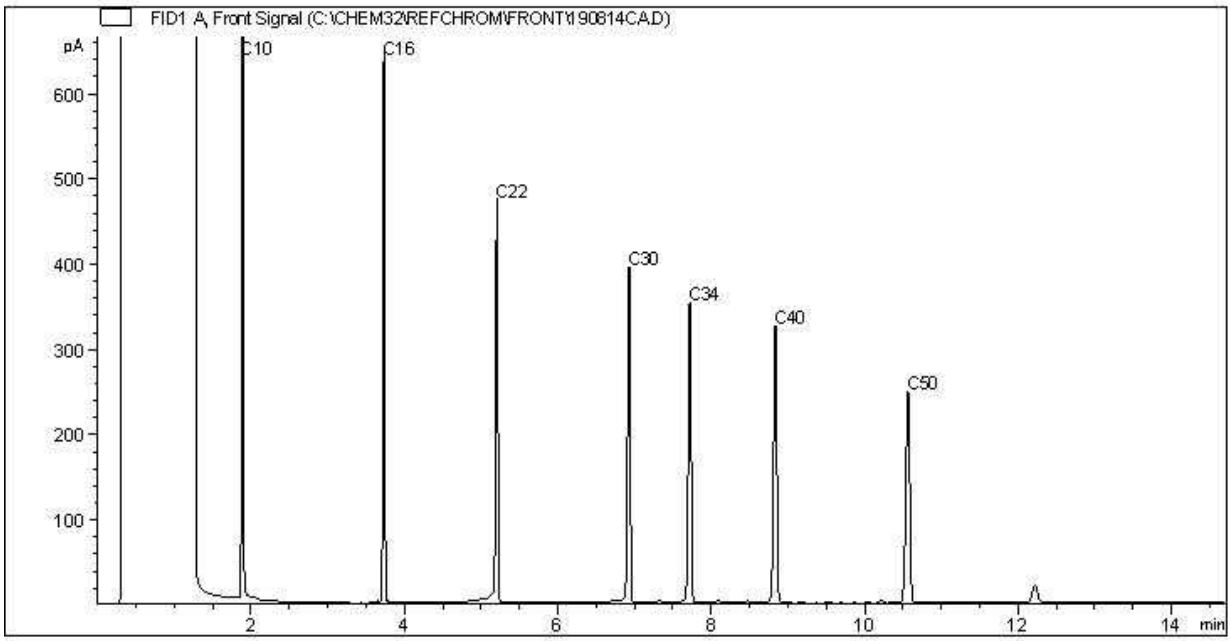
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC15



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

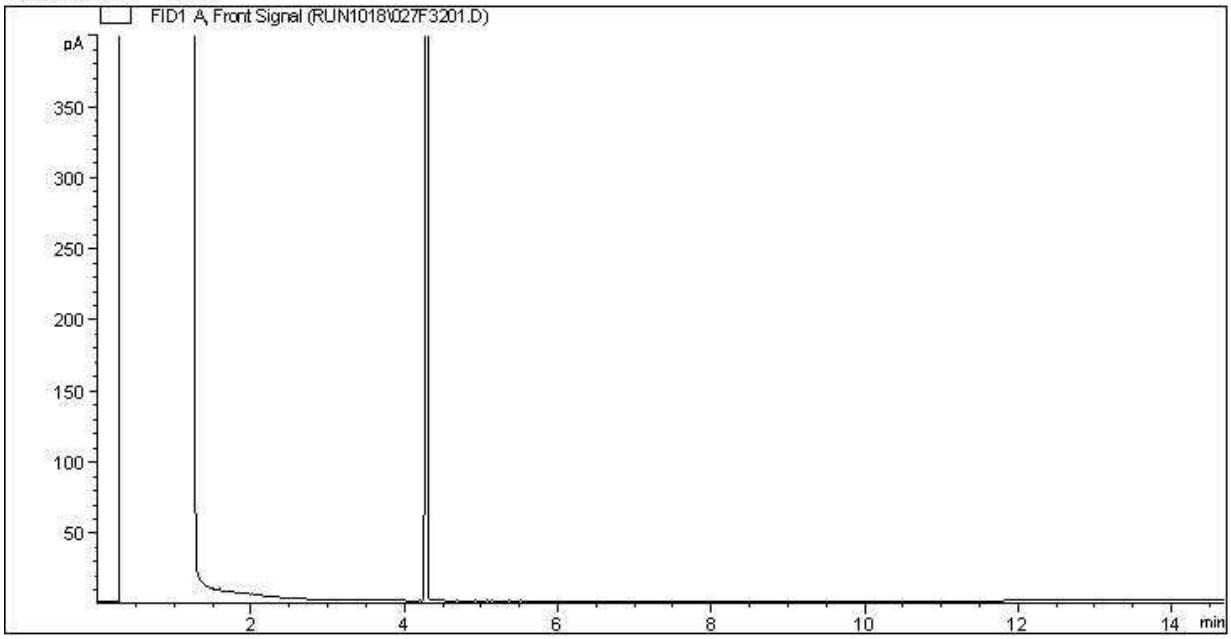
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B989129
Report Date: 2019/10/23
BV Labs Sample: WS4840

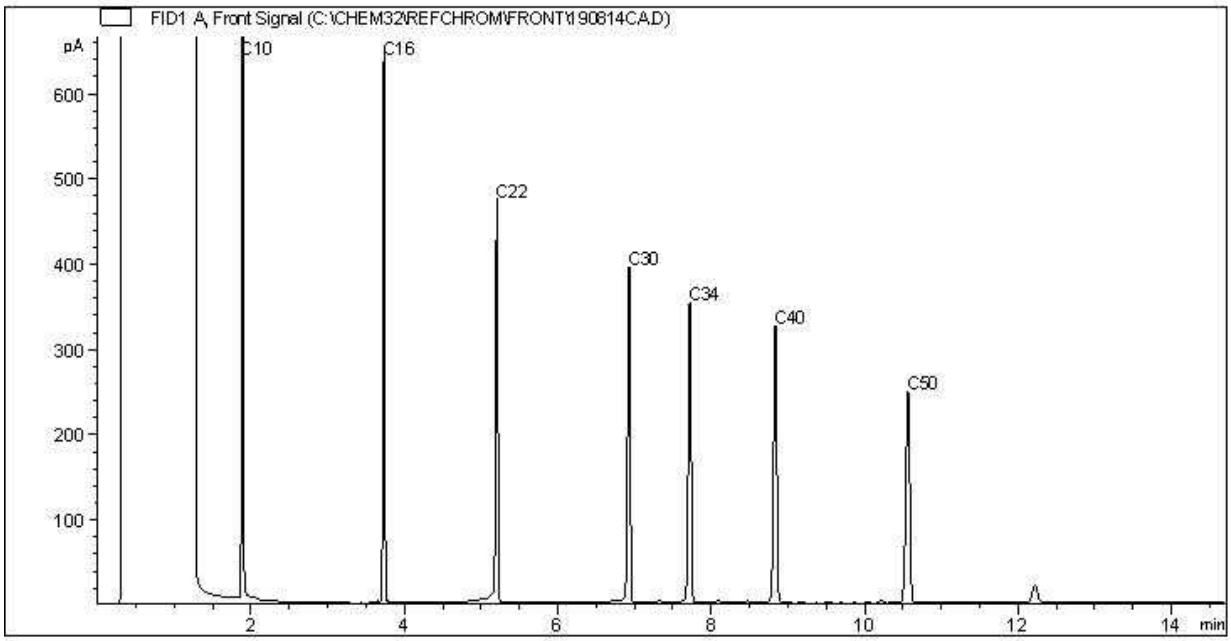
CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1639
Client ID: 4009-14

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC15



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

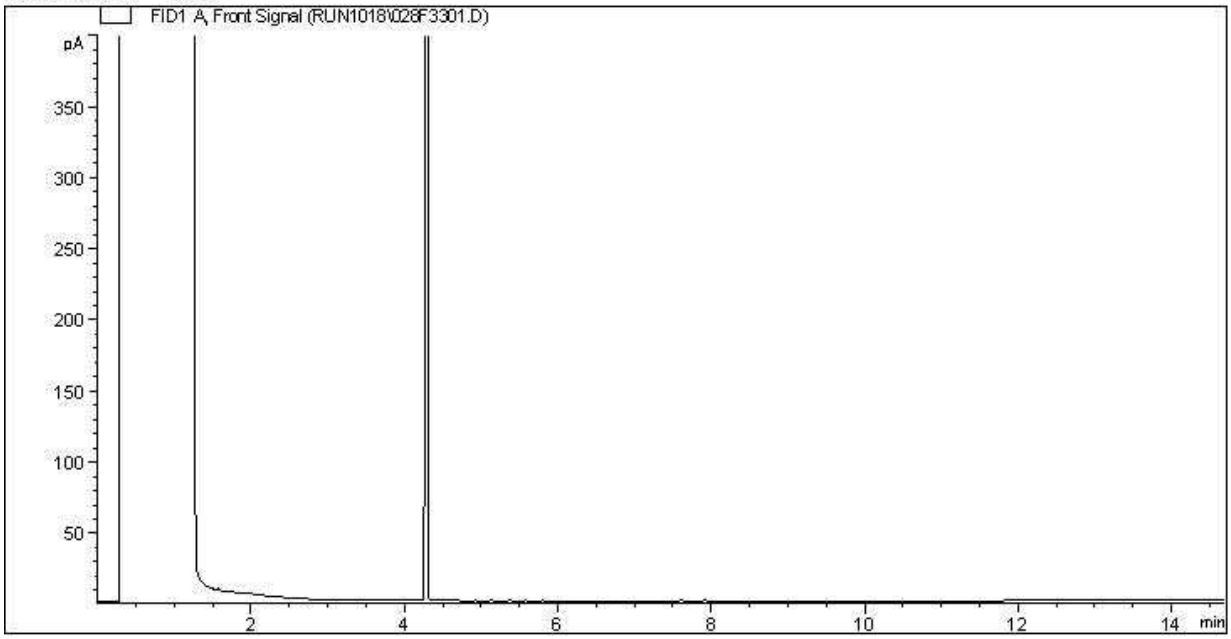
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B989129
Report Date: 2019/10/23
BV Labs Sample: WS4841

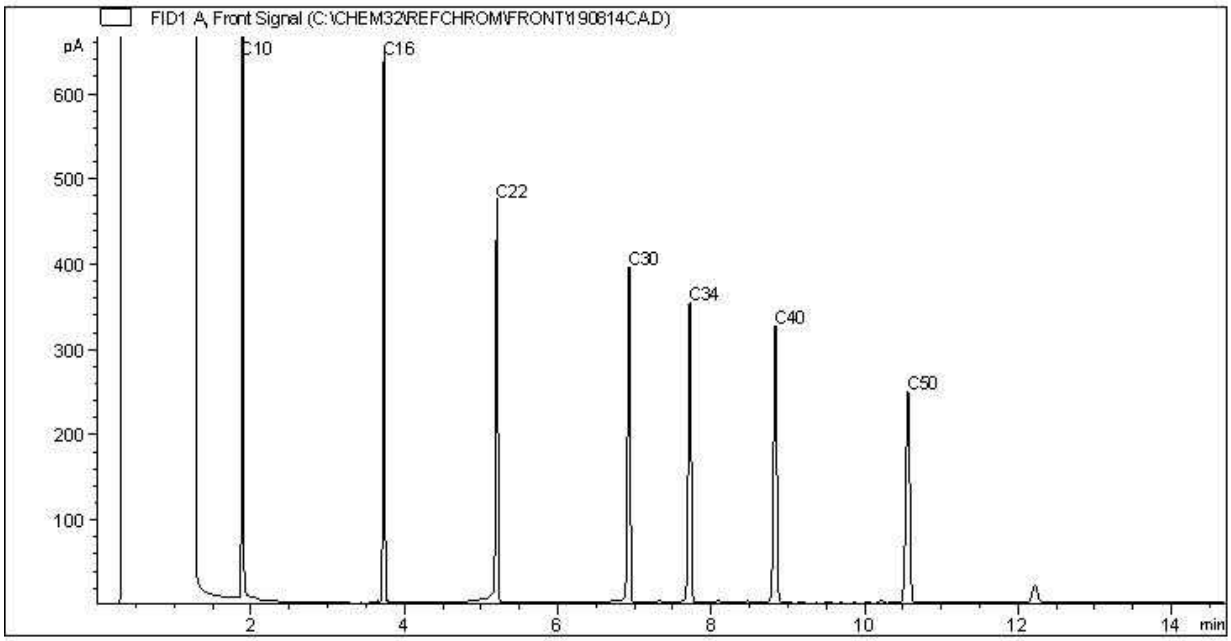
CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1639
Client ID: 4009-17

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC15



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: CG2430.1 E39
Your C.O.C. #: M085468

Attention: STEPHEN D'ABADIE

CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
CANADA T2E 7K9

Report Date: 2019/10/24
Report #: R2800983
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B989750
Received: 2019/10/18, 12:54

Sample Matrix: Ground Water
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 in Water by HS GC/MS/FID	4	N/A	2019/10/22	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX	4	N/A	2019/10/23		Auto Calc
CCME Hydrocarbons in Water (F2; C10-C16) (1)	4	2019/10/20	2019/10/20	AB SOP-00037 AB SOP-00040	CCME PHC-CWS m
Benzo[a]pyrene Equivalency (2)	4	N/A	2019/10/22		Auto Calc
PAH in Water by GC/MS	2	2019/10/20	2019/10/21	AB SOP-00037 / AB SOP-00003	EPA 3510C/8270E m
PAH in Water by GC/MS	2	2019/10/20	2019/10/22	AB SOP-00037 / AB SOP-00003	EPA 3510C/8270E m
Total Trihalomethanes Calculation	4	N/A	2019/10/24		Auto Calc
VOCs in Water by HS GC/MS (Std List)	4	N/A	2019/10/23	AB SOP-00056	EPA 5021a/8260d m

Sample Matrix: Soil
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS/FID (MeOH extract) (3)	1	N/A	2019/10/21	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX	1	N/A	2019/10/22		Auto Calc
CCME Hydrocarbons (F2-F4 in soil) (4)	1	2019/10/21	2019/10/23	AB SOP-00036	CCME PHC-CWS m
Moisture	2	N/A	2019/10/22	AB SOP-00002	CCME PHC-CWS m
VOCs in Soil by HS GC/MS (Std List) (3)	2	N/A	2019/10/22	AB SOP-00056	EPA 5021a/8260d m

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total Trihalomethanes Calculation	1	N/A	2019/10/24		Auto Calc
VOCs in Water by HS GC/MS (Std List)	1	N/A	2019/10/23	AB SOP-00056	EPA 5021a/8260d m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

Your Project #: CG2430.1 E39
Your C.O.C. #: M085468

Attention: STEPHEN D'ABADIE

CLIFTON ASSOCIATES LTD.
2222 30TH AVENUE NE
CALGARY, AB
CANADA T2E 7K9

Report Date: 2019/10/24
Report #: R2800983
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B989750
Received: 2019/10/18, 12:54

data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Silica gel clean up employed.
(2) B[a]P TPE is calculated using 1/2 of the RDL for non detect results as per Alberta Environment instructions. This protocol may not apply in other jurisdictions.
(3) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.
(4) All CCME results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following Alberta Environment’s Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods September 2003. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

AUTHORIZED REPORT
RAPPORT AUTORISÉ

Bureau Veritas Laboratories
24 Oct 2019 15:20:56

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Linsay Sunderman, Key Account Specialist
Email: linsay.sunderman@bvlabs.com
Phone# (403)735-2237 Ext:2237

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Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B989750
Report Date: 2019/10/24

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E39
Sampler Initials: AUS

AT1 BTEX AND F1-F2 IN WATER (GROUND WATER)

BV Labs ID		WS8370	WS8370	WS8371	WS8372	WS8373	WS8373		
Sampling Date		2019/10/18 09:00	2019/10/18 09:00	2019/10/18 09:30	2019/10/18 10:30	2019/10/18 11:00	2019/10/18 11:00		
COC Number		M085468	M085468	M085468	M085468	M085468	M085468		
	UNITS	**4008A**	**4008A Lab-Dup**	**4008B**	**4009A**	**4009B**	**4009B Lab-Dup**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon									
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	N/A	<0.10	<0.10	<0.10	<0.10	0.10	9634289
Volatiles									
Benzene	mg/L	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	N/A	0.00040	9636432
Toluene	mg/L	0.0025	0.0023	<0.00040	0.00045	<0.00040	N/A	0.00040	9636432
Ethylbenzene	mg/L	0.00048	0.00048	<0.00040	<0.00040	<0.00040	N/A	0.00040	9636432
m & p-Xylene	mg/L	0.014	0.013	<0.00080	<0.00080	<0.00080	N/A	0.00080	9636432
o-Xylene	mg/L	0.080	0.076	0.00052	<0.00040	<0.00040	N/A	0.00040	9636432
Xylenes (Total)	mg/L	0.093	N/A	<0.00089	<0.00089	<0.00089	N/A	0.00089	9634198
F1 (C6-C10) - BTEX	mg/L	<0.10	N/A	<0.10	<0.10	<0.10	N/A	0.10	9634198
F1 (C6-C10)	mg/L	0.14	0.15	<0.10	<0.10	<0.10	N/A	0.10	9636432
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	98	92	93	101	96	N/A	N/A	9636432
4-Bromofluorobenzene (sur.)	%	104	97	97	96	95	N/A	N/A	9636432
D4-1,2-Dichloroethane (sur.)	%	94	90	92	102	97	N/A	N/A	9636432
O-TERPHENYL (sur.)	%	97	N/A	97	103	93	95	N/A	9634289

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B989750
Report Date: 2019/10/24

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E39
Sampler Initials: AUS

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

BV Labs ID		WS8375		
Sampling Date		2019/10/15		
COC Number		M085468		
	UNITS	**4008-20**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon				
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	10	9636833
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	50	9636833
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	50	9636833
Reached Baseline at C50	mg/kg	Yes	N/A	9636833
Physical Properties				
Moisture	%	21	0.30	9637119
Volatiles				
Xylenes (Total)	mg/kg	<0.045	0.045	9634128
F1 (C6-C10) - BTEX	mg/kg	<10	10	9634128
Field Preserved Volatiles				
Benzene	mg/kg	<0.0050	0.0050	9635208
Toluene	mg/kg	<0.050	0.050	9635208
Ethylbenzene	mg/kg	<0.010	0.010	9635208
m & p-Xylene	mg/kg	<0.040	0.040	9635208
o-Xylene	mg/kg	<0.020	0.020	9635208
F1 (C6-C10)	mg/kg	<10	10	9635208
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	93	N/A	9635208
4-Bromofluorobenzene (sur.)	%	102	N/A	9635208
D10-o-Xylene (sur.)	%	119	N/A	9635208
D4-1,2-Dichloroethane (sur.)	%	89	N/A	9635208
O-TERPHENYL (sur.)	%	107	N/A	9636833

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B989750
Report Date: 2019/10/24

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E39
Sampler Initials: AUS

SEMIVOLATILE ORGANICS BY GC-MS (GROUND WATER)

BV Labs ID		WS8370	WS8371	WS8372	WS8373		
Sampling Date		2019/10/18 09:00	2019/10/18 09:30	2019/10/18 10:30	2019/10/18 11:00		
COC Number		M085468	M085468	M085468	M085468		
	UNITS	**4008A**	**4008B**	**4009A**	**4009B**	**RDL**	**QC Batch**
Polycyclic Aromatics							
B[a]P TPE Total Potency Equivalents	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	9633998
Acenaphthene	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	9634292
Acenaphthylene	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	9634292
Acridine	mg/L	<0.000040	<0.000040	<0.000040	<0.000040	0.000040	9634292
Anthracene	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	9634292
Benzo(a)anthracene	mg/L	<0.0000085	<0.0000085	<0.0000085	<0.0000085	0.0000085	9634292
Benzo(b&j)fluoranthene	mg/L	<0.0000085	<0.0000085	<0.0000085	<0.0000085	0.0000085	9634292
Benzo(k)fluoranthene	mg/L	<0.0000085	<0.0000085	<0.0000085	<0.0000085	0.0000085	9634292
Benzo(g,h,i)perylene	mg/L	<0.0000085	<0.0000085	<0.0000085	<0.0000085	0.0000085	9634292
Benzo(c)phenanthrene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	9634292
Benzo(a)pyrene	mg/L	<0.0000075	<0.0000075	<0.0000075	<0.0000075	0.0000075	9634292
Benzo(e)pyrene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	9634292
Chrysene	mg/L	<0.0000085	<0.0000085	<0.0000085	<0.0000085	0.0000085	9634292
Dibenz(a,h)anthracene	mg/L	<0.0000075	<0.0000075	<0.0000075	<0.0000075	0.0000075	9634292
Fluoranthene	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	9634292
Fluorene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	9634292
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	<0.0000085	<0.0000085	<0.0000085	0.0000085	9634292
1-Methylnaphthalene	mg/L	0.00029	<0.00010	<0.00010	<0.00010	0.00010	9634292
2-Methylnaphthalene	mg/L	0.00032	<0.00010	<0.00010	<0.00010	0.00010	9634292
Naphthalene	mg/L	0.0052	<0.00010	<0.00010	<0.00010	0.00010	9634292
Phenanthrene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	9634292
Perylene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	9634292
Pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	0.000020	9634292
Quinoline	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	9634292
Surrogate Recovery (%)							
D10-ANTHRACENE (sur.)	%	113	112	113	108	N/A	9634292
D8-ACENAPHTHYLENE (sur.)	%	97	100	95	91	N/A	9634292
D8-NAPHTHALENE (sur.)	%	68	69	66	73	N/A	9634292
TERPHENYL-D14 (sur.)	%	121	120	122	115	N/A	9634292

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B989750
Report Date: 2019/10/24

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E39
Sampler Initials: AUS

SEMIVOLATILE ORGANICS BY GC-MS (GROUND WATER)

BV Labs ID		WS8373		
Sampling Date		2019/10/18 11:00		
COC Number		M085468		
	UNITS	**4009B Lab-Dup**	**RDL**	**QC Batch**
Polycyclic Aromatics				
Acenaphthene	mg/L	<0.00010	0.00010	9634292
Acenaphthylene	mg/L	<0.00010	0.00010	9634292
Acridine	mg/L	<0.000040	0.000040	9634292
Anthracene	mg/L	<0.000010	0.000010	9634292
Benzo(a)anthracene	mg/L	<0.0000085	0.0000085	9634292
Benzo(b&j)fluoranthene	mg/L	<0.0000085	0.0000085	9634292
Benzo(k)fluoranthene	mg/L	<0.0000085	0.0000085	9634292
Benzo(g,h,i)perylene	mg/L	<0.0000085	0.0000085	9634292
Benzo(c)phenanthrene	mg/L	<0.000050	0.000050	9634292
Benzo(a)pyrene	mg/L	<0.0000075	0.0000075	9634292
Benzo(e)pyrene	mg/L	<0.000050	0.000050	9634292
Chrysene	mg/L	<0.0000085	0.0000085	9634292
Dibenz(a,h)anthracene	mg/L	<0.0000075	0.0000075	9634292
Fluoranthene	mg/L	<0.000010	0.000010	9634292
Fluorene	mg/L	<0.000050	0.000050	9634292
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	0.0000085	9634292
1-Methylnaphthalene	mg/L	<0.00010	0.00010	9634292
2-Methylnaphthalene	mg/L	<0.00010	0.00010	9634292
Naphthalene	mg/L	<0.00010	0.00010	9634292
Phenanthrene	mg/L	<0.000050	0.000050	9634292
Perylene	mg/L	<0.000050	0.000050	9634292
Pyrene	mg/L	<0.000020	0.000020	9634292
Quinoline	mg/L	<0.00020	0.00020	9634292
Surrogate Recovery (%)				
D10-ANTHRACENE (sur.)	%	111	N/A	9634292
D8-ACENAPHTHYLENE (sur.)	%	96	N/A	9634292
D8-NAPHTHALENE (sur.)	%	79	N/A	9634292
TERPHENYL-D14 (sur.)	%	120	N/A	9634292

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B989750
Report Date: 2019/10/24

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E39
Sampler Initials: AUS

VOLATILE ORGANICS BY GC-MS (GROUND WATER)

BV Labs ID		WS8370	WS8370	WS8371	WS8372	WS8373		
Sampling Date		2019/10/18 09:00	2019/10/18 09:00	2019/10/18 09:30	2019/10/18 10:30	2019/10/18 11:00		
COC Number		M085468	M085468	M085468	M085468	M085468		
	UNITS	**4008A**	**4008A Lab-Dup**	**4008B**	**4009A**	**4009B**	**RDL**	**QC Batch**
Volatiles								
Total Trihalomethanes	mg/L	<0.0013	N/A	<0.0013	<0.0013	<0.0013	0.0013	9634006
Bromodichloromethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9636437
Bromoform	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9636437
Bromomethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	9636437
Carbon tetrachloride	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9636437
Chlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9636437
Chlorodibromomethane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	9636437
Chloroethane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	9636437
Chloroform	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9636437
Chloromethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	9636437
1,2-dibromoethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	9636437
1,2-dichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9636437
1,3-dichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9636437
1,4-dichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9636437
1,1-dichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9636437
1,2-dichloroethane	mg/L	<0.00050	<0.00050	<0.00050	0.0077	0.0045	0.00050	9636437
1,1-dichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9636437
cis-1,2-dichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9636437
trans-1,2-dichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9636437
Dichloromethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	9636437
1,2-dichloropropane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9636437
cis-1,3-dichloropropene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9636437
trans-1,3-dichloropropene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9636437
Methyl methacrylate	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9636437
Methyl-tert-butylether (MTBE)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9636437
Styrene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9636437
1,1,1,2-tetrachloroethane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	9636437
1,1,2,2-tetrachloroethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	9636437
Tetrachloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9636437
1,2,3-trichlorobenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	9636437
1,2,4-trichlorobenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	9636437

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B989750
Report Date: 2019/10/24

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E39
Sampler Initials: AUS

VOLATILE ORGANICS BY GC-MS (GROUND WATER)

BV Labs ID		WS8370	WS8370	WS8371	WS8372	WS8373		
Sampling Date		2019/10/18 09:00	2019/10/18 09:00	2019/10/18 09:30	2019/10/18 10:30	2019/10/18 11:00		
COC Number		M085468	M085468	M085468	M085468	M085468		
	UNITS	**4008A**	**4008A Lab-Dup**	**4008B**	**4009A**	**4009B**	**RDL**	**QC Batch**
1,3,5-trichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9636437
1,1,1-trichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9636437
1,1,2-trichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9636437
Trichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9636437
Trichlorofluoromethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9636437
1,2,4-trimethylbenzene	mg/L	0.0062	0.0060	<0.00050	<0.00050	<0.00050	0.00050	9636437
1,3,5-trimethylbenzene	mg/L	0.0014	0.0014	<0.00050	<0.00050	<0.00050	0.00050	9636437
Vinyl chloride	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	9636437
Surrogate Recovery (%)								
1,4-Difluorobenzene (sur.)	%	101	101	101	100	101	N/A	9636437
4-Bromofluorobenzene (sur.)	%	91	92	95	95	94	N/A	9636437
D4-1,2-Dichloroethane (sur.)	%	95	96	97	95	97	N/A	9636437

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B989750
Report Date: 2019/10/24

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E39
Sampler Initials: AUS

PHYSICAL TESTING (SOIL)

BV Labs ID		WS8376		
Sampling Date		2019/10/15		
COC Number		M085468		
	UNITS	**4008B-20**	**RDL**	**QC Batch**
Physical Properties				
Moisture	%	19	0.30	9637119
RDL = Reportable Detection Limit				

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B989750
Report Date: 2019/10/24

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E39
Sampler Initials: AUS

VOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		WS8375	WS8376		
Sampling Date		2019/10/15	2019/10/15		
COC Number		M085468	M085468		
	UNITS	**4008-20**	**4008B-20**	**RDL**	**QC Batch**
Field Preserved Volatiles					
Benzene	mg/kg	N/A	<0.0050	0.0050	9635251
Bromodichloromethane	mg/kg	<0.030	<0.030	0.030	9635251
Bromoform	mg/kg	<0.050	<0.050	0.050	9635251
Bromomethane	mg/kg	<0.020	<0.020	0.020	9635251
Carbon tetrachloride	mg/kg	<0.00050	<0.00050	0.00050	9635251
Chlorobenzene	mg/kg	<0.0010	<0.0010	0.0010	9635251
Chlorodibromomethane	mg/kg	<0.020	<0.020	0.020	9635251
Chloroethane	mg/kg	<0.020	<0.020	0.020	9635251
Chloroform	mg/kg	<0.010	<0.010	0.010	9635251
Chloromethane	mg/kg	<0.030	<0.030	0.030	9635251
1,2-dibromoethane	mg/kg	<0.0020	<0.0020	0.0020	9635251
1,2-dichlorobenzene	mg/kg	<0.020	<0.020	0.020	9635251
1,3-dichlorobenzene	mg/kg	<0.020	<0.020	0.020	9635251
1,4-dichlorobenzene	mg/kg	<0.020	<0.020	0.020	9635251
1,1-dichloroethane	mg/kg	<0.020	<0.020	0.020	9635251
1,2-dichloroethane	mg/kg	<0.0020	<0.0020	0.0020	9635251
1,1-dichloroethene	mg/kg	<0.020	<0.020	0.020	9635251
cis-1,2-dichloroethene	mg/kg	<0.020	<0.020	0.020	9635251
trans-1,2-dichloroethene	mg/kg	<0.020	<0.020	0.020	9635251
Dichloromethane	mg/kg	<0.030	<0.030	0.030	9635251
1,2-dichloropropane	mg/kg	<0.020	<0.020	0.020	9635251
cis-1,3-dichloropropene	mg/kg	<0.020	<0.020	0.020	9635251
trans-1,3-dichloropropene	mg/kg	<0.020	<0.020	0.020	9635251
Ethylbenzene	mg/kg	N/A	<0.010	0.010	9635251
Methyl methacrylate	mg/kg	<0.040	<0.040	0.040	9635251
Methyl-tert-butylether (MTBE)	mg/kg	<0.030	<0.030	0.030	9635251
Styrene	mg/kg	<0.020	<0.020	0.020	9635251
1,1,1,2-tetrachloroethane	mg/kg	<0.050	<0.050	0.050	9635251
1,1,2,2-tetrachloroethane	mg/kg	<0.050	<0.050	0.050	9635251
Tetrachloroethene	mg/kg	<0.010	<0.010	0.010	9635251
Toluene	mg/kg	N/A	<0.050	0.050	9635251
1,2,3-trichlorobenzene	mg/kg	<0.040	<0.040	0.040	9635251

RDL = Reportable Detection Limit
N/A = Not Applicable

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BV Labs Job #: B989750
Report Date: 2019/10/24

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E39
Sampler Initials: AUS

VOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		WS8375	WS8376		
Sampling Date		2019/10/15	2019/10/15		
COC Number		M085468	M085468		
	UNITS	**4008-20**	**4008B-20**	**RDL**	**QC Batch**
1,2,4-trichlorobenzene	mg/kg	<0.040	<0.040	0.040	9635251
1,3,5-trichlorobenzene	mg/kg	<0.040	<0.040	0.040	9635251
1,1,1-trichloroethane	mg/kg	<0.020	<0.020	0.020	9635251
1,1,2-trichloroethane	mg/kg	<0.020	<0.020	0.020	9635251
Trichloroethene	mg/kg	<0.010	<0.010	0.010	9635251
Trichlorofluoromethane	mg/kg	<0.020	<0.020	0.020	9635251
1,2,4-trimethylbenzene	mg/kg	<0.50	<0.50	0.50	9635251
1,3,5-trimethylbenzene	mg/kg	<0.50	<0.50	0.50	9635251
Vinyl chloride	mg/kg	<0.00030	<0.00030	0.00030	9635251
Xylenes (Total)	mg/kg	N/A	<0.040	0.040	9635251
m & p-Xylene	mg/kg	N/A	<0.040	0.040	9635251
o-Xylene	mg/kg	N/A	<0.020	0.020	9635251
Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	99	99	N/A	9635251
4-Bromofluorobenzene (sur.)	%	102	102	N/A	9635251
D10-o-Xylene (sur.)	%	113	108	N/A	9635251
D4-1,2-Dichloroethane (sur.)	%	102	105	N/A	9635251

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B989750
Report Date: 2019/10/24

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E39
Sampler Initials: AUS

VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		WS8374		
Sampling Date		2019/10/18		
COC Number		M085468		
	UNITS	**TRIP BLANK**	**RDL**	**QC Batch**
Volatiles				
Total Trihalomethanes	mg/L	<0.0013	0.0013	9634006
Benzene	mg/L	<0.00040	0.00040	9636437
Bromodichloromethane	mg/L	<0.00050	0.00050	9636437
Bromoform	mg/L	<0.00050	0.00050	9636437
Bromomethane	mg/L	<0.0020	0.0020	9636437
Carbon tetrachloride	mg/L	<0.00050	0.00050	9636437
Chlorobenzene	mg/L	<0.00050	0.00050	9636437
Chlorodibromomethane	mg/L	<0.0010	0.0010	9636437
Chloroethane	mg/L	<0.0010	0.0010	9636437
Chloroform	mg/L	<0.00050	0.00050	9636437
Chloromethane	mg/L	<0.0020	0.0020	9636437
1,2-dibromoethane	mg/L	<0.00020	0.00020	9636437
1,2-dichlorobenzene	mg/L	<0.00050	0.00050	9636437
1,3-dichlorobenzene	mg/L	<0.00050	0.00050	9636437
1,4-dichlorobenzene	mg/L	<0.00050	0.00050	9636437
1,1-dichloroethane	mg/L	<0.00050	0.00050	9636437
1,2-dichloroethane	mg/L	<0.00050	0.00050	9636437
1,1-dichloroethene	mg/L	<0.00050	0.00050	9636437
cis-1,2-dichloroethene	mg/L	<0.00050	0.00050	9636437
trans-1,2-dichloroethene	mg/L	<0.00050	0.00050	9636437
Dichloromethane	mg/L	<0.0020	0.0020	9636437
1,2-dichloropropane	mg/L	<0.00050	0.00050	9636437
cis-1,3-dichloropropene	mg/L	<0.00050	0.00050	9636437
trans-1,3-dichloropropene	mg/L	<0.00050	0.00050	9636437
Ethylbenzene	mg/L	<0.00040	0.00040	9636437
Methyl methacrylate	mg/L	<0.00050	0.00050	9636437
Methyl-tert-butylether (MTBE)	mg/L	<0.00050	0.00050	9636437
Styrene	mg/L	<0.00050	0.00050	9636437
1,1,1,2-tetrachloroethane	mg/L	<0.0010	0.0010	9636437
1,1,2,2-tetrachloroethane	mg/L	<0.0020	0.0020	9636437
Tetrachloroethene	mg/L	<0.00050	0.00050	9636437
Toluene	mg/L	<0.00040	0.00040	9636437
1,2,3-trichlorobenzene	mg/L	<0.0010	0.0010	9636437
RDL = Reportable Detection Limit				

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BV Labs Job #: B989750
Report Date: 2019/10/24

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E39
Sampler Initials: AUS

VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		WS8374		
Sampling Date		2019/10/18		
COC Number		M085468		
	UNITS	**TRIP BLANK**	**RDL**	**QC Batch**
1,2,4-trichlorobenzene	mg/L	<0.0010	0.0010	9636437
1,3,5-trichlorobenzene	mg/L	<0.00050	0.00050	9636437
1,1,1-trichloroethane	mg/L	<0.00050	0.00050	9636437
1,1,2-trichloroethane	mg/L	<0.00050	0.00050	9636437
Trichloroethene	mg/L	<0.00050	0.00050	9636437
Trichlorofluoromethane	mg/L	<0.00050	0.00050	9636437
1,2,4-trimethylbenzene	mg/L	<0.00050	0.00050	9636437
1,3,5-trimethylbenzene	mg/L	<0.00050	0.00050	9636437
Vinyl chloride	mg/L	<0.00050	0.00050	9636437
Xylenes (Total)	mg/L	<0.00080	0.00080	9636437
m & p-Xylene	mg/L	<0.00080	0.00080	9636437
o-Xylene	mg/L	<0.00040	0.00040	9636437
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	100	N/A	9636437
4-Bromofluorobenzene (sur.)	%	95	N/A	9636437
D4-1,2-Dichloroethane (sur.)	%	97	N/A	9636437

RDL = Reportable Detection Limit
N/A = Not Applicable

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.3°C

Results relate only to the items tested.

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BV Labs Job #: B989750
Report Date: 2019/10/24

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E39
Sampler Initials: AUS

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9634289	MHF	Matrix Spike	O-TERPHENYL (sur.)	2019/10/20		94	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/10/20		96	%	60 - 140
9634289	MHF	Spiked Blank	O-TERPHENYL (sur.)	2019/10/20		94	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/10/20		95	%	60 - 140
9634289	MHF	Method Blank	O-TERPHENYL (sur.)	2019/10/20		98	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/10/20	<0.10		mg/L	
9634289	MHF	RPD [WS8373-01]	F2 (C10-C16 Hydrocarbons)	2019/10/20	NC		%	30
9634292	NK3	Matrix Spike [WS8370-01]	D10-ANTHRACENE (sur.)	2019/10/22		107	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/10/22		93	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/10/22		67	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/10/22		115	%	50 - 130
			Acenaphthene	2019/10/22		89	%	50 - 130
			Acenaphthylene	2019/10/22		90	%	50 - 130
			Acridine	2019/10/22		80	%	50 - 130
			Anthracene	2019/10/22		87	%	50 - 130
			Benzo(a)anthracene	2019/10/22		97	%	50 - 130
			Benzo(b&j)fluoranthene	2019/10/22		89	%	50 - 130
			Benzo(k)fluoranthene	2019/10/22		92	%	50 - 130
			Benzo(g,h,i)perylene	2019/10/22		93	%	50 - 130
			Benzo(c)phenanthrene	2019/10/22		98	%	50 - 130
			Benzo(a)pyrene	2019/10/22		104	%	50 - 130
			Benzo(e)pyrene	2019/10/22		93	%	50 - 130
			Chrysene	2019/10/22		95	%	50 - 130
			Dibenz(a,h)anthracene	2019/10/22		99	%	50 - 130
			Fluoranthene	2019/10/22		92	%	50 - 130
			Fluorene	2019/10/22		94	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/10/22		97	%	50 - 130
			1-Methylnaphthalene	2019/10/22		84	%	50 - 130
			2-Methylnaphthalene	2019/10/22		81	%	50 - 130
			Naphthalene	2019/10/22		71	%	50 - 130
			Phenanthrene	2019/10/22		87	%	50 - 130
			Perylene	2019/10/22		88	%	50 - 130
			Pyrene	2019/10/22		92	%	50 - 130
			Quinoline	2019/10/22		102	%	50 - 130
9634292	NK3	Spiked Blank	D10-ANTHRACENE (sur.)	2019/10/21		107	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/10/21		93	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/10/21		69	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/10/21		113	%	50 - 130
			Acenaphthene	2019/10/21		83	%	50 - 130
			Acenaphthylene	2019/10/21		85	%	50 - 130
			Acridine	2019/10/21		81	%	50 - 130
			Anthracene	2019/10/21		85	%	50 - 130
			Benzo(a)anthracene	2019/10/21		99	%	50 - 130
			Benzo(b&j)fluoranthene	2019/10/21		92	%	50 - 130
			Benzo(k)fluoranthene	2019/10/21		90	%	50 - 130
			Benzo(g,h,i)perylene	2019/10/21		95	%	50 - 130
			Benzo(c)phenanthrene	2019/10/21		97	%	50 - 130
			Benzo(a)pyrene	2019/10/21		106	%	50 - 130
			Benzo(e)pyrene	2019/10/21		94	%	50 - 130
			Chrysene	2019/10/21		94	%	50 - 130
			Dibenz(a,h)anthracene	2019/10/21		105	%	50 - 130
			Fluoranthene	2019/10/21		91	%	50 - 130
			Fluorene	2019/10/21		90	%	50 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Indeno(1,2,3-cd)pyrene	2019/10/21		105	%	50 - 130
			1-Methylnaphthalene	2019/10/21		73	%	50 - 130
			2-Methylnaphthalene	2019/10/21		68	%	50 - 130
			Naphthalene	2019/10/21		68	%	50 - 130
			Phenanthrene	2019/10/21		85	%	50 - 130
			Perylene	2019/10/21		86	%	50 - 130
			Pyrene	2019/10/21		90	%	50 - 130
			Quinoline	2019/10/21		101	%	50 - 130
9634292	NK3	Method Blank	D10-ANTHRACENE (sur.)	2019/10/21		106	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2019/10/21		77	%	50 - 130
			D8-NAPHTHALENE (sur.)	2019/10/21		46 (1)	%	50 - 130
			TERPHENYL-D14 (sur.)	2019/10/21		114	%	50 - 130
			Acenaphthene	2019/10/21	<0.00010		mg/L	
			Acenaphthylene	2019/10/21	<0.00010		mg/L	
			Acridine	2019/10/21	<0.000040		mg/L	
			Anthracene	2019/10/21	<0.000010		mg/L	
			Benzo(a)anthracene	2019/10/21	<0.0000085		mg/L	
			Benzo(b&j)fluoranthene	2019/10/21	<0.0000085		mg/L	
			Benzo(k)fluoranthene	2019/10/21	<0.0000085		mg/L	
			Benzo(g,h,i)perylene	2019/10/21	<0.0000085		mg/L	
			Benzo(c)phenanthrene	2019/10/21	<0.000050		mg/L	
			Benzo(a)pyrene	2019/10/21	<0.0000075		mg/L	
			Benzo(e)pyrene	2019/10/21	<0.000050		mg/L	
			Chrysene	2019/10/21	<0.0000085		mg/L	
			Dibenz(a,h)anthracene	2019/10/21	<0.0000075		mg/L	
			Fluoranthene	2019/10/21	<0.000010		mg/L	
			Fluorene	2019/10/21	<0.000050		mg/L	
			Indeno(1,2,3-cd)pyrene	2019/10/21	<0.0000085		mg/L	
			1-Methylnaphthalene	2019/10/21	<0.00010		mg/L	
			2-Methylnaphthalene	2019/10/21	<0.00010		mg/L	
			Naphthalene	2019/10/21	<0.00010		mg/L	
			Phenanthrene	2019/10/21	<0.000050		mg/L	
			Perylene	2019/10/21	<0.000050		mg/L	
			Pyrene	2019/10/21	<0.000020		mg/L	
			Quinoline	2019/10/21	<0.00020		mg/L	
9634292	NK3	RPD [WS8373-01]	Acenaphthene	2019/10/22	NC		%	30
			Acenaphthylene	2019/10/22	NC		%	30
			Acridine	2019/10/22	NC		%	30
			Anthracene	2019/10/22	NC		%	30
			Benzo(a)anthracene	2019/10/22	NC		%	30
			Benzo(b&j)fluoranthene	2019/10/22	NC		%	30
			Benzo(k)fluoranthene	2019/10/22	NC		%	30
			Benzo(g,h,i)perylene	2019/10/22	NC		%	30
			Benzo(c)phenanthrene	2019/10/22	NC		%	30
			Benzo(a)pyrene	2019/10/22	NC		%	30
			Benzo(e)pyrene	2019/10/22	NC		%	30
			Chrysene	2019/10/22	NC		%	30
			Dibenz(a,h)anthracene	2019/10/22	NC		%	30
			Fluoranthene	2019/10/22	NC		%	30
			Fluorene	2019/10/22	NC		%	30
			Indeno(1,2,3-cd)pyrene	2019/10/22	NC		%	30
			1-Methylnaphthalene	2019/10/22	NC		%	30
			2-Methylnaphthalene	2019/10/22	NC		%	30
			Naphthalene	2019/10/22	NC		%	30

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Phenanthrene	2019/10/22	NC		%	30
			Perylene	2019/10/22	NC		%	30
			Pyrene	2019/10/22	NC		%	30
			Quinoline	2019/10/22	NC		%	30
9635208	RSU	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/10/21		98	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/10/21		100	%	50 - 140
			D10-o-Xylene (sur.)	2019/10/21		101	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/10/21		90	%	50 - 140
			Benzene	2019/10/21		74	%	50 - 140
			Toluene	2019/10/21		75	%	50 - 140
			Ethylbenzene	2019/10/21		76	%	50 - 140
			m & p-Xylene	2019/10/21		76	%	50 - 140
			o-Xylene	2019/10/21		79	%	50 - 140
			F1 (C6-C10)	2019/10/21		93	%	60 - 140
9635208	RSU	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/10/21		89	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/10/21		100	%	50 - 140
			D10-o-Xylene (sur.)	2019/10/21		138	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/10/21		89	%	50 - 140
			Benzene	2019/10/21		109	%	60 - 130
			Toluene	2019/10/21		115	%	60 - 130
			Ethylbenzene	2019/10/21		121	%	60 - 130
			m & p-Xylene	2019/10/21		121	%	60 - 130
			o-Xylene	2019/10/21		126	%	60 - 130
			F1 (C6-C10)	2019/10/21		94	%	60 - 140
9635208	RSU	Method Blank	1,4-Difluorobenzene (sur.)	2019/10/21		98	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/10/21		103	%	50 - 140
			D10-o-Xylene (sur.)	2019/10/21		96	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/10/21		90	%	50 - 140
			Benzene	2019/10/21	<0.0050		mg/kg	
			Toluene	2019/10/21	<0.050		mg/kg	
			Ethylbenzene	2019/10/21	<0.010		mg/kg	
			m & p-Xylene	2019/10/21	<0.040		mg/kg	
			o-Xylene	2019/10/21	<0.020		mg/kg	
			F1 (C6-C10)	2019/10/21	<10		mg/kg	
9635208	RSU	RPD	Benzene	2019/10/21	1.5		%	50
			Toluene	2019/10/21	0.75		%	50
			Ethylbenzene	2019/10/21	3.5		%	50
			m & p-Xylene	2019/10/21	0		%	50
			o-Xylene	2019/10/21	2.5		%	50
			F1 (C6-C10)	2019/10/21	6.1		%	30
9635251	QW1	Matrix Spike	1,4-Difluorobenzene (sur.)	2019/10/22		102	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/10/22		104	%	50 - 140
			D10-o-Xylene (sur.)	2019/10/22		115	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/10/22		117	%	50 - 140
			Benzene	2019/10/22		98	%	50 - 140
			Bromodichloromethane	2019/10/22		104	%	50 - 140
			Bromoform	2019/10/22		99	%	50 - 140
			Bromomethane	2019/10/22		101	%	50 - 140
			Carbon tetrachloride	2019/10/22		92	%	50 - 140
			Chlorobenzene	2019/10/22		91	%	50 - 140
			Chlorodibromomethane	2019/10/22		104	%	50 - 140
			Chloroethane	2019/10/22		120	%	50 - 140
			Chloroform	2019/10/22		94	%	50 - 140
			Chloromethane	2019/10/22		93	%	50 - 140

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,2-dibromoethane	2019/10/22		106	%	50 - 140
			1,2-dichlorobenzene	2019/10/22		95	%	50 - 140
			1,3-dichlorobenzene	2019/10/22		96	%	50 - 140
			1,4-dichlorobenzene	2019/10/22		93	%	50 - 140
			1,1-dichloroethane	2019/10/22		96	%	50 - 140
			1,2-dichloroethane	2019/10/22		103	%	50 - 140
			1,1-dichloroethene	2019/10/22		95	%	50 - 140
			cis-1,2-dichloroethene	2019/10/22		97	%	50 - 140
			trans-1,2-dichloroethene	2019/10/22		92	%	50 - 140
			Dichloromethane	2019/10/22		95	%	50 - 140
			1,2-dichloropropane	2019/10/22		102	%	50 - 140
			cis-1,3-dichloropropene	2019/10/22		106	%	50 - 140
			trans-1,3-dichloropropene	2019/10/22		107	%	50 - 140
			Ethylbenzene	2019/10/22		94	%	50 - 140
			Methyl methacrylate	2019/10/22		108	%	50 - 140
			Methyl-tert-butylether (MTBE)	2019/10/22		97	%	50 - 140
			Styrene	2019/10/22		98	%	50 - 140
			1,1,1,2-tetrachloroethane	2019/10/22		96	%	50 - 140
			1,1,2,2-tetrachloroethane	2019/10/22		94	%	50 - 140
			Tetrachloroethene	2019/10/22		90	%	50 - 140
			Toluene	2019/10/22		92	%	50 - 140
			1,2,3-trichlorobenzene	2019/10/22		81	%	50 - 140
			1,2,4-trichlorobenzene	2019/10/22		81	%	50 - 140
			1,3,5-trichlorobenzene	2019/10/22		85	%	50 - 140
			1,1,1-trichloroethane	2019/10/22		95	%	50 - 140
			1,1,2-trichloroethane	2019/10/22		106	%	50 - 140
			Trichloroethene	2019/10/22		96	%	50 - 140
			Trichlorofluoromethane	2019/10/22		93	%	50 - 140
			1,2,4-trimethylbenzene	2019/10/22		95	%	50 - 140
			1,3,5-trimethylbenzene	2019/10/22		94	%	50 - 140
			Vinyl chloride	2019/10/22		91	%	50 - 140
			m & p-Xylene	2019/10/22		93	%	50 - 140
			o-Xylene	2019/10/22		93	%	50 - 140
9635251	QW1	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/10/22		103	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/10/22		100	%	50 - 140
			D10-o-Xylene (sur.)	2019/10/22		103	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/10/22		119	%	50 - 140
			Benzene	2019/10/22		106	%	60 - 130
			Bromodichloromethane	2019/10/22		108	%	60 - 130
			Bromoform	2019/10/22		103	%	60 - 130
			Bromomethane	2019/10/22		93	%	60 - 130
			Carbon tetrachloride	2019/10/22		99	%	60 - 130
			Chlorobenzene	2019/10/22		96	%	60 - 130
			Chlorodibromomethane	2019/10/22		106	%	60 - 130
			Chloroethane	2019/10/22		130	%	60 - 130
			Chloroform	2019/10/22		99	%	60 - 130
			Chloromethane	2019/10/22		98	%	60 - 130
			1,2-dibromoethane	2019/10/22		109	%	60 - 130
			1,2-dichlorobenzene	2019/10/22		101	%	60 - 130
			1,3-dichlorobenzene	2019/10/22		100	%	60 - 130
			1,4-dichlorobenzene	2019/10/22		97	%	60 - 130
			1,1-dichloroethane	2019/10/22		102	%	60 - 130
			1,2-dichloroethane	2019/10/22		109	%	60 - 130
			1,1-dichloroethene	2019/10/22		103	%	60 - 130

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			cis-1,2-dichloroethene	2019/10/22		102	%	60 - 130
			trans-1,2-dichloroethene	2019/10/22		99	%	60 - 130
			Dichloromethane	2019/10/22		101	%	60 - 130
			1,2-dichloropropane	2019/10/22		106	%	60 - 130
			cis-1,3-dichloropropene	2019/10/22		92	%	60 - 130
			trans-1,3-dichloropropene	2019/10/22		84	%	60 - 130
			Ethylbenzene	2019/10/22		101	%	60 - 130
			Methyl methacrylate	2019/10/22		110	%	60 - 130
			Methyl-tert-butylether (MTBE)	2019/10/22		101	%	60 - 130
			Styrene	2019/10/22		103	%	60 - 130
			1,1,1,2-tetrachloroethane	2019/10/22		99	%	60 - 130
			1,1,2,2-tetrachloroethane	2019/10/22		102	%	60 - 130
			Tetrachloroethene	2019/10/22		96	%	60 - 130
			Toluene	2019/10/22		97	%	60 - 130
			1,2,3-trichlorobenzene	2019/10/22		92	%	60 - 130
			1,2,4-trichlorobenzene	2019/10/22		92	%	60 - 130
			1,3,5-trichlorobenzene	2019/10/22		95	%	60 - 130
			1,1,1-trichloroethane	2019/10/22		102	%	60 - 130
			1,1,2-trichloroethane	2019/10/22		113	%	60 - 130
			Trichloroethene	2019/10/22		103	%	60 - 130
			Trichlorofluoromethane	2019/10/22		102	%	60 - 130
			1,2,4-trimethylbenzene	2019/10/22		98	%	60 - 130
			1,3,5-trimethylbenzene	2019/10/22		98	%	60 - 130
			Vinyl chloride	2019/10/22		99	%	60 - 130
			m & p-Xylene	2019/10/22		100	%	60 - 130
			o-Xylene	2019/10/22		99	%	60 - 130
9635251	QW1	Method Blank	1,4-Difluorobenzene (sur.)	2019/10/22		99	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/10/22		100	%	50 - 140
			D10-o-Xylene (sur.)	2019/10/22		100	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/10/22		103	%	50 - 140
			Benzene	2019/10/22	<0.0050		mg/kg	
			Bromodichloromethane	2019/10/22	<0.030		mg/kg	
			Bromoform	2019/10/22	<0.050		mg/kg	
			Bromomethane	2019/10/22	<0.020		mg/kg	
			Carbon tetrachloride	2019/10/22	<0.00050		mg/kg	
			Chlorobenzene	2019/10/22	<0.0010		mg/kg	
			Chlorodibromomethane	2019/10/22	<0.020		mg/kg	
			Chloroethane	2019/10/22	<0.020		mg/kg	
			Chloroform	2019/10/22	<0.010		mg/kg	
			Chloromethane	2019/10/22	<0.030		mg/kg	
			1,2-dibromoethane	2019/10/22	<0.0020		mg/kg	
			1,2-dichlorobenzene	2019/10/22	<0.020		mg/kg	
			1,3-dichlorobenzene	2019/10/22	<0.020		mg/kg	
			1,4-dichlorobenzene	2019/10/22	<0.020		mg/kg	
			1,1-dichloroethane	2019/10/22	<0.020		mg/kg	
			1,2-dichloroethane	2019/10/22	<0.0020		mg/kg	
			1,1-dichloroethene	2019/10/22	<0.020		mg/kg	
			cis-1,2-dichloroethene	2019/10/22	<0.020		mg/kg	
			trans-1,2-dichloroethene	2019/10/22	<0.020		mg/kg	
			Dichloromethane	2019/10/22	<0.030		mg/kg	
			1,2-dichloropropane	2019/10/22	<0.020		mg/kg	
			cis-1,3-dichloropropene	2019/10/22	<0.020		mg/kg	
			trans-1,3-dichloropropene	2019/10/22	<0.020		mg/kg	
			Ethylbenzene	2019/10/22	<0.010		mg/kg	

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Methyl methacrylate	2019/10/22	<0.040		mg/kg	
			Methyl-tert-butylether (MTBE)	2019/10/22	<0.030		mg/kg	
			Styrene	2019/10/22	<0.020		mg/kg	
			1,1,1,2-tetrachloroethane	2019/10/22	<0.050		mg/kg	
			1,1,2,2-tetrachloroethane	2019/10/22	<0.050		mg/kg	
			Tetrachloroethene	2019/10/22	<0.010		mg/kg	
			Toluene	2019/10/22	<0.050		mg/kg	
			1,2,3-trichlorobenzene	2019/10/22	<0.040		mg/kg	
			1,2,4-trichlorobenzene	2019/10/22	<0.040		mg/kg	
			1,3,5-trichlorobenzene	2019/10/22	<0.040		mg/kg	
			1,1,1-trichloroethane	2019/10/22	<0.020		mg/kg	
			1,1,2-trichloroethane	2019/10/22	<0.020		mg/kg	
			Trichloroethene	2019/10/22	<0.010		mg/kg	
			Trichlorofluoromethane	2019/10/22	<0.020		mg/kg	
			1,2,4-trimethylbenzene	2019/10/22	<0.50		mg/kg	
			1,3,5-trimethylbenzene	2019/10/22	<0.50		mg/kg	
			Vinyl chloride	2019/10/22	<0.00030		mg/kg	
			Xylenes (Total)	2019/10/22	<0.040		mg/kg	
			m & p-Xylene	2019/10/22	<0.040		mg/kg	
			o-Xylene	2019/10/22	<0.020		mg/kg	
9635251	QW1	RPD	Bromodichloromethane	2019/10/22	NC		%	50
			Bromoform	2019/10/22	NC		%	50
			Bromomethane	2019/10/22	NC		%	50
			Carbon tetrachloride	2019/10/22	NC		%	50
			Chlorobenzene	2019/10/22	NC		%	50
			Chlorodibromomethane	2019/10/22	NC		%	50
			Chloroethane	2019/10/22	NC		%	50
			Chloroform	2019/10/22	NC		%	50
			Chloromethane	2019/10/22	NC		%	50
			1,2-dibromoethane	2019/10/22	NC		%	50
			1,2-dichlorobenzene	2019/10/22	NC		%	50
			1,3-dichlorobenzene	2019/10/22	NC		%	50
			1,4-dichlorobenzene	2019/10/22	NC		%	50
			1,1-dichloroethane	2019/10/22	NC		%	50
			1,2-dichloroethane	2019/10/22	NC		%	50
			1,1-dichloroethene	2019/10/22	NC		%	50
			cis-1,2-dichloroethene	2019/10/22	NC		%	50
			trans-1,2-dichloroethene	2019/10/22	NC		%	50
			Dichloromethane	2019/10/22	NC		%	50
			1,2-dichloropropane	2019/10/22	NC		%	50
			cis-1,3-dichloropropene	2019/10/22	NC		%	50
			trans-1,3-dichloropropene	2019/10/22	NC		%	50
			Methyl methacrylate	2019/10/22	NC		%	50
			Methyl-tert-butylether (MTBE)	2019/10/22	NC		%	50
			Styrene	2019/10/22	NC		%	50
			1,1,1,2-tetrachloroethane	2019/10/22	NC		%	50
			1,1,2,2-tetrachloroethane	2019/10/22	NC		%	50
			Tetrachloroethene	2019/10/22	NC		%	50
			1,2,3-trichlorobenzene	2019/10/22	NC		%	50
			1,2,4-trichlorobenzene	2019/10/22	NC		%	50
			1,3,5-trichlorobenzene	2019/10/22	NC		%	50
			1,1,1-trichloroethane	2019/10/22	NC		%	50
			1,1,2-trichloroethane	2019/10/22	NC		%	50
			Trichloroethene	2019/10/22	NC		%	50

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Trichlorofluoromethane	2019/10/22	NC		%	50
			1,2,4-trimethylbenzene	2019/10/22	NC		%	50
			1,3,5-trimethylbenzene	2019/10/22	NC		%	50
			Vinyl chloride	2019/10/22	NC		%	50
9636432	GP4	Matrix Spike [WS8371-02]	1,4-Difluorobenzene (sur.)	2019/10/22		97	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/10/22		102	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/10/22		90	%	50 - 140
			Benzene	2019/10/22		84	%	50 - 140
			Toluene	2019/10/22		92	%	50 - 140
			Ethylbenzene	2019/10/22		92	%	50 - 140
			m & p-Xylene	2019/10/22		96	%	50 - 140
			o-Xylene	2019/10/22		94	%	50 - 140
			F1 (C6-C10)	2019/10/22		77	%	60 - 140
9636432	GP4	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/10/22		96	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/10/22		97	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/10/22		88	%	50 - 140
			Benzene	2019/10/22		85	%	60 - 130
			Toluene	2019/10/22		88	%	60 - 130
			Ethylbenzene	2019/10/22		95	%	60 - 130
			m & p-Xylene	2019/10/22		96	%	60 - 130
			o-Xylene	2019/10/22		93	%	60 - 130
			F1 (C6-C10)	2019/10/22		81	%	60 - 140
9636432	GP4	Method Blank	1,4-Difluorobenzene (sur.)	2019/10/22		99	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/10/22		95	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/10/22		99	%	50 - 140
			Benzene	2019/10/22	<0.00040		mg/L	
			Toluene	2019/10/22	<0.00040		mg/L	
			Ethylbenzene	2019/10/22	<0.00040		mg/L	
			m & p-Xylene	2019/10/22	<0.00080		mg/L	
			o-Xylene	2019/10/22	<0.00040		mg/L	
			F1 (C6-C10)	2019/10/22	<0.10		mg/L	
9636432	GP4	RPD [WS8370-02]	Benzene	2019/10/22	NC		%	30
			Toluene	2019/10/22	8.0		%	30
			Ethylbenzene	2019/10/22	0		%	30
			m & p-Xylene	2019/10/22	3.0		%	30
			o-Xylene	2019/10/22	5.3		%	30
			F1 (C6-C10)	2019/10/22	11		%	30
9636437	QW1	Matrix Spike [WS8371-02]	1,4-Difluorobenzene (sur.)	2019/10/23		104	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/10/23		101	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/10/23		107	%	50 - 140
			Benzene	2019/10/23		89	%	50 - 140
			Bromodichloromethane	2019/10/23		101	%	50 - 140
			Bromoform	2019/10/23		96	%	50 - 140
			Bromomethane	2019/10/23		107	%	50 - 140
			Carbon tetrachloride	2019/10/23		103	%	50 - 140
			Chlorobenzene	2019/10/23		86	%	50 - 140
			Chlorodibromomethane	2019/10/23		98	%	50 - 140
			Chloroethane	2019/10/23		97	%	50 - 140
			Chloroform	2019/10/23		90	%	50 - 140
			Chloromethane	2019/10/23		116	%	50 - 140
			1,2-dibromoethane	2019/10/23		89	%	50 - 140
			1,2-dichlorobenzene	2019/10/23		94	%	50 - 140

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,3-dichlorobenzene	2019/10/23		93	%	50 - 140
			1,4-dichlorobenzene	2019/10/23		90	%	50 - 140
			1,1-dichloroethane	2019/10/23		92	%	50 - 140
			1,2-dichloroethane	2019/10/23		93	%	50 - 140
			1,1-dichloroethene	2019/10/23		93	%	50 - 140
			cis-1,2-dichloroethene	2019/10/23		92	%	50 - 140
			trans-1,2-dichloroethene	2019/10/23		88	%	50 - 140
			Dichloromethane	2019/10/23		89	%	50 - 140
			1,2-dichloropropane	2019/10/23		95	%	50 - 140
			cis-1,3-dichloropropene	2019/10/23		139	%	50 - 140
			trans-1,3-dichloropropene	2019/10/23		149 (1)	%	50 - 140
			Ethylbenzene	2019/10/23		86	%	50 - 140
			Methyl methacrylate	2019/10/23		113	%	50 - 140
			Methyl-tert-butylether (MTBE)	2019/10/23		96	%	50 - 140
			Styrene	2019/10/23		91	%	50 - 140
			1,1,1,2-tetrachloroethane	2019/10/23		94	%	50 - 140
			1,1,2,2-tetrachloroethane	2019/10/23		89	%	50 - 140
			Tetrachloroethene	2019/10/23		82	%	50 - 140
			Toluene	2019/10/23		84	%	50 - 140
			1,2,3-trichlorobenzene	2019/10/23		91	%	50 - 140
			1,2,4-trichlorobenzene	2019/10/23		92	%	50 - 140
			1,3,5-trichlorobenzene	2019/10/23		92	%	50 - 140
			1,1,1-trichloroethane	2019/10/23		102	%	50 - 140
			1,1,2-trichloroethane	2019/10/23		95	%	50 - 140
			Trichloroethene	2019/10/23		98	%	50 - 140
			Trichlorofluoromethane	2019/10/23		93	%	50 - 140
			1,2,4-trimethylbenzene	2019/10/23		94	%	50 - 140
			1,3,5-trimethylbenzene	2019/10/23		97	%	50 - 140
			Vinyl chloride	2019/10/23		98	%	50 - 140
			m & p-Xylene	2019/10/23		84	%	50 - 140
			o-Xylene	2019/10/23		82	%	50 - 140
9636437	QW1	Spiked Blank	1,4-Difluorobenzene (sur.)	2019/10/23		102	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/10/23		105	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/10/23		110	%	50 - 140
			Benzene	2019/10/23		90	%	60 - 130
			Bromodichloromethane	2019/10/23		103	%	60 - 130
			Bromoform	2019/10/23		108	%	60 - 130
			Bromomethane	2019/10/23		96	%	60 - 130
			Carbon tetrachloride	2019/10/23		103	%	60 - 130
			Chlorobenzene	2019/10/23		89	%	60 - 130
			Chlorodibromomethane	2019/10/23		107	%	60 - 130
			Chloroethane	2019/10/23		93	%	60 - 130
			Chloroform	2019/10/23		91	%	60 - 130
			Chloromethane	2019/10/23		108	%	60 - 130
			1,2-dibromoethane	2019/10/23		97	%	60 - 130
			1,2-dichlorobenzene	2019/10/23		100	%	60 - 130
			1,3-dichlorobenzene	2019/10/23		96	%	60 - 130
			1,4-dichlorobenzene	2019/10/23		92	%	60 - 130
			1,1-dichloroethane	2019/10/23		93	%	60 - 130
			1,2-dichloroethane	2019/10/23		97	%	60 - 130
			1,1-dichloroethene	2019/10/23		91	%	60 - 130
			cis-1,2-dichloroethene	2019/10/23		93	%	60 - 130
			trans-1,2-dichloroethene	2019/10/23		85	%	60 - 130
			Dichloromethane	2019/10/23		90	%	60 - 130

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,2-dichloropropane	2019/10/23		96	%	60 - 130
			cis-1,3-dichloropropene	2019/10/23		112	%	60 - 130
			trans-1,3-dichloropropene	2019/10/23		122	%	60 - 130
			Ethylbenzene	2019/10/23		88	%	60 - 130
			Methyl methacrylate	2019/10/23		116	%	60 - 130
			Methyl-tert-butylether (MTBE)	2019/10/23		95	%	60 - 130
			Styrene	2019/10/23		94	%	60 - 130
			1,1,1,2-tetrachloroethane	2019/10/23		99	%	60 - 130
			1,1,2,2-tetrachloroethane	2019/10/23		96	%	60 - 130
			Tetrachloroethene	2019/10/23		83	%	60 - 130
			Toluene	2019/10/23		87	%	60 - 130
			1,2,3-trichlorobenzene	2019/10/23		93	%	60 - 130
			1,2,4-trichlorobenzene	2019/10/23		92	%	60 - 130
			1,3,5-trichlorobenzene	2019/10/23		90	%	60 - 130
			1,1,1-trichloroethane	2019/10/23		100	%	60 - 130
			1,1,2-trichloroethane	2019/10/23		99	%	60 - 130
			Trichloroethene	2019/10/23		97	%	60 - 130
			Trichlorofluoromethane	2019/10/23		91	%	60 - 130
			1,2,4-trimethylbenzene	2019/10/23		97	%	60 - 130
			1,3,5-trimethylbenzene	2019/10/23		99	%	60 - 130
			Vinyl chloride	2019/10/23		91	%	60 - 130
			m & p-Xylene	2019/10/23		84	%	60 - 130
			o-Xylene	2019/10/23		84	%	60 - 130
9636437	QW1	Method Blank	1,4-Difluorobenzene (sur.)	2019/10/23		100	%	50 - 140
			4-Bromofluorobenzene (sur.)	2019/10/23		95	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2019/10/23		96	%	50 - 140
			Benzene	2019/10/23	<0.00040		mg/L	
			Bromodichloromethane	2019/10/23	<0.00050		mg/L	
			Bromoform	2019/10/23	<0.00050		mg/L	
			Bromomethane	2019/10/23	<0.0020		mg/L	
			Carbon tetrachloride	2019/10/23	<0.00050		mg/L	
			Chlorobenzene	2019/10/23	<0.00050		mg/L	
			Chlorodibromomethane	2019/10/23	<0.0010		mg/L	
			Chloroethane	2019/10/23	<0.0010		mg/L	
			Chloroform	2019/10/23	<0.00050		mg/L	
			Chloromethane	2019/10/23	<0.0020		mg/L	
			1,2-dibromoethane	2019/10/23	<0.00020		mg/L	
			1,2-dichlorobenzene	2019/10/23	<0.00050		mg/L	
			1,3-dichlorobenzene	2019/10/23	<0.00050		mg/L	
			1,4-dichlorobenzene	2019/10/23	<0.00050		mg/L	
			1,1-dichloroethane	2019/10/23	<0.00050		mg/L	
			1,2-dichloroethane	2019/10/23	<0.00050		mg/L	
			1,1-dichloroethene	2019/10/23	<0.00050		mg/L	
			cis-1,2-dichloroethene	2019/10/23	<0.00050		mg/L	
			trans-1,2-dichloroethene	2019/10/23	<0.00050		mg/L	
			Dichloromethane	2019/10/23	<0.0020		mg/L	
			1,2-dichloropropane	2019/10/23	<0.00050		mg/L	
			cis-1,3-dichloropropene	2019/10/23	<0.00050		mg/L	
			trans-1,3-dichloropropene	2019/10/23	<0.00050		mg/L	
			Ethylbenzene	2019/10/23	<0.00040		mg/L	
			Methyl methacrylate	2019/10/23	<0.00050		mg/L	
			Methyl-tert-butylether (MTBE)	2019/10/23	<0.00050		mg/L	
			Styrene	2019/10/23	<0.00050		mg/L	
			1,1,1,2-tetrachloroethane	2019/10/23	<0.0010		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,1,2,2-tetrachloroethane	2019/10/23	<0.0020		mg/L	
			Tetrachloroethene	2019/10/23	<0.00050		mg/L	
			Toluene	2019/10/23	<0.00040		mg/L	
			1,2,3-trichlorobenzene	2019/10/23	<0.0010		mg/L	
			1,2,4-trichlorobenzene	2019/10/23	<0.0010		mg/L	
			1,3,5-trichlorobenzene	2019/10/23	<0.00050		mg/L	
			1,1,1-trichloroethane	2019/10/23	<0.00050		mg/L	
			1,1,2-trichloroethane	2019/10/23	<0.00050		mg/L	
			Trichloroethene	2019/10/23	<0.00050		mg/L	
			Trichlorofluoromethane	2019/10/23	<0.00050		mg/L	
			1,2,4-trimethylbenzene	2019/10/23	<0.00050		mg/L	
			1,3,5-trimethylbenzene	2019/10/23	<0.00050		mg/L	
			Vinyl chloride	2019/10/23	<0.00050		mg/L	
			Xylenes (Total)	2019/10/23	<0.00080		mg/L	
			m & p-Xylene	2019/10/23	<0.00080		mg/L	
			o-Xylene	2019/10/23	<0.00040		mg/L	
9636437	QW1	RPD [WS8370-02]	Bromodichloromethane	2019/10/23	NC		%	30
			Bromoform	2019/10/23	NC		%	30
			Bromomethane	2019/10/23	NC		%	30
			Carbon tetrachloride	2019/10/23	NC		%	30
			Chlorobenzene	2019/10/23	NC		%	30
			Chlorodibromomethane	2019/10/23	NC		%	30
			Chloroethane	2019/10/23	NC		%	30
			Chloroform	2019/10/23	NC		%	30
			Chloromethane	2019/10/23	NC		%	30
			1,2-dibromoethane	2019/10/23	NC		%	30
			1,2-dichlorobenzene	2019/10/23	NC		%	30
			1,3-dichlorobenzene	2019/10/23	NC		%	30
			1,4-dichlorobenzene	2019/10/23	NC		%	30
			1,1-dichloroethane	2019/10/23	NC		%	30
			1,2-dichloroethane	2019/10/23	NC		%	30
			1,1-dichloroethene	2019/10/23	NC		%	30
			cis-1,2-dichloroethene	2019/10/23	NC		%	30
			trans-1,2-dichloroethene	2019/10/23	NC		%	30
			Dichloromethane	2019/10/23	NC		%	30
			1,2-dichloropropane	2019/10/23	NC		%	30
			cis-1,3-dichloropropene	2019/10/23	NC		%	30
			trans-1,3-dichloropropene	2019/10/23	NC		%	30
			Methyl methacrylate	2019/10/23	NC		%	30
			Methyl-tert-butylether (MTBE)	2019/10/23	NC		%	30
			Styrene	2019/10/23	NC		%	30
			1,1,1,2-tetrachloroethane	2019/10/23	NC		%	30
			1,1,2,2-tetrachloroethane	2019/10/23	NC		%	30
			Tetrachloroethene	2019/10/23	NC		%	30
			1,2,3-trichlorobenzene	2019/10/23	NC		%	30
			1,2,4-trichlorobenzene	2019/10/23	NC		%	30
			1,3,5-trichlorobenzene	2019/10/23	NC		%	30
			1,1,1-trichloroethane	2019/10/23	NC		%	30
			1,1,2-trichloroethane	2019/10/23	NC		%	30
			Trichloroethene	2019/10/23	NC		%	30
			Trichlorofluoromethane	2019/10/23	NC		%	30
			1,2,4-trimethylbenzene	2019/10/23	3.8		%	30
			1,3,5-trimethylbenzene	2019/10/23	2.9		%	30
			Vinyl chloride	2019/10/23	NC		%	30

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B989750
Report Date: 2019/10/24

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E39
Sampler Initials: AUS

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9636833	VP4	Matrix Spike	O-TERPHENYL (sur.)	2019/10/22		100	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/10/22		98	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2019/10/22		99	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2019/10/22		96	%	60 - 140
9636833	VP4	Spiked Blank	O-TERPHENYL (sur.)	2019/10/22		100	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/10/22		94	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2019/10/22		97	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2019/10/22		93	%	60 - 140
9636833	VP4	Method Blank	O-TERPHENYL (sur.)	2019/10/22		108	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2019/10/22	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2019/10/22	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2019/10/22	<50		mg/kg	
9636833	VP4	RPD	F2 (C10-C16 Hydrocarbons)	2019/10/22	NC		%	40
			F3 (C16-C34 Hydrocarbons)	2019/10/22	15		%	40
			F4 (C34-C50 Hydrocarbons)	2019/10/22	NC		%	40
9637119	SRI	Method Blank	Moisture	2019/10/22	<0.30		%	
9637119	SRI	RPD	Moisture	2019/10/22	2.7		%	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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NOTIFICATION LOG

No Reportable Regulation Exceedences Noted.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

BV Labs Job #: B989750
Report Date: 2019/10/24

CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E39
Sampler Initials: AUS

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Dennis Ngondu, B.Sc., P.Chem., QP, Supervisor, Organics

Janet Gao, B.Sc., QP, Supervisor, Organics

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone (403) 291-3077 Fax (403) 291-9468

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Edmonton: 9331-48 St. T6B 2R4. Toll Free (800) 386-7247
maxxam.ca

T25

CHAIN OF CUSTODY RECORD

M 085468

Page 1 of 1

Invoice Information		Report Information (if differs from invoice)		Project Information		Turnaround Time (TAT) Required
Company:	Clifton	Company:		Quotation #:		☑ 5 - 7 Days Regular (Most analyses)
Contact Name:	Stephen d'Abadie	Contact Name:		P.O. #/ AFE#:		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address:	2222 – 30 Ave. NE Calgary AB	Address:		Project #:	CG2430.1 E39	Rush TAT (Surcharges will be applied): ☐ Same Day ☐ 2 Days ☐ 1 Day ☐ 3-4 Days
Phone:	403-701-8226	Phone:		Site Location:		
Email:	stephen_dabadie@clifton.ca	Email:		Site #:		Date Required:
Copies:		Copies:		Sampled By:	Austin	Rush Confirmation #:

Laboratory Use Only

	YES	NO	Cooler ID			
Seal Present		✓	Temp	3	2	2
Seal Intact		✓				
Cooling Media	✓					
	YES	NO	Cooler ID			
Seal Present			Temp			
Seal Intact						
Cooling Media						
	YES	NO	Cooler ID			
Seal Present			Temp			
Seal Intact						
Cooling Media						

Depot Reception

Analysis Requested

	Sample Identification	Depth (Unit)	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	# of containers	BTEX F1 ☐ VOC ☑	BTEX F1-F2	BTEX F1-F4	Routine Water	Regulated Metals · Tot ☐ Diss ☐	Mercury Total ☐ Dissolved ☐	Salinity 4	Sieve (75 micron)	Texture (% Sand, Silt, Clay)	Basic Class II Landfill	PAHs	HOLD - DO NOT ANALYZE
1	4008A		2019/10/18	9:00	GW	7	✓	✓									✓	
2	4008B		↓	9:30	GW	7	✓	✓									✓	
3	4009A		↓	10:30	GW	7	✓	✓									✓	
4	4009B		↓	11:00	GW	7	✓	✓									✓	
5	Trip Blank		2019/10/18		W	2	✓											
6	4008-20		2019/10/15		Soil	3	✓		✓									
7	4008B-20		2019/10/15		Soil	3	✓											
8																		
9																		
10																		

Please indicate Filtered, Preserved or Both (F, P, F/P)

Regulatory Criteria

- ☑ AT1
- ☐ CCME
- ☐ Drinking Water
- ☐ D50 (Drilling Waste)
- ☐ Saskatchewan
- ☐ Other:

Special Instructions

Relinquished by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)	Received by: (Signature/ Print)	DATE (YYYY/MM/DD)	Time (HH:MM)
Austin Mei	2019/10/18	12:40	Sara Bischoff	2019/10/18	12:54

18-Oct-19 12:54
Linsay Sunderman
B989750
JEM INS-0191

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Maxxam's standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms which are available for viewing at www.maxxam

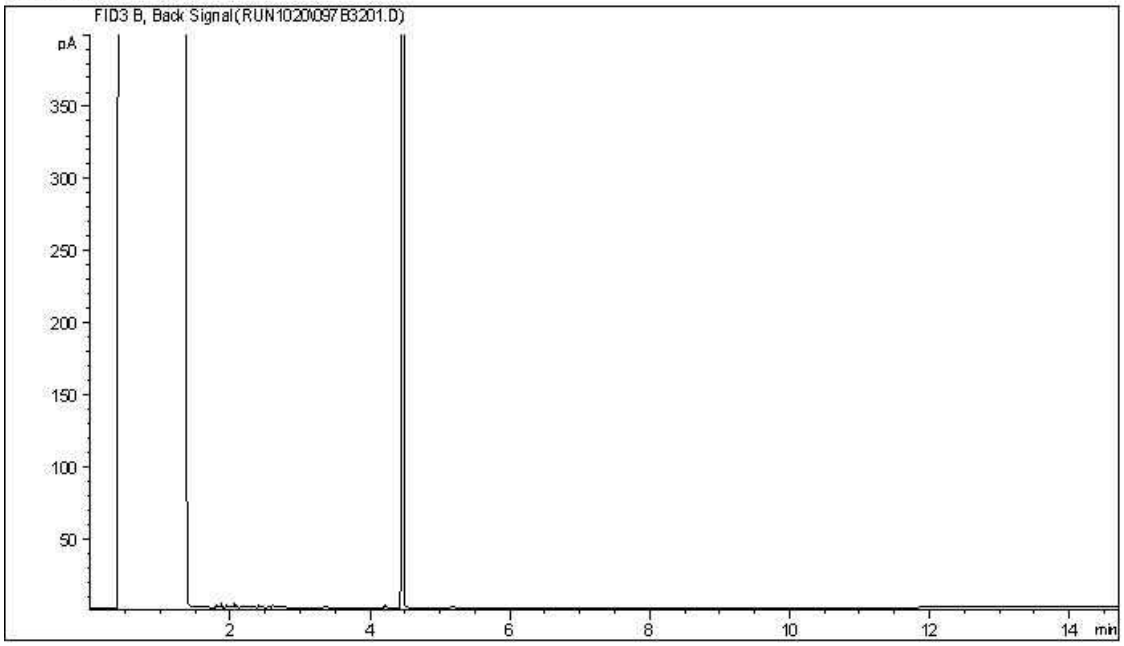
AB FCD-00331/7

BV Labs Job #: B989750
Report Date: 2019/10/24
BV Labs Sample: WS8370

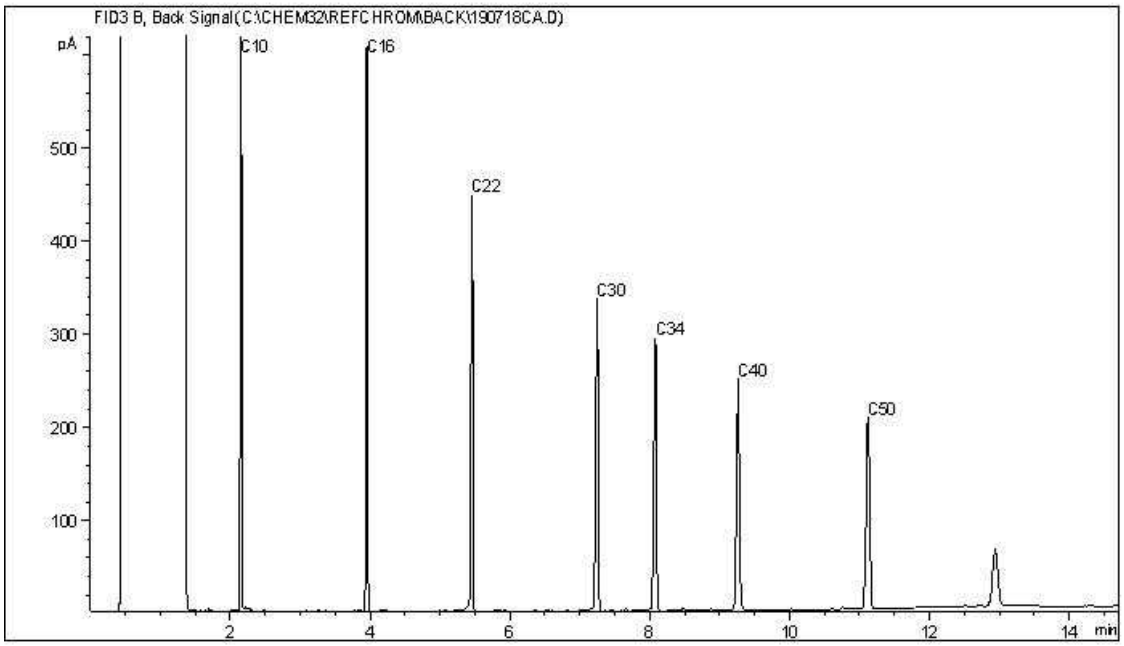
CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E39
Client ID: 4008A

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC13



Carbon Range Distribution - Reference Chromatogram



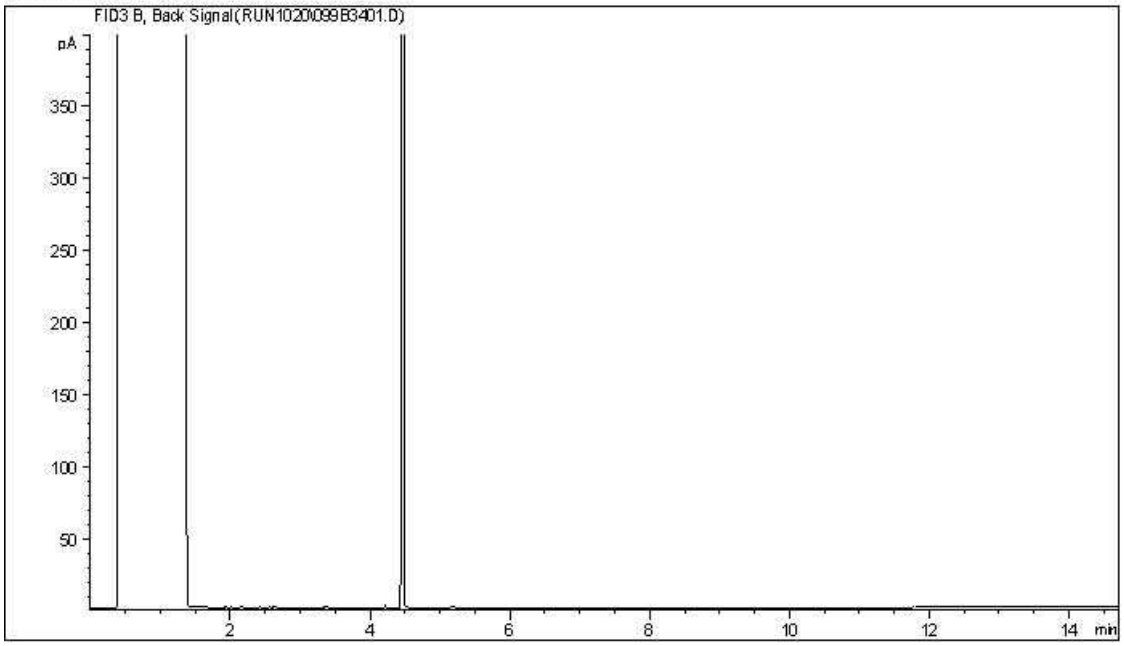
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

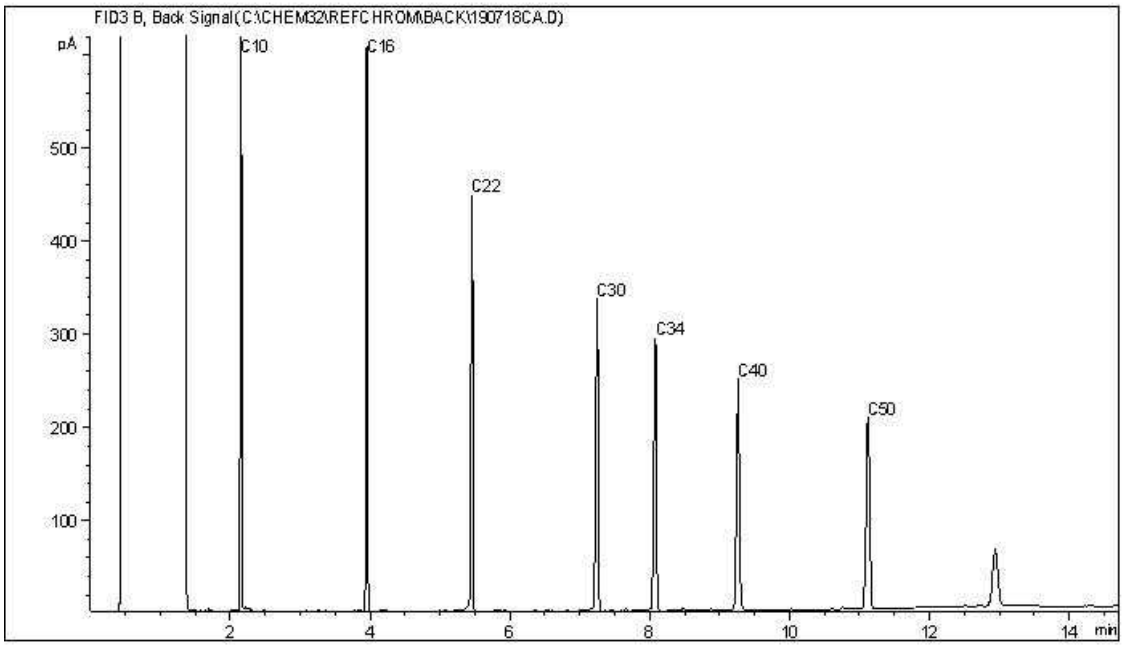
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC13



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

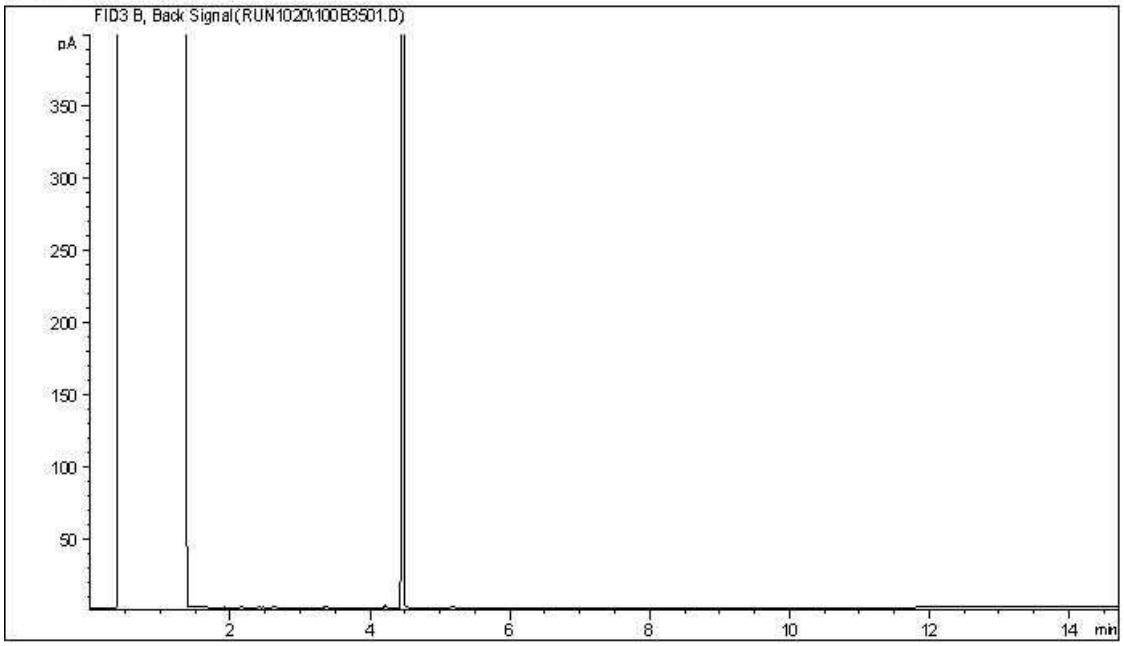
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B989750
Report Date: 2019/10/24
BV Labs Sample: WS8372

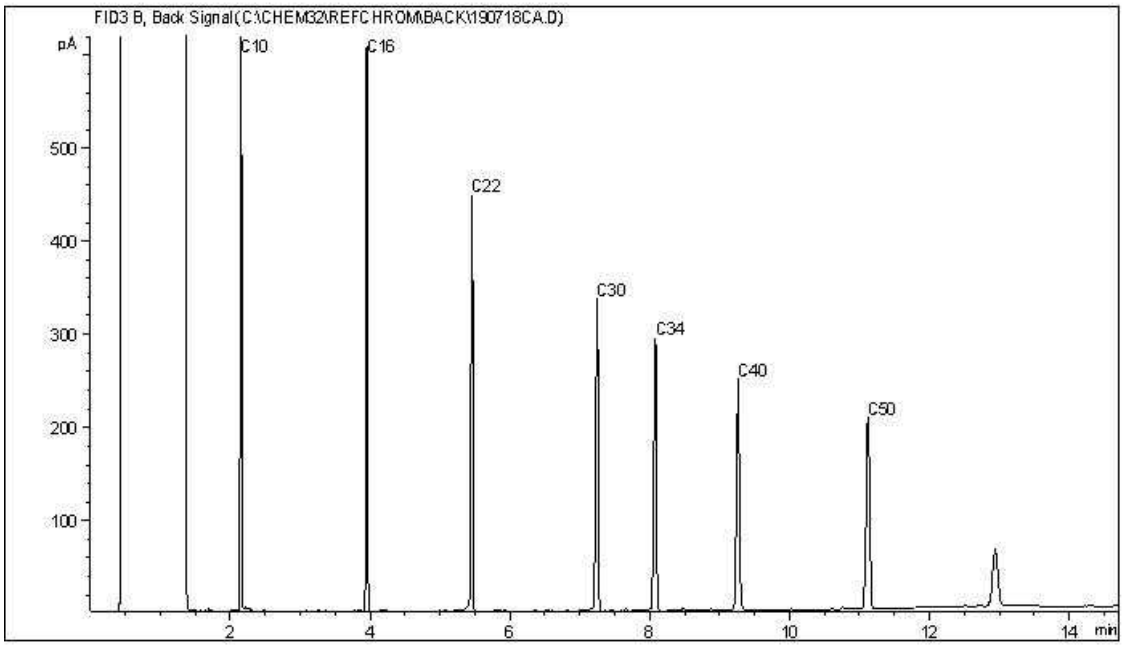
CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E39
Client ID: 4009A

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC13



Carbon Range Distribution - Reference Chromatogram



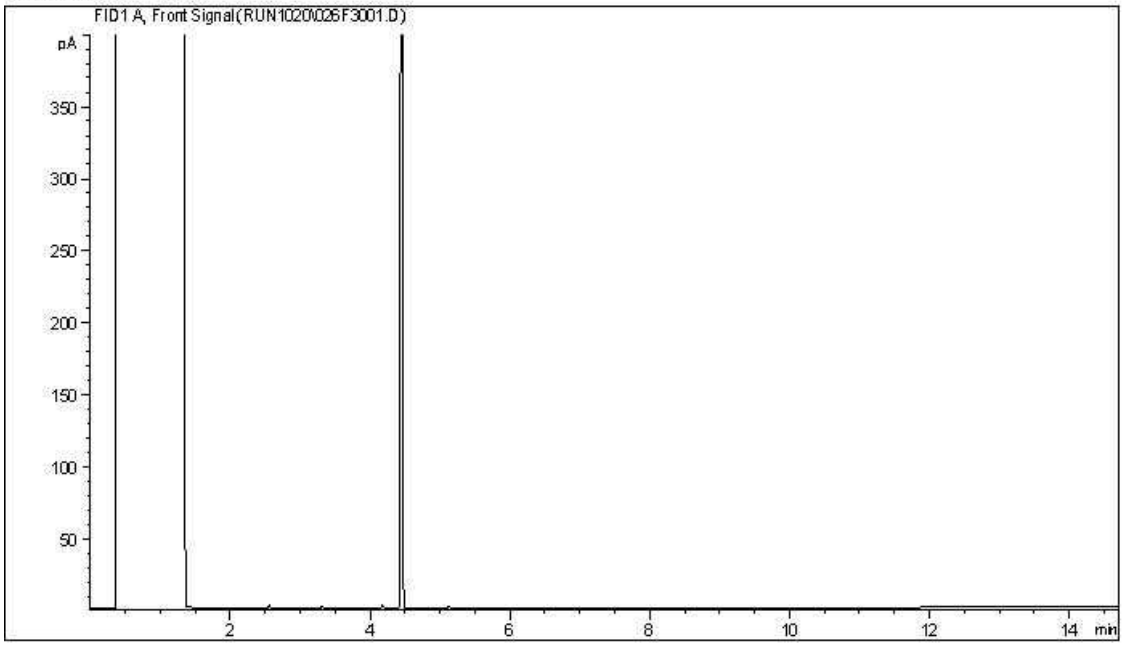
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

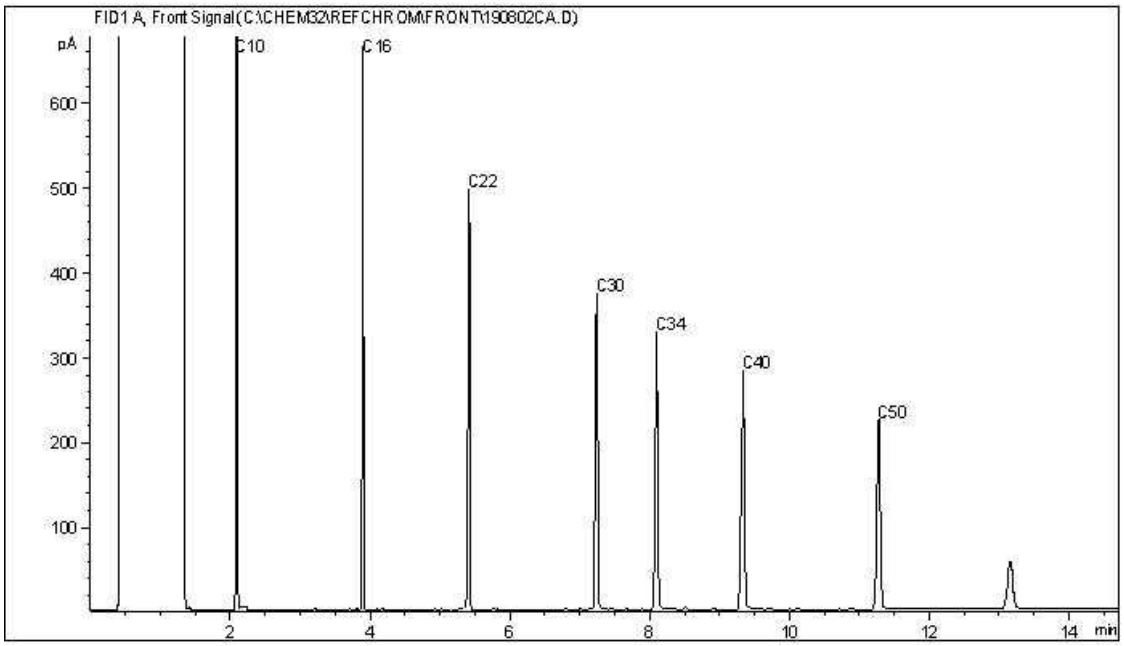
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC13



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

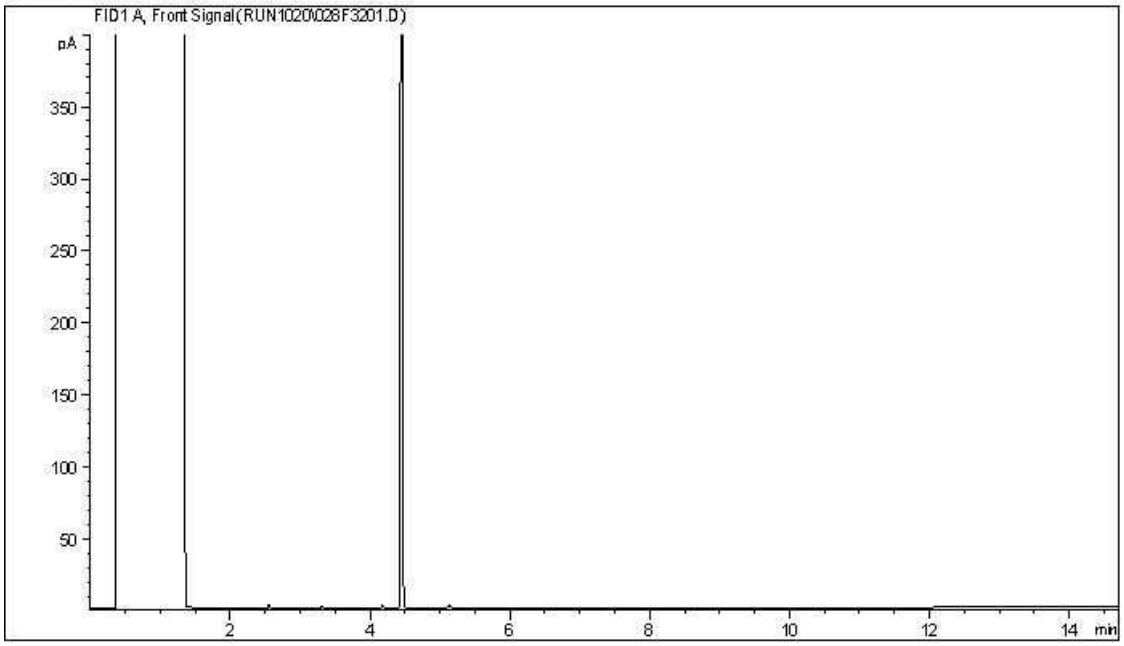
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: B989750
Report Date: 2019/10/24
BV Labs Sample: WS8373 Lab-Dup

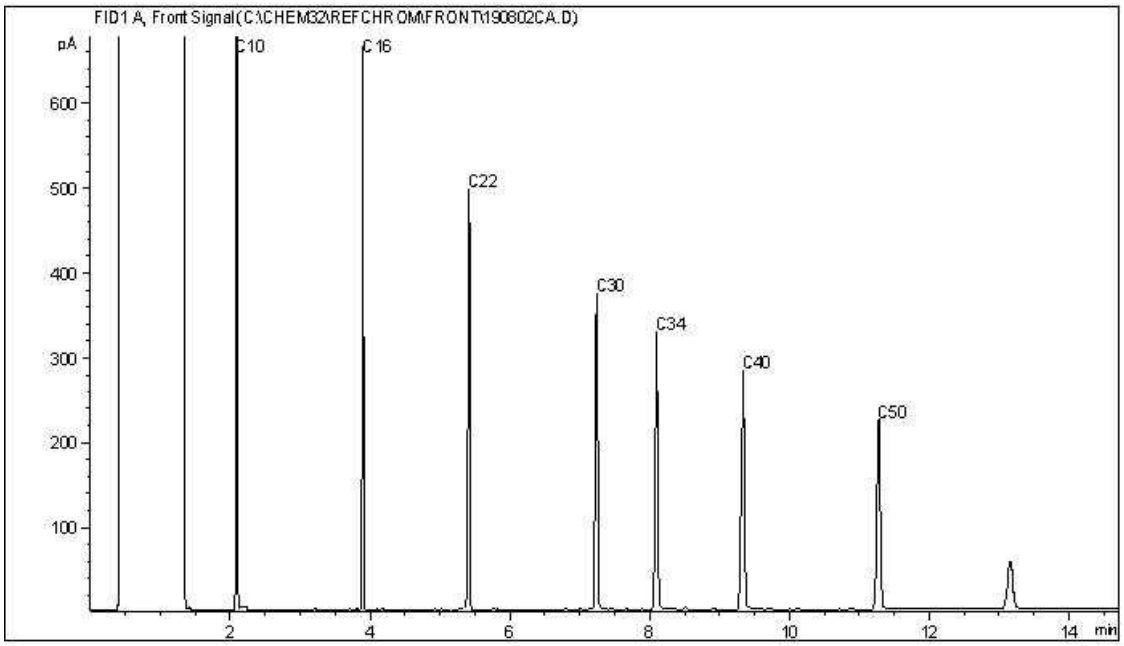
CLIFTON ASSOCIATES LTD.
Client Project #: CG2430.1 E39
Client ID: 4009B

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC13



Carbon Range Distribution - Reference Chromatogram



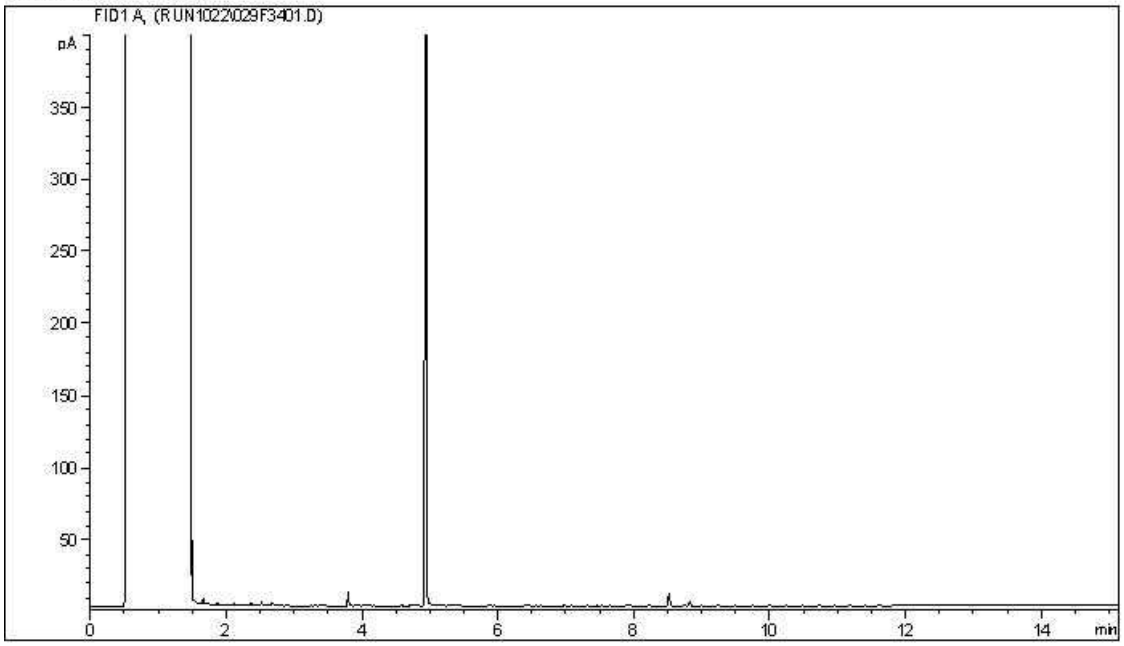
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

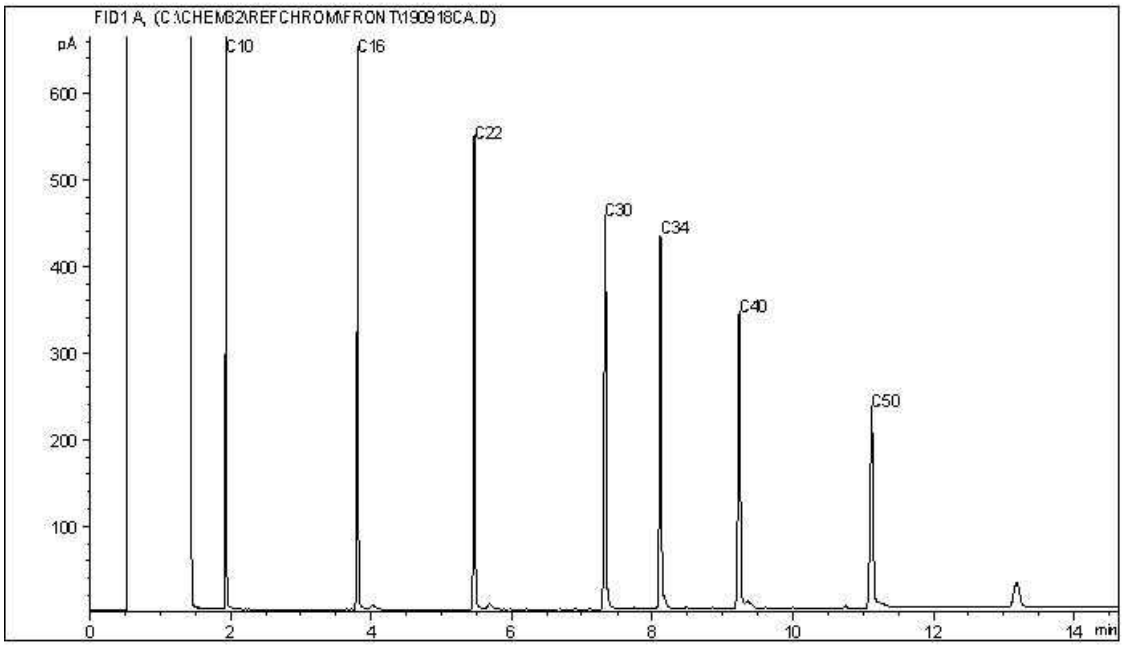
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Instrument: GC12



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

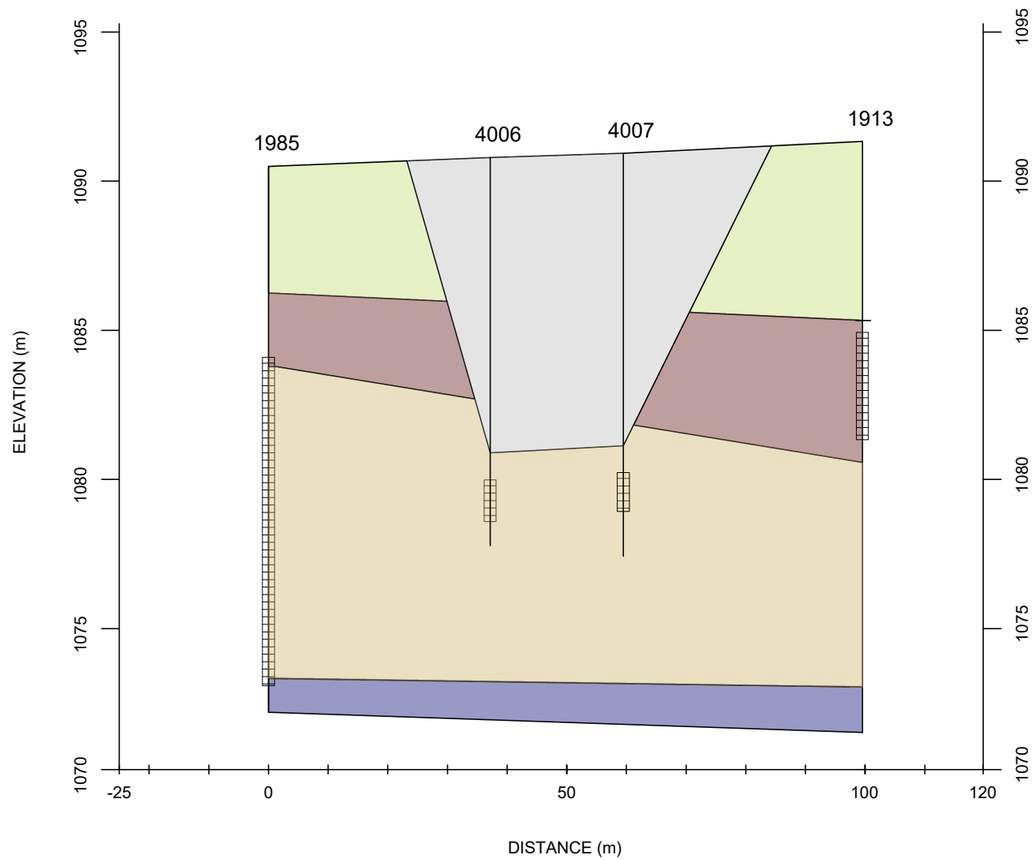
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Appendix C
Lithological Cross – Sections

Clifton

CROSS SECTION L-L'



LEGEND:

- UNIT 1 - UPPER SILTY SAND
- UNIT 2 - UPPER CLAYEY SILT
- UNIT 3 - MIDDLE SANDY SILT
- UNIT 4 - LOWER CLAYEY SILT
- UNIT 5 - UNDEFINED
- UNIT 6 - EXCAVATION FILL
- WELL SCREEN

NOTES:

1. VERTICAL EXAGGERATION OF 5

0 10 20 30 40 50 m
SCALE 1:1000 PLOT SIZE 11x17

0 5 10m
SCALE 1:200 PLOT SIZE 11x17

ENGINEER
Clifton Associates

CLIENT
SEARS

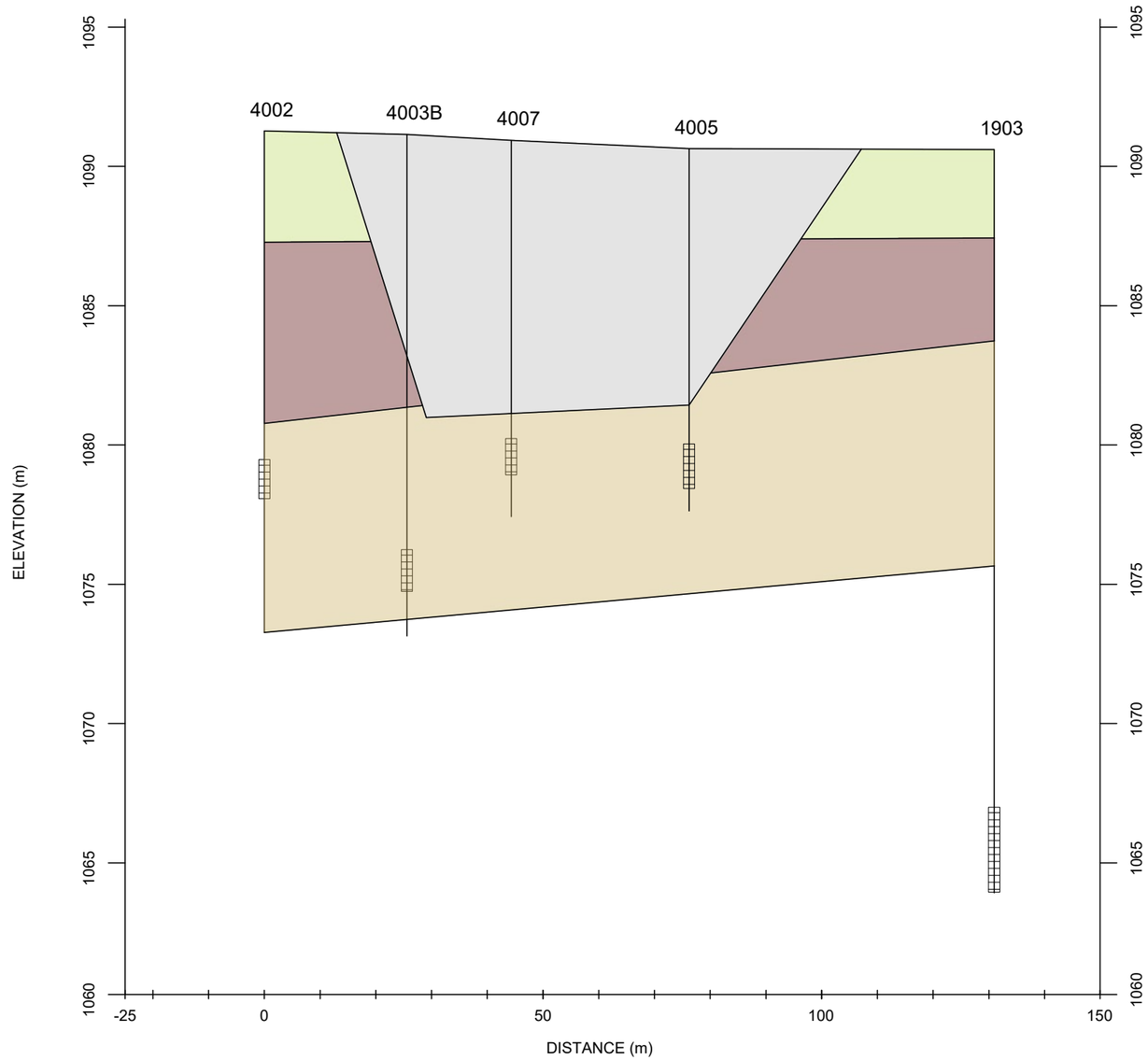
PROJECT
REMEDIATION PLAN
HOUNSFIELD HEIGHTS AND MALL AREAS
CALGARY, ALBERTA

TITLE
CROSS SECTION L-L'

DESIGNED	SCALE	DATE
	HOR 1:1000 VERT 1:200	2018-12-03
DRAWN RD	PROJECT NO. CG2430.1 E33	FIG. C.1-13
CHECKED TK	FILE NO. CG2430.1-E33-C-1.13	

W:\CG2430.1 SEARS\CURRENT\E33\CG2430.1-E33-C-1.13.dwg, 07/24/2019 2:27:04 PM

CROSS SECTION M-M'



LEGEND:

- UNIT 1 - UPPER SILTY SAND
- UNIT 2 - UPPER CLAYEY SILT
- UNIT 3 - MIDDLE SANDY SILT
- UNIT 4 - LOWER CLAYEY SILT
- UNIT 5 - UNDEFINED
- UNIT 6 - EXCAVATION FILL
- WELL SCREEN

NOTES:

1. VERTICAL EXAGGERATION OF 5

0 10 20 30 40 50 m
SCALE 1:1000 PLOT SIZE 11x17

0 5 10m
SCALE 1:200 PLOT SIZE 11x17

ENGINEER
Clifton Associates

CLIENT
SEARS

PROJECT
REMEDIATION PLAN
HOUNSFIELD HEIGHTS AND MALL AREAS
CALGARY, ALBERTA

TITLE
CROSS SECTION M-M'

DESIGNED	SCALE HOR 1:1000 VERT 1:200	DATE 2018-12-03
DRAWN RD	PROJECT NO. CG2430.1 E33	FIG. C.1-14
CHECKED TK	FILE NO. CG2430.1-E33-C-1.14	

W:\CG2430.1 SE-HS\CURRENT\E33\CG2430.1-E33-C-1.14.dwg, 07/24/2019 2:28:34 PM

Appendix D

Clifton

Record of Site Condition

1 REPORT AND FORM INFORMATION

Title of report	Supplemental Phase II ESA		
Report date (*dd-mon-yyyy*)	18 December 2019	Record of Site Condition (RSC) ID No.[Ψ]	

2 SITE IDENTIFICATION AND PHYSICAL LOCATION

2.1 Site name	North Hill Mall		
2.2 Address of site	1616 14th Avenue NW		
	Municipality	Calgary	**Alberta**

2.3 Legal land description of site *(if multiple, list all.)*

Plan, Block, Lot (PBL)			Alberta Township System (ATS)					
Plan	Block	Lot	LSD	Quarter	Section	Township	Range	Meridian
				NE	20	24	01	W5M

3 STAKEHOLDERS

3.1 Operator

Company	BentallGreenOak	Contact person	Dave Mclean
Mailing address	Suite 1300, 112 4th Avenue SW Calgary, Alberta T2P 0H3	Position held	Vice President - Asset Management
		Business phone No.	403-542-4739
		Business fax No.	
		Business e-mail	david.mclean@bentallgreenoak.com

3.2 Consultant ☐ Not applicable

Company	Clifton Associates Ltd	Contact person	Stephen d'Abadie
Mailing address	**2222 30 Avenue NE** **Calgary, Alberta** **T2E7K9**	Position held	Environmental Scientist
		Business phone No.	403-263-2556
		Business fax No.	403-234-9033
		Business e-mail	stephen_dabadie@clifton.ca

3.3 Landowner(s)

Land type	☒ Private ☐ Special Areas ☐ Parks and protected area ☐ Public (*if not private, provide Disposition No.: _____*)
Landowner(s)	☒ Same as operator ☐ Other

[Ψ]: Do not fill in. Reserved for internal administrative purposes only.

3.4 Occupant(s)			
Are there occupants at the site?	☒ Yes	☐ No	☐ To be determined (TBD)
Occupant(s)	☐ Same as operator	☒ Same as landowner	☐ Other
What is the type of occupancy?	☐ Apartment building	☐ Town house	☐ Single detached house
	☐ Agricultural	☐ Industrial	☒ Commercial
	☐ Other (*specify*) _____		

4 OPERATING STATUS

☐ Operating ☐ Suspended ☐ Abandoned ☐ Decommissioning in progress ☐ Closed
☐ Reclaimed (*provide Reclamation Certificate No.(s):* _____) ☒ Not applicable

5 TYPE OF ACTIVITY AND SITE

5.1 Petroleum Storage Tank Site ☐ Yes

5.1.1 ESRD file No.(s)		PTMAA site No.	

5.1.2 Types of activity

☐	Retail gas station	☐	Aviation fuelling station	☐	Bulk fuel	☐	Other *(specify)*: _____

5.2 Upstream Oil and Gas Facility ☐ Yes

5.2.1 ESRD file No.(s)		AER approval No.(s)	

5.2.2 AER authorization type ☐ Approval ☐ License ☐ Permit ☐ Order ☐ Other (*specify*)_____

5.2.3 Types of activity

☐	Wellsite and associated facility	☐	Satellite	☐	Battery	☐	Pipeline
☐	Compressor and pumping station	☐	Other (*specify*): _____				

5.3 Approved Facility Under Environmental Protection and Enhancement Act (EPEA) ☐ Yes

5.3.1 ESRD approval No.(s)		AER approval No.(s)	

5.3.2 Types of approved activity

☐	Chemical manufacturing plant	☐	Enhanced recovery in-situ oil sands or heavy oil processing plant	☐	Fertilizer manufacturing plant	☐	Landfill
☐	Metal manufacturing plant	☐	Oil refinery	☐	Oilsands processing plant	☐	Oil production site
☐	Pesticide manufacturing plant	☐	Petrochemical manufacturing plant	☐	Pipeline	☐	Power plant
☐	Pulp and paper processing plant	☐	Sour gas processing plant	☐	Sulphur manufacturing or processing plant	☐	Waste management facility
☐	Wood treatment plant	☐	Other *(specify)*: _____				

5.4 Facility Under EPEA Code of Practice	☐ Yes		
5.4.1 ESRD registration No.(s)		AER registration No.(s)	

5.4.2 Type of Code of Practice

☐	Asphalt paving plant	☐	Compressor and pumping station	☐	Concrete producing plant	☐	Landfill
☐	Pesticides	☐	Pipeline	☐	Land treatment of soils containing hydrocarbons	☐	Sand and gravel pit
☐	Small incinerator	☐	Sweet gas processing plant	☐	Other *(specify)*: _____		

5.5 Other Activity	☐ Yes				
5.5.1 ESRD file No.(s)	00141934	Other site ID No.(s)		Authorized by	

5.5.2 Types of activity

☐	Dry cleaning operation	☐	Highway maintenance yard	☐	Transportation
☐	Other *(specify)*: Shopping Center				

6 SITE CHARACTERIZATION

6.1 What Environmental Site Assessments (ESA) Have Been Conducted and Completed to Date?

☐ Phase I ESA

☒ Phase II ESA (*check all that apply.*)

☐ Initial intrusive sampling ☐ delineation completed ☒ post-remediation monitoring ☐ final confirmatory sampling

6.2 Contaminants of Potential Concern (COPC)

6.2.1 Does the site have any of the conditions that require the mandatory use of *Alberta Tier 2 Soil and Groundwater Remediation Guidelines* (ESRD, 2007 and updates)? *(check all that apply in Section 6.2.1.1.)*

☐ Yes ☒ No *(➔proceed to Section 6.2.2.)*

6.2.1.1 Identify any conditions that require the approaches of the Alberta Tier 2 guidelines. *(see Alberta Tier I Soil and Groundwater Remediation Guidelines (ESRD, 2007 and updates), for details.)*

☐	Contamination within 30 cm of building foundation	☐	Unusual building feature (*eg. earthen floor*)	☐	Contamination within 10 m distance of surface water body
☐	Fractured bedrock	☐	Potentially high hydraulic conductivity *(> 10^{-5} m/sec.)*	☐	Other (*see Alberta Tier 1 guidelines and specify):* _____

6.2.1.2 Did the Alberta Tier 2 approach lead to a soil or groundwater guideline that was lower than the corresponding Tier 1 guideline for the same contaminant(s)?

☐ Yes ☐ TBD ☒ No *(➔proceed to Section 6.2.2.)*

6.2.1.3 If you answered 'yes' or 'TBD' to Section 6.2.1.2, identify the group of contaminants for each COPC with a mandatory Tier 2 guideline that is lower than the corresponding Tier 1 guideline (*check all that apply*, *see Alberta Tier 1 guidelines, Tables 1-4 for detailed listing).*

☐	General and inorganic parameters	☐	Metals
☐	Hydrocarbons	☐	Halogenated aliphatics
☐	Chlorinated aromatics	☐	Pesticides
☐	Other organics	☐	Radionuclides
☐	Salt	☐	Other (*specify*): _____

6.2.1.4 Did any past or current ESA relevant to this investigation identify an exceedance of the mandatory Tier 2 guidelines referred to in Section 6.2.1.3 (e.g. Tier 2 guidelines that are lower than the corresponding Tier 1 guidelines)? ☐ Yes ☐ No ☐ TBD

6.2.1.5 If you answered 'yes' in Section 6.2.1.4, have all relevant COPC been remediated to meet the mandatory Tier 2 guidelines? ☐ Yes ☐ No

6.2.2. Did any past or current ESA relevant to this investigation identify a drilling waste disposal area?

☐ Yes ☒ No (*➔proceed to Section 6.2.3.)*

6.2.2.1 If a drilling waste disposal area was identified, did any past or current ESA identify non-compliance with the compliance options outlined in *Assessing Drilling Waste Disposal Areas: Compliance Options for Reclamation Certification* (AER, 2014), as amended?

☐ Yes ☐ No

6.2.2.2 If you answered 'yes' in Section 6.2.2.1, have all COPC been remediated to meet the compliance options outlined in *Assessing Drilling Waste Disposal Areas: Compliance Options for Reclamation Certification* (AER, 2014), as amended?

☐ Yes ☐ No

6.2.2.3 For any COPC that did not meet the compliance options in Assessing Drilling Waste Disposal Areas, identify the group of contaminants (*check of all that apply*, *see the Alberta Tier 1 guidelines, Tables 1-4 for detailed listing).*

☐	General and inorganic parameters	☐	Metals
☐	Hydrocarbons	☐	Halogenated aliphatics
☐	Chlorinated aromatics	☐	Pesticides
☐	Other organics	☐	Radionuclides
☐	Salt	☐	Other (*specify*): _____

6.2.3 For all areas and COPCs not assessed under Sections 6.2.1 or 6.2.2, did any ESA relevant to this investigation identify an exceedance over the Alberta Tier 1 guidelines?

☒ Yes ☐ No (*➔proceed to Section 6.3.)*

6.2.3.1 If you answered 'yes' in Section 6.2.3, have all COPC been remediated to meet the Alberta Tier 1 guidelines?

☐ Yes ☒ No ☐ TBD

6.2.3.2 For any COPC that exceeded Alberta Tier 1 guidelines in Section 6.2.3.1, identify the group of contaminants. (*check all that apply*, *see the Alberta Tier 1 guidelines, Tables 1-4 for detailed listing.)*

☐	General and inorganic parameters	☐	Metals
☒	Hydrocarbons	☐	Halogenated aliphatics
☐	Chlorinated aromatics	☐	Pesticides
☐	Other organics	☐	Radionuclides
☐	Salt	☐	Other (*specify*): _____

6.3 Status of Investigation

6.3.1 Identify soil and groundwater guidelines used to assess the COPCs that are the subject of this investigation *(check all that apply).*

☒ *Alberta Tier 1 Soil and Groundwater Remediation Guidelines* – 2007 and updates,
☐ Coarse grained ☒ Fine grained

☐ *Alberta Tier 2 Soil and Groundwater Remediation Guidelines* – 2007 and updates,
☐ Pathway exclusion ☐ Guideline adjustment ☐ Site specific remediation objectives

☐ *Assessing Drilling Waste Disposal Areas: Compliance Options for Reclamation Certification* (AER, 2014), as amended

☐ Other (*specify*): _____

6.3.2 What land use classification(s) is used?

☐ Natural ☐ Agricultural ☐ Residential ☒ Commercial ☐ Industrial ☐ Other (*specify:*_____)

6.3.3 What is the outcome of the investigation? *(check one only.)*

☐ For all COPCs on-site and off-site, no exceedance has been found above any applicable soil and groundwater guidelines in any prior and current assessments.

☐ All contamination on-site and off-site has been completely remediated and meets the applicable soil and groundwater guidelines.

☒ One or more COPC still exceeds the applicable soil or groundwater guidelines.

6.3.4 How many contaminated areas are there currently at the site?

one ☐ None ☐ TBD

6.3.5 Are all contaminated areas and potential contaminated areas assessed during this investigation?

☒ Yes ☐ No

6.3.6 For all areas of potential environmental concern, list the dates when the contamination was discovered *(specify dd-mon-yyyy)*: **1995; _____**

6.3.7 For all areas that have been identified in Section 6.3.4, have all substance releases been reported to ESRD?

☒ Yes ☐ No ☐ Not applicable

6.3.8 If the answer to Section 6.3.7 is 'yes', list all Incident No.(s) (*attach separate sheet if necessary*):

_____; _____ ☐ Not assigned

6.3.9 What is the approximate, cumulative amount of land area remaining exceeding applicable remediation guidelines? 3500 (m^2) ☐ None ☐ TBD

6.3.10 Is there non-aqueous phase liquid (NAPL) product remaining on site? ☐ Yes ☒ No ☐ TBD

6.3.11 Is there non-aqueous phase liquid (NAPL) product remaining off site? ☒ Yes ☐ No ☐ TBD

6.3.12 What is the remediation status of the contaminated areas at site?

☐	No remediation required	☐	Site has exceedance but no remediation plan
☒	Remediation plan developed	☐	Active remediation
☐	Remediation completed	☐	Post remediation assessment completed
☒	Ongoing risk management plan – on-site	☒	Ongoing risk management plan – off-site
☐	Remediation Certificate issued for some area(s) *(provide Remediation Certificate No.(s):_____)*		
☐	Remediation Certificate cancelled for some area(s) *(provide Remediation Certificate No.(s):_____)*		

Direction for Completing the Remainder of the Form

Attach the analytical summary tables of the COPCs that are the subject of this investigation and still present at this site. A detailed listing of COPCs can be found with Tables 1-4 in *Alberta Tier 1 Soil and Groundwater Remediation Guidelines* (ESRD, 2007 and updates), as amended. Refer to the *RSC User's Guide* for detailed information on format and other requirements regarding the summary table.

For the remainder of the form, follow the directions below:

- If the COPCs on-site and off-site have never exceeded any applicable soil and groundwater guidelines in any prior and current assessments, ➔proceed to Section 8, or
- If the COPCs on-site and off-site have been completely remediated and meet the applicable soil and groundwater guidelines, ➔proceed to Section 8, or
- For all other circumstances, continue with Section 6.4.

6.4 Key Transport Factors for Existing COPCs

6.4.1 What is the horizontal distance to the nearest water well from the edge of the nearest contaminated area?

☐ 0-50 m ☐ 50-100 m ☐ 100-300 m ☐ 300-1000 m ☒ > 1000 m

6.4.2 What is the horizontal distance to the nearest surface water body from the edge of the contaminated area?

☐ ≤10 m ☐ 10-50 m ☐ 50-100 m ☐ 100-300 m ☐ 300-1000 m ☒ > 1000 m

6.4.3 Does delineation achieve closure above the groundwater water table that is nearest to the ground surface?

☐ Yes (➔ *go to Section 6.5.)* ☒ No ☐ TBD

6.4.4 Is the groundwater that is nearest the ground surface a domestic use aquifer (DUA) as defined in Alberta Tier 2 guidelines?

☒ Yes ☐ No ☐ TBD ☐ Not required (NR)

6.4.5 Is there a hydraulic barrier, as defined in Alberta Tier 2 guidelines, between the base of the contaminated area and the DUA?

☐ Yes ☒ No ☐ TBD ☐ NR

6.4.6 If you answered 'yes' to Section 6.4.5, provide the measured largest value of the hydraulic conductivity (as value $\times 10^{-7}$ m/sec.) for the 5.0 m vertical layer from the bottom of the contaminated zone.

_____($\times 10^{-7}$ m/sec.) ☐ TBD ☐ NR

6.5 On-site Characterization

6.5.1 What is the dominant soil texture that governs substance transport at the site?

☒ Coarse grained ☒ Fine grained ☐ TBD ☐ Not applicable (*must identify reason in Section 6.2.1.1.)*

6.5.2 What are the shallowest and deepest measured depths (meters below ground surface) of the water table at site?

Shallowest: **5.00** (m) Deepest: 12.25(m) ☐ TBD ☐ NR (*specify max. depth assessed*: _____(m))

6.5.3 What is the dominant horizontal direction of groundwater flow for the near surface water table?

(*N, NW, etc.:* south) ☐ TBD ☐ NR

6.5.4 What is the existing land use classification?

☐ Natural ☐ Agricultural ☐ Residential ☒ Commercial ☐ Industrial ☐ Other (*specify*) _____

6.5.5 What is the end land use classification?

☐ Natural ☐ Agricultural ☐ Residential ☒ Commercial ☐ Industrial ☐ Other (*specify*) _____

6.5.6 Identify exposure pathways for which the applicable guidelines are exceeded on-site *(check all that apply).*			
☒	Vapour inhalation	☐	Soil ingestion
☒	Ingestion of potable water	☐	Soil dermal (skin) contact
☐	Fresh water aquatic life	☐	Soil contact for plants and invertebrates
☐	TBD	☐	Other *(specify)*: _____

6.6 Off-site Characterization

6.6.1 Are there COPCs off-site exceeding applicable soil or groundwater guidelines?

☐ No (➔*if on-site contamination was reported, proceed to Section 7, otherwise, proceed to Section 8.)*
☒ Yes ☐ TBD

6.6.2 What is the current land use classification for any off-site area(s) identified in Section 6.6.1?

☐ Natural ☐ Agricultural ☒ Residential ☐ Commercial ☐ Industrial ☐ Other (*specify*) _____

6.6.3 What is the end land use classification for any off-site area(s) identified in Section 6.6.1?

☐ Natural ☐ Agricultural ☒ Residential ☐ Commercial ☐ Industrial ☐ Other (*specify*) _____

6.6.4 Is there any substance concentration under a road allowance exceeding the applicable soil or groundwater guidelines?

☒ Yes ☐ No (➔*proceed to Section 6.6.6.)* ☐ TBD

6.6.5 What is the most sensitive land use classification adjacent to the road allowance?

☐ Natural ☐ Agricultural ☒ Residential ☐ Commercial ☐ Industrial ☐ Other (*specify*) _____

6.6.6 Identify exposure pathways for which the applicable guidelines are exceeded off-site *(check all that apply).*			
☒	Vapour inhalation	☐	Soil ingestion
☒	Ingestion of potable water	☐	Soil dermal (skin) contact
☐	Fresh water aquatic life	☐	Soil contact for plants and invertebrates
☐	TBD	☐	Other *(specify)*: _____

7 RISK MANAGEMENT PLAN (RMP)

7.1 What is the Plan for Contaminated Areas Still Remaining on and off the Site? *(check one only.)*

☒ Complete remediation (➔*proceed to Section 8).*
☐ Partial remediation with risk management for some residual contamination.
☐ Risk management for all remaining contamination.

7.2 Key Progress of RMP

7.2.1 If the site needs an on-going RMP, answer all the following questions that apply to the RMP.

☐ Yes	☐ No	Are contaminated areas completely delineated horizontally and vertically in soil?
☐ Yes	☐ No	Are contaminated areas completely delineated horizontally and vertically in groundwater?
☐ Yes	☐ No	Is source identified and completely delineated?
☐ Yes	☐ No	Is source migrating or has migrated off-site?
☐ Yes	☐ No	Is source left as is?
☐ Yes	☐ No	Is source partially removed and residual source being managed?
☐ Yes	☐ No	Is source controlled with physical or administrative methods?
☐ Yes	☐ No	Are all pathways of concern identified?
☐ Yes	☐ No	Have all relevant receptors been identified and protected?
☐ Yes	☐ No	Is there a monitoring program in place to verify RMP success?
☐ Yes	☐ No	Are there third parties related to this RMP? (*if the answer is 'no', skip the next question.*)
☐ Yes	☐ No	If there are third parties, have all of them accepted the RMP?
☐ Yes	☐ No	Is there a commitment from person(s) responsible to implement and monitor the RMP until final remediation guidelines are achieved?
☐ Yes	☐ No	Is there a contingency plan in place should the RMP fail?
☐ Yes	☐ No	Is the RMP implemented for the site?

Public Disclosure and Privacy Notification

The *Record of Site Condition* form is a public record that is disclosed in accordance with section 35 of the *Environmental Protection and Enhancement Act, Disclosure of Information Regulation*, and *Ministerial Order 23/2004*. Reasonable efforts have been made to minimize collection of personal information where possible. Personal information on the form is collected under the authority of section 12(c) and other provisions of the *Environmental Protection and Enhancement Act* and is in compliance with section 33(a) and 33(c) of the *Freedom of Information and Protection of Privacy Act* (FOIP). Personal information collected on this form will be used by Alberta Environment and Sustainable Resource Development (ESRD) or the Alberta Energy Regulator (AER), as the case may be, for the purposes of administering its programs.

Accuracy of Information

The information in this document has been submitted by persons other than ESRD or the AER. The Department, the Government of Alberta, and the AER cannot and do not warrant that the information in this document is current, accurate, complete, or free of errors. Persons accessing the information provided should not rely on it, and any reliance on the information provided is taken at the sole risk of the user. Users of this information are advised to conduct their own due diligence to satisfy themselves of the environmental condition of the property of interest.

8 DECLARATION

This *Record of Site Condition* form was prepared for the purpose of reporting on the state of environmental site conditions and, where applicable, for the purpose of remediation or reclamation, for:
Sears Gas Bar (site name) (the "Site").

I, as the licensed operator or authorized representative, have reviewed all information that was used in preparation of this form and I am satisfied that it was prepared in a manner consistent with the Applicable Standard[ǂ] together with any relevant additional guidance that is available from Alberta Environment and Sustainable Resource Development as of this date for conducting environmental site assessments.

Having conducted reasonable inquiries to obtain all relevant information, to my knowledge, the statements made in this form are true as of this date. I have disclosed all pertinent information of which I am aware concerning the historical and current environmental condition of the Site to the Director.

Any use which a third party, other than the Crown in right of Alberta or the AER, makes of this form, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. The undersigned accepts no responsibility for damages, if any, suffered by any third party, other than the Crown in right of Alberta and the AER, as a result of decisions made or actions based on this form. Any exclusions or disclaimers to the contrary contained in any attachment to this form are of no force or effect as against the Crown in right of Alberta and the AER.

Footnote ǂ:

"Applicable Standard" means

a) for the purposes of upstream oil and gas sites,

i) *2010 Reclamation Criteria for Wellsites and Associated Facilities Application Guidelines* (ESRD 2011),

ii) CSA Standard Z769, *Phase II Environmental Site Assessment,* as amended, for any Phase II site assessment information used in preparation of this form on all upstream oil and gas sites not included in a) i);

b) for the purposes of all other sites, CSA Standard Z768, *Phase I Environmental Site Assessment,* as amended, for any Phase I site assessment information and with CSA Standard Z769, *Phase II Environmental Site Assessment,* as amended, for any Phase II site assessment information used in preparation of this form.

By signing below, I as the licensed operator or authorized representative, confirm the information provided herein is correct and complete, to the best of my knowledge and belief.

Clifton Associates Ltd	Stephen d'Abadie	Project Manager		18/12/209
Name of operator	Name of authorized representative	Title of authorized representative (*e.g. officer, director*)	Signature	Date (*dd-mon-yyyy*)