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REPORT



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FINAL REPORT ON

Canada Creosote Site - 2014 North Bow Supplementary Subsurface Investigation and Vapour Intrusion Assessment

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EXECUTIVE SUMMARY

Golder and Associates Ltd. (Golder) was retained by Alberta Environment and Sustainable Resource Development (ESRD) to carry out a supplementary subsurface environmental investigation and vapour intrusion assessment in West Hillhurst, a primarily residential community in Calgary, Alberta. The Site is primarily developed with single-family homes, streets and alley ways and encompasses the area between 15th Street NW and 18th Street NW (east to west) and between Westmount Boulevard NW and Bowness Road NW (south to north).

For over 40 years until the mid-1960's, the Canada Creosote facility operated on the south side of the Bow River. Wood treatment activities using a mixture of chemicals occurred at the Canada Creosote site. With time, these compounds migrated under the Bow River and during excavations for utility construction, creosote-like impacts were identified in locations in West Hillhurst. Based on this information, Golder was retained by ESRD starting in 2010 to conduct an environmental investigation and human health risk assessment program (see Golder 2011a).

The main contaminant of concern (COC) in West Hillhurst resulting from historical wood treatment activities is creosote. Creosote is a mixture of hydrocarbons including polycyclic aromatic hydrocarbons (PAH), petroleum hydrocarbons (PHC) and volatile organic compounds (VOC). The physical properties of the individual chemicals that make up the creosote mixture vary. Some predominantly dissolve in water, others are present primarily as an immiscible phase and float on water (light non-aqueous phase liquids [LNAPL]) or sink in water (dense non-aqueous phase liquids [DNAPL]) and some volatilize. Since the chemicals can exist in various states and interact with both soil and water, investigations to date in West Hillhurst have included soil, water and vapour (soil and air) monitoring.

In 2012, Golder was retained to update the screening level risk assessment conducted in 2010. As part of this Screening Level Risk Assessment Update (Golder, 2014), chemicals related to wood treatment were screened and a list of relevant chemicals that could potential present a human health risk was developed. The results of the Screening Level Risk Assessment Update identified a possible unacceptable risk to residential and construction workers based on results of testing of soil vapour from MW10-6. It was determined that if the concentration of naphthalene in MW10-06, was hypothetically measured in a basement (after applying a conservative attenuation factor), it would exceed screening criteria for the vapour inhalation pathway. After confirming this result through a follow-up sampling program in 2013, an additional investigation into the potential for soil vapour intrusion into houses in the area of monitoring well MW10-06 was conducted by Golder in 2014 and is summarized herein.

The objectives of the 2014 investigation and monitoring program were to:

- Evaluate the potential for vapour migration in residences in the area of MW10-6;
- Assess exposure and risk to residents in the vicinity of MW10-6 through direct measurement of indoor air;
- Investigate the effects of seasonality on potential vapour intrusion, soil vapour concentrations and presence of NAPL near NW10-6;
- Evaluate the if attenuation and if possible biodegradation is occurring between the source and residence; and
- Where possible, delineate the extent of NAPL in the vicinity of monitoring well MW10-6 and further characterize soil and groundwater conditions in this area.



In January 2014, twelve groundwater monitoring wells, with six being nested pairs, were installed at nine locations at the Site to delineate the extent of NAPL and further characterize the area of impact. The 2014 groundwater monitoring network at the Site was comprised of 17 wells (six deep “A” wells and 11 shallow “B” wells). Wells were monitored in both March and June 2014, when water levels within the Bow River were at their lowest (March) and just before being at their highest (June). Groundwater elevations measured at the Site in 2014 indicated a radial groundwater flow direction with one component of the flow direction towards Broadview Road NW which appears to be a local groundwater low area.

During groundwater monitoring in 2014, NAPL was not detected in any monitoring wells except MW10-06. This suggests that the extent of NAPL was localized around MW10-06 during this time. Similar to historical results, the highest PHC and PAH concentrations were generally found at MW10-7A, MW10-01A and MW11-06 (note groundwater samples were not analyzed from MW10-6 because of NAPL in the well); however, concentrations in newly installed MW14-1A, MW14-4A and MW14-6B were also significantly elevated. These locations are generally located along Broadview Road and 19th Street NW and in the southwest portion of the Site. While concentrations of select parameters are above Alberta Tier 1 Guidelines for potable water, it should be noted that the water supply to West Hillhurst is municipally serviced. Naphthalene, benzene and PHC Fraction F2 were detected at concentrations above the AB Tier 2 Guidelines for the vapour inhalation pathway at a number of locations; however, direct measurement of soil vapour at the Site indicated that significant attenuation is occurring between the groundwater and shallow soil vapour, as soil vapour concentrations were generally low across the Site (see below).

In January 2014, five multiple depth soil vapour monitoring probes were installed adjacent to homes near MW10-06. The current soil vapour monitoring network at the Site consists of 14 probes (seven deep probe, six shallow probe and one monitoring well) at eight locations. In most instances, probes were monitored in March, June, August and November 2014. The measured soil vapour concentrations for these monitoring events were all below the soil vapour screening criteria established for this project with the exception of MW10-06 (both in the well and soil vapour probe beside the well), indicating that there is likely not a significant deep soil vapour source. Elevated soil vapour concentrations have consistently been detected at MW10-06 since 2012 and are likely attributable to the presence of DNAPL in this well. NAPL has not been identified in other wells in the vicinity of MW10-06.

In 2014, five residential homes were monitored on a quarterly basis using a combination of sub-slab vapour probes and indoor air monitoring. With the exception of naphthalene during one sampling event and in one residence, all sub-slab vapour concentrations were less than the soil vapour screening criteria established for the project. In response to the elevated occurrence of naphthalene, the sub-slab soil vapour at this location was resampled and all results, included naphthalene were below the sub-slab vapour screening criteria established for the project. It is not clear whether this one time elevated sub-slab naphthalene result is reflective of actual subsurface conditions or anomalous; however, the elevated concentration does not appear to be persistent. It should be noted that at the same time the elevated naphthalene concentration was reported in the sub-slab, the concentration of naphthalene reported in the indoor air samples (basement and main floor) were below the indoor air screening criteria indicating that there was no risk to building occupants as a result of possible naphthalene vapour intrusion from the sub-slab into the home.



The indoor air sampling completed in 2014 did not identify any concentrations above the indoor air screening criteria that were considered primarily attributable to contaminant source vapour intrusion in the five homes assessed. The results of indoor air analysis indicates that chloroform was identified in all homes at concentrations above the indoor screening criteria; however, chloroform is not considered a chemical associated with the historic creosote contamination, and its presence in indoor air is more likely related to background sources within homes. Several other compounds (bromodichloromethane, benzene, hexachlorobutadiene, and trichloroethylene) were detected in indoor air at concentrations above the indoor air screening criteria. However; in all the cases with the exception of one (benzene in one home during one sampling event), the concentrations measured in the sub-slab sample were below the detection limits or lower than or similar to those measured in the indoor air sample. From these results, it is inferred that vapour intrusion is not occurring to a significant extent and that indoor air concentrations are more likely related to background sources within the homes. Indoor air concentrations measured above the screening criteria may represent a potential health concern; however, the data collected in 2014 indicates these results are attributable to background sources within the homes and not a result of vapour intrusion from the creosote contamination source.

Consistent with a dissolved phase source and a water table that was sufficiently high such that the DNAPL source zones are likely submerged below the water table, relatively low soil vapour concentrations were measured at the Site (with the exception of in MW10-06). Consistent with historical results at MW10-06, where NAPL was detected, the vapour concentrations were significantly higher in this localized area.

The conceptual model is that aerobic biodegradation of creosote vapours is occurring within the vadose zone, which is supported by biogenic gas data (oxygen and carbon dioxide). In addition, comparison of the contaminant concentrations in MW10-06 versus the shallower probe at the same location indicates that the concentrations in the probe are lower than those in the well. This suggests that there is contaminant degradation occurring between the source zone and the shallow vadose zone.

Groundwater level monitoring conducted between 2012 and 2014 indicates that groundwater levels at the Site are affected by water levels in the Bow River. Based on data collected in 2014, there does not appear to be a clear correlation between the depth to groundwater (i.e., seasonality) and soil vapour concentrations at the Site. This may be attributable to the fact that groundwater levels were not interpreted to fall below the elevation of bedrock at the Site and thus NAPL present in the bedrock was not exposed to soil gas.

Based on the results of the 2014 supplementary subsurface investigation and vapour intrusion assessment, Golder recommends the following:

- Ongoing monitoring of groundwater monitoring wells across the site to assess changes in the presence of NAPL; and;
- Follow-up monitoring and sampling of sub-slab and indoor air within the five homes assessed to determine if the conditions encountered in 2014 remain consistent, and to verify the irregular naphthalene, benzene and trichloroethylene concentrations within or below one of the residences.



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1.0 INTRODUCTION

Golder Associates Ltd. (Golder) was retained by Alberta Environment and Sustainable Resource Development (ESRD) to carry out additional environmental investigation and a vapour intrusion assessment at the primarily residential area of West Hillhurst, Calgary, Alberta, located north of the Bow River and the former Canada Creosote Site, henceforth referred to as the “North Bow Site” or “Site” (refer to Figure 1 at the end of this report).

The project study area is between 15th Street NW and 18th Street NW (east to west) and between Westmount Boulevard NW and Bowness Road NW (south to north). The Site is primarily developed with single-family homes, streets and alley ways. A church, two parks, and properties occupied by the Canadian Broadcasting Corporation (CBC) Calgary Radio and Television, and Emergency Medical Services (EMS) Station #6 are also present within the Site boundary. The Site is approximately 750 m long and 250 m wide (refer to Figure 2).

Golder’s scope of work for this project was outlined in our proposal dated December 17, 2013, and scope change dated January 31, 2014, which increased the scope of work. The original written authorization to proceed with the work was provided by ESRD in January 2014.

1.1 Background and Previous Investigations

For over 40 years until the mid-1960’s, the Canada Creosote facility operated on the south side of the Bow River. Wood-preserving operations historically took place on the Canada Creosote Site and involved the use of tars, creosote, and petroleum oils. The physical properties of the individual chemicals that make up the creosote mixture vary. Some predominantly dissolve in water, others are present primarily as an immiscible phase and float on water (light non-aqueous phase liquids [LNAPL]) or sink in water (dense non-aqueous phase liquids [DNAPL]) and some volatilize. With time, these compounds migrated under the Bow River and during utility work creosote like impacts were identified in locations in West Hillhurst. Based on this information, Golder was retained by ESRD in 2010 to prepare a human health risk assessment (2011 HHRA) for the Site (Golder 2011a). The purpose of the HHRA was to assess possible human health risk associated with potential exposure to subsurface contamination (by residents or construction workers involved with buried utilities) that has migrated from the Canada Creosote Site to the North Bow Site area. Prior to the 2011 HHRA, a number of investigations were completed by others at the North Bow Site and the Canada Creosote Site, including a 2011 Phase I ESA of the Site completed by Golder (Golder 2011b). These previously conducted investigations have been comprehensively summarized in the 2011 Golder HHRA and summaries are not included in this report.

The results of the 2011 HHRA indicated that the predicted risks for residents were negligible based on the soil vapour measurements collected on-Site. Potential risks to construction workers involved in subsurface activities exposed to groundwater and trench air were above target risk levels for a number of compounds. A potentially significant finding of the HHRA was that groundwater elevations during the soil vapour investigation in March 2011 were relatively high, which appeared to be a result of water levels in the Bow River. It was postulated that if the groundwater level were to decline to below the bedrock surface, there may be greater potential for contaminants within bedrock or in soil near the bedrock-soil interface to volatilize and consequently greater potential for elevated soil vapour concentrations.



In order to address data gaps identified in the HHRA, Golder recommended the following:

- Additional boreholes and monitoring wells should be constructed to assess the depth to bedrock and characterize contamination source (i.e. non-aqueous phase liquid [NAPL]) zones, focussing on the area with the shallowest bedrock observed during the 2011 field program (along Broadview Road NW), but moving outward from this area, as warranted.
- A supplementary soil vapour probe installation program based on the results of the above bedrock characterization.
- Regular monitoring (or download and analysis of data) of Bow River levels and groundwater levels.
- An additional soil vapour monitoring event when groundwater levels are lower (likely late summer), which should include collection and analysis of soil vapour samples from existing and new probes, and analysis of groundwater from select monitoring wells.
- On the basis of the additional data obtained, the human health risk assessment should be updated, and possible requirements for further assessment and monitoring should be evaluated.

In 2012 and 2013, Golder undertook a Screening Level Risk Assessment Update (Golder 2014) based on newly acquired data. The field program was completed in December 2011 (installation of additional monitoring wells and soil vapour probes), November 2012 (groundwater and soil vapour monitoring and sampling) and April 2013 (soil vapour re-sampling). The re-sampling event was carried out based on a preliminary review of soil vapour results from the November 2012 sampling program and subsequent discussions with ESRD, as a number of results from the November 2012 program were not as expected (i.e., significantly lower than expected, or significantly higher than expected). The purpose of the re-sampling in April 2013 was to confirm the seemingly anomalous results from the November 2012 sampling event.

Results of the follow-up investigation identified 0.57 m of LNAPL in monitoring well MW10-6 in 2012 and 0.44 m of dense, non-aqueous phase liquid (DNAPL) in MW10-6 in 2013. Soil vapour analytical results indicated relatively low soil vapour concentrations measured at the Site (with the exception of MW10-6), consistent with a dissolved phase source and a water table that was sufficiently high such that the NAPL source zones were likely submerged below the water table. At MW10-6 where NAPL was detected, the vapour concentrations were significantly higher. The naphthalene and petroleum hydrocarbon (PHC) fraction F1 and F2 concentrations in soil vapour at this location were between 50 and 700 times higher than the next highest concentration measured within the North Bow Site, suggesting a NAPL source in the vadose zone near MW10-6.

The Screening Level Risk Assessment Update identified possible unacceptable risks to residents and construction workers for several non-carcinogenic chemicals associated with Site contamination using the maximum measured soil vapour concentration (i.e., at MW10-6), resulting in conservative estimates of risk. The estimated risks for measured concentrations at all other locations were below the target risk levels except for chloroform (location MW10-3B). This result suggested that the predicted potentially unacceptable risks from the creosote contamination were isolated to an area in the vicinity of MW10-06.

Based on the results of the Screening Level Risk Assessment Update, it was recommended that further investigation and monitoring be carried out to evaluate the potential for soil vapour intrusion into houses in the area of monitoring well MW10-6. Direct measurement of indoor air quality was deemed appropriate to better assess actual exposure and risk to residents near the affected area. As elevated risk levels may be associated with the presence of NAPL, delineation of the NAPL near MW10-6 was recommended. It was also recommended that the additional site characterization data including bedrock conditions and NAPL occurrences, and soil and



groundwater quality in the area be obtained. Additional monitoring of seasonal concentration variability was considered warranted to better understand conditions potentially influencing vapour intrusion (e.g., monitoring during summer and winter conditions). Finally, additional soil vapour monitoring was recommended to assess biodegradation conditions and concentration attenuation below and near houses of potential concern and the potential for vapour intrusion.

The work described in this report was carried out to address the recommendations outlined in the Screening Level Risk Assessment Update.

1.2 Objectives

The objectives of this investigation were to:

- Evaluate the potential for vapour intrusion into residences due to the presence of NAPL in the area of monitoring well MW10-6;
- Assess exposure and risk to residents in the vicinity of monitoring well MW10-6 through direct measurement of indoor air;
- Investigate the effects of seasonality on vapour intrusion, soil vapour concentrations and NAPL presence in monitoring well MW10-6;
- Evaluate the degree of attenuation and biodegradation between the source and residences; and
- Where possible, delineate the extent of NAPL in the vicinity of monitoring well MW10-6 and further characterize soil and groundwater conditions in this area;

1.3 Scope of Work

The original scope of work for this investigation included the following tasks:

- Installing and quarterly sampling of two sub-slab vapour probes within each of six homes located near MW10-06 (Home “A”, Home “B”, Home “C”, Home “D”, Home “E” and Home “F” on Broadview Road, NW);
- Collecting two indoor air samples from each of six homes located near MW10-06 on a quarterly basis;
- Collecting outdoor air samples during quarterly sampling events to assess background concentrations;
- Installing up to 13 groundwater monitoring wells at nine locations in the vicinity of MW10-06;
- Quarterly monitoring of newly installed monitoring wells and five existing wells. Quarterly sampling of four newly installed wells and bi-annual sampling on the remaining newly installed wells and five existing wells;
- Installing of six multiple depth soil vapour probes adjacent to homes near MW10-6;
- Quarterly monitoring and soil vapour sampling of newly installed multiple depth soil vapour probes and four existing soil vapour probes/monitoring wells;
- Measuring water levels over the duration of the investigation using transducers installed in three monitoring wells at the Site to assess groundwater levels over time;
- Updating the site conception model (CSM); and,
- Preparing this summary report.



1.3.1 Deviations from the Proposed Scope of Work

Based on the presence of above-ground and below-ground utilities and other infrastructure, only nine suitable locations were identified for installation of groundwater monitoring wells. As such, only 12 monitoring wells were installed in 2014.

Following discussions with the property owners of Home “D” Broadview Road NW, it was concluded that they did not want to be included in the investigation. As such, no sub-slab, soil vapour, or indoor air samples were collected on this property. The multi-depth soil vapour probe intended to be placed on this property was relocated to the City of Calgary right-of-way between Home “D” and Home “B” as a probe could also not be placed on the property of Home “B” due to the presence of walkways and landscaping.

Due to the layout of a number of homes, two sub-slab probes could only be installed in one home (Home “C” Broadview Road NW). One sub-slab probe was installed in each of Home “A” Broadview Road NW, Home “B” Broadview Road NW, and Home “F” Broadview Road NW and no sub-slab probes were installed in Home “E” Broadview Road NW as this home did not have a basement but only an earthen crawl space.

Upon discussion with the owners of Home “B” Broadview Road NW, it was noted that the basement floor of this home was equipped with in-floor heating. Golder conducted a survey of the basement floor using high frequency ground penetrating radar (GPR) to identify the locations of radiant heat pipes. Based on the results of the survey, one location in the basement floor was identified to be clear of in-floor pipes and a sub-slab probe was installed at this location.

Two indoor air samples were collected from each home during each quarterly sampling event, with the exception of Home “A” Broadview Road NW during the first quarterly event. Indoor air samples were not collected from this home as it was noted that spray painting of an interior wall was taking place at the intended time of sampling. The presence of spray paint would likely have caused anomalously high concentrations of volatile organic compounds (VOCs) in indoor air.



2.0 REVIEW OF CONCEPTUAL SITE MODEL

The conceptual site model (CSM) that was formulated based on information from the 2011 Phase I ESA, and results of the 2011 HHRA and 2012/2013 Screening Level Risk Assessment Update is summarized below.

2.1 Contamination Source Areas

Known areas with historic creosote-related NAPL impacts include:

- Along Broadview Road NW, creosote-related contamination was encountered during excavation for construction of a water main, both east and west of 18th Street NW; light non-aqueous phase liquid (LNAPL) was observed as a sheen on seepage water entering the excavation at depths inferred between 2.5 and 3 metres below ground surface (m bgs) and dense non-aqueous phase liquid (DNAPL) was observed entering the base of the excavation at depths that were on the order of 5 m bgs (detailed information on depths was not provided in historical reports);
- At the CBC site, DNAPL was encountered in three wells completed within the bedrock where the depth to the top surface of the DNAPL in wells ranged from 3.9 m to 9.3 m bgs; and
- Along Memorial Drive, DNAPL was encountered at one well approximately half-way between 17th Street NW and a line extending south from 18th Street NW. Creosote staining was observed in fracture zones at depths of 1 m to 5 m below the soil-bedrock interface at several other boreholes along Memorial Drive.

The migration pathways for DNAPL are complex, and Keystone (2003) hypothesized that DNAPL may have migrated and possibly is continuing to migrate either on top of the bedrock surface or through fractures within the bedrock.

Geology at the Site consists mainly of topsoil underlain by sandy silt to silty sand, underlain by varying amounts of sand and gravel. Siltstone bedrock is encountered between 4 and 7 m bgs and is generally encountered at a higher elevation in the western portion of the Site and at a lower elevation in the eastern portion of the Site. At the CBC and EMS sites, the depth to bedrock was approximately 7 m bgs. Variable thicknesses of DNAPL (up to approximately 8.5 m in thickness) were historically measured in three wells at the CBC site and one well along Memorial Drive. The thickness of DNAPL in a well does not reflect the thickness of DNAPL within the formation and is inferred to be highly exaggerated compared to the depth intervals that likely contain DNAPL within the bedrock. Although analysis of DNAPL migration is beyond the scope of Golder's investigation, the DNAPL in the bedrock may be under pressure and thus when a well penetrates DNAPL-containing fractures in the bedrock, the DNAPL pushes up in the well and partially fills the well. In the area of the CBC site, the bedrock appears to be overlain by clay, which may act as a confining unit that influences fluid pressures within the bedrock.

There is evidence of creosote impacts in bedrock and soil above bedrock at three monitoring wells along Broadview Road NW (MW10-6, MW10-7B and MW11-01), which is generally consistent with the area with historical indications of NAPL. Well MW10-6 is a short distance further west than historical locations where NAPL was encountered. In 2011, MW10-6 had a creosote-like LNAPL sheen at the water table, whereas in 2012/2013 there was 0.57 m of LNAPL (2012) and 0.44 m of DNAPL (2013) present in the well. Evidence of creosote impacts were also noted at MW11-06 located north of Westmount Boulevard near 18th Street, where no historical impacts of NAPL have been noted. Creosote impacts were also noted in wells MW1 and MW2 on the west portion of the CBC property, and MW3-A and MW6-B in the central area of the CBC property (see Golder 2011 HHRA for well locations). These impacts are consistent with historical results.



The groundwater elevation data indicates approximately 1.5 m fluctuation seasonally and lower elevations in November and April and higher elevations in late spring and early summer and early winter. West of 17th Avenue, the groundwater flow direction during higher water table conditions appears to be to the north indicating the Bow River in this area is losing water to the shallow groundwater system. During lower water table conditions, the groundwater flow direction is variable and likely controlled by the variable bedrock surface and utility corridor backfill. Groundwater elevation data collected on the western portion of the Site in 2014 (see Section 5.2 below) indicates radial groundwater flow towards Broadview Road NW.

The results of groundwater analyses indicate elevated concentrations of naphthalene and PHC F2 fraction in wells along Broadview Road NW in the general area of 18th and 19th Street NW that were consistent with locations of monitoring wells with observed creosote impacts. Other Site wells had significantly lower but detectable naphthalene concentrations, excluding MW11-6 where the highest naphthalene concentration was measured. Groundwater concentrations were relatively consistent between the March 2011 and November 2012 sampling events.

The results of soil vapour analyses from March 2011, November 2012 [Summa canisters only] and April 2013 indicated significantly higher BTEX, naphthalene and hydrocarbon fraction concentrations at MW10-6 compared to all other sampling locations. For example, the April 2013 naphthalene concentration in soil vapour at MW10-6 was approximately 700 times higher than the next highest concentration from previous events and the F1 and F2 concentrations were approximately 50 times higher. NAPL was detected in well MW10-6 (LNAPL in 2011 and 2012, and DNAPL in 2013) and therefore the possible presence of NAPL within the vadose zone may be the source of the elevated soil vapour concentrations measured at this location. Excluding MW10-6, the concentrations of analytes commonly associated with creosote, such as BTEX, F1 and F2 were relatively low compared to other project sites where higher soil vapour concentrations have been measured near to creosote-impacted soil. In addition, testing of soil vapour for a large list of the PIANO (paraffins, isoparaffins, aromatics, naphthenes, and olefins) compounds did not reveal other compounds of significant potential concern based on qualitative comparisons and the human health risk assessment.

2.2 Potential for Volatilization and Soil Vapour Fate and Transport Processes

An understanding of the contamination source is important because of the implications for volatilization and the potential for soil vapour intrusion. The greatest potential for volatilization exists where NAPL is present above the water table. The available historical information indicates that the depth to groundwater ranges between approximately 3.4 m to 4.3 m. For this depth range, the known NAPL zones based on historical information would appear to be below the water table. When NAPL is below the water table, chemicals must diffuse upward through water within the saturated zone and capillary fringe before there is the potential for volatilization to the soil vapour phase. For a dissolved phase source, there is less potential for volatilization compared to a NAPL source above the water table given that chemicals must again diffuse through the capillary fringe. This conceptual model is described in greater detail in guidance prepared by Golder for the Science Advisory Board for Contaminated Sites (SABCS) of British Columbia (Golder, 2011b) and other research publications (e.g., Golder, 2008a). When developing the CSM, possible seasonal fluctuations in the water table should be considered.



Within the vadose zone, the main processes affecting migration of creosote-related soil vapours are chemical diffusion and aerobic biodegradation, although sorption of chemicals into naturally-occurring organic carbon may also influence soil vapour transport. Soil gas advection may be a significant process close to buildings due to building pressures, which can be positive or negative, depending on building properties and weather.

The soil lithology within the vadose zone at the Site is variable, but based on historical information generally consists of near-surface topsoil and fill deposits, underlain by interlayered native deposits consisting of sand and gravel, sand and silty sand. At the CBC site, the vadose zone soils appear to be generally finer-grained than those observed to the west and consist primarily of sandy silt with variable gravel content.

During the previous investigation, it was noted that the depth to the water table was sufficiently high such that the NAPL source zones appeared to be submerged in early March 2011, which was consistent with a relatively weak vapour source and low soil vapour concentrations. It was postulated that there would be greater potential for volatilization for low groundwater elevation conditions, particularly if the groundwater was below the surface of the bedrock. Based on data collected from three permanent water level transducers, groundwater levels were generally at their lowest from late October to early December in 2013 and almost as low in March and April. However, groundwater levels measured during this period remained above the bedrock surface. The lowest water levels measured in 2014 were between February and March 2014 and were similar to slightly higher than those measured in 2013 (see Section 5.2 below).

2.2.1 Aerobic Biodegradation

For NAPL sources submerged below the water table or dissolved groundwater sources, the near-water table soil vapour concentrations will tend to be low to moderate and aerobic biodegradation typically results in relatively rapid attenuation of hydrocarbon vapour concentrations to non-significant concentrations. This CSM is supported through observations at other creosote or coal-tar sites (e.g., Hers *et al.*, 2010) and extensive research at petroleum hydrocarbon sites (Ostendorf and Kampbell, 1991; Ririe and Sweeney, 1995; Ririe *et al.*, 1998; Ostendorf *et al.*, 2000; Hers *et al.*, 2000; Roggemans *et al.*, 2002; Sanders and Hers, 2006; Davis *et al.*, 2009; Patterson and Davis, 2009). In addition, results of the 2014 Supplementary Subsurface Investigation and Vapour Intrusion Assessment support the CSM as results show that biodegradation is occurring between the source and shallow soil (see further information below).

When evaluating aerobic biodegradation, the CSM should consider the potential for a capping effect where oxygen recharge to the subsurface is reduced through foundation slabs or paved surfaces. It is noted that while oxygen migration through concrete or asphalt is slower than through soil, it will occur. Excluding the CBC and EMS sites, buildings at the Site are detached houses with relatively extensive landscaped areas. There is a low potential for a significant capping effect and thus oxygen recharge is unlikely to be significantly limited. Frost and snow cover have also been identified as possibly reducing oxygen recharge, and was evaluated as part of an in-progress research project conducted by Golder, but this effect was not observed at a research site in Saskatchewan during winter conditions (Hers *et al.*, 2011). The building footprint for the CBC building is larger but there are open landscaped areas as well surrounding most the building.

The CSM should also consider the potential for generation of methane and carbon dioxide (biogenic gases) under anaerobic conditions either within creosote NAPL source zones or naturally-occurring organic deposits (e.g., peat bogs). Biogenic gases are important to evaluate from a safety hazard standpoint (e.g., explosivity and asphyxiation) and methane when oxidized represents an oxygen sink or demand. The potential for biogenic gas generation will strongly depend on the size of the NAPL source zone and potential for anaerobic conditions to develop. Given that the NAPL at the Site has migrated several hundred metres within bedrock fractures or on



top of bedrock surface troughs, there may be insufficient mass of NAPL for anaerobic conditions to develop from this factor alone.

Soil vapour monitoring identified elevated oxygen concentrations near to atmospheric levels at most locations indicating a well-oxygenated vadose zone, and relatively low carbon dioxide, methane and combustible vapour concentrations. The elevated oxygen concentrations and somewhat elevated carbon dioxide concentrations suggest that aerobic biodegradation is a process that reduces the concentrations of creosote-related vapours to relatively low levels at most locations. The BTEX and naphthalene concentrations were relatively low at the probe (MW10-22) with the lowest oxygen concentration (13%). In contrast, the oxygen concentrations were close to atmospheric at probe MW10-6, where relatively high BTEX and naphthalene concentrations were measured, and where PID concentrations measured during field screening were also elevated (up to 74 ppm). The elevated oxygen concentration at MW10-6 is unexpected, but may be due to a nearby NAPL source that is close to the probe and incomplete biodegradation within short vapour migration distances.

2.3 Building Properties

The characteristics of the buildings are also potentially important in situations where soil vapour is able to migrate to the underside of the building (*i.e.*, in cases where soil vapour is not attenuated in the vadose zone). The CSM described above suggests that there may be significant aerobic biodegradation, which may prevent upward soil vapour migration toward houses from occurring. The key process potentially affecting soil vapour intrusion is soil gas advection. During the heating season, houses tend to be depressurized due to the stack effect (warm air rising in the house) and possibly due to furnace operation. Depressurization represents the driving gradient for soil gas advection into a building. The soil-air permeability and properties of the building foundation (*e.g.*, cracks, drains, sumps, and other openings) also influence soil gas advection. Other building related factors that potentially affect soil vapour intrusion include the type of foundation (*e.g.*, basement, crawlspace, or slab-at-grade), depth to the base of foundation below ground surface, size and height of the building, and building ventilation.

2.4 Preferential Pathways

Utility corridors backfilled with coarse-grained soil can in some instances be preferential pathways for transport of DNAPL or groundwater with dissolved impacts below the water table, or soil vapour above the water table. The potential for preferential DNAPL migration will depend on the conductivity of the utility corridor backfill to DNAPL flow compared to that of the native soils. At the Site, the vadose zone soils are generally coarse-grained, which would reduce the potential for preferential DNAPL migration along utilities.

Above the water table, preferential migration of soil vapour along utility backfill may be limited because there is likely little difference in the soil-air permeability of the coarse-grained native soil and utility backfill. In addition, if there were to be enhanced potential for hydrocarbon vapour migration, the same enhanced potential would also apply to oxygen transport, which would promote aerobic biodegradation. Therefore, based on the initial CSM, utilities are considered unlikely to represent significant preferential pathways for soil vapour transport at the Site.

Sumps in homes could also represent preferential pathways for vapour migration into homes; however, no sumps were identified in any of the homes investigated as part of the 2014 work.



3.0 FIELD PROGRAM APPROACH, SCOPE AND METHODS

The field program approach, rationale, scope and methods are described in the following sections. The drilling program was completed in January 2014, and quarterly groundwater monitoring and sampling, soil vapour sampling, sub-slab sampling and indoor air sampling were completed in January, February and March (1st quarter), June, (2nd quarter), August (3rd quarter) and November (4th quarter).

3.1 Health and Safety Plan

A Site-Specific Health and Safety and Environment Plan (SS-HASEP) was developed, reviewed, and approved prior to the start of work. A major component of the SS-HASEP was the identification of potential health and safety hazards associated with conditions and scheduled activities within the project area and implementation of the controls necessary to minimize the risk to people. All Golder staff and subcontractors working on the Site read, signed, and complied with the SS-HASEP throughout the course of the project.

3.2 Sub-Slab Probe Installation

Beginning in January 2014, Golder coordinated with the home owners of Home “A”, Home “B”, Home “C”, Home “E” and Home “F” Broadview Road NW to install sub-slab vapour probes in the basement on each home. Prior to probe installation, Golder completed a reconnaissance survey of each home to identify appropriate locations for probe installation, and to identify possible background sources of VOCs in indoor air and possible features and properties of the building that may influence vapour intrusion such as type of foundation, cracks in the foundation, utility penetrations, sumps and heating system. A sensitive PID (ppbRAE) was also used to screen for possible indoor contamination sources. If materials that represent possible indoor sources of petroleum hydrocarbons or VOCs were identified, the home owners were asked to remove these materials from the home at least three days prior to indoor air testing. Home surveys took place on January 16 (Home “A”, Home “B” and Home “E” Broadview Road NW), January 17 (Home “C” Broadview Road NW) and February 11 (Home “F” Broadview Road NW), 2014.

Two sub-slab probes were installed in the basement floor of Home “C” Broadview Road NW, and one sub-slab probe was installed in the basement floor of Home “A”, Home “B” and Home “F” Broadview Road NW, on January 24, March 13, and February 11, 2014, respectively. No sub-slab probes were installed in Home “E” Broadview Road NW as the basement consisted only of an earthen floor crawl space. During the survey of Home “B” Broadview Road NW carried out on January 16, 2014, it was noted that the basement floor was equipped with in-floor heating. In order to assess the location of in-floor heating pipes, Golder personnel completed a ground penetrating radar (GPR) survey of the floor. Only one area clear of pipes and other anomalies was identified and a sub-slab probe was installed in this location. A summary of the building and probe location details for each home is presented in the following table:



Table 1: Building and Sub-Slab Probe Details

Building Address	Home “A” Broadview Road NW	Home “B” Broadview Road NW	Home “C” Broadview Road NW.	Home “E” Broadview Road NW	Home “F” Broadview Road NW
Building Type	Bungalow with developed basement	2-Storey with developed basement	Bungalow with developed basement	2-Storey with crawl space	Bungalow with developed basement
Heating Type	Natural gas, hot air circulation	Natural gas, hot air circulation. Central air conditioning.	Natural gas, hot air circulation	Natural gas, hot air circulation	Natural gas, hot air circulation
Foundation Type and Thickness	Concrete, 2”	Concrete, 2.5”	Concrete, 3.5”	None – earthen flood	Concrete, 1.5”
General Location of Sub-Slab Probe	In mechanical room, 1.7m north and 1.95m west of exterior wall, 1.7 m from nearest floor drain	In mechanical room, 1.3m from north exterior wall and 1.2m from west exterior wall	Probe 1 – in mechanical room, 2.3 m from exterior wall, 1m from drain. Probe 2 – in laundry room, 1.7m from exterior wall	None	In mechanical room, 1.2m north and 1.5m east of exterior walls. No visible cracks or drains noted within 2 m
Presence of Sump	No	No	No	No	No
Notes	Spray paint vapours throughout home during survey	In-floor radiant heating in basement. Minor cracks in slab.	None	Crawl space approximately 1m in height	Basement has separate residence suite

Sub-slab probes were installed by drilling a small hole (1” in diameter) in the floor slab with a heavy duty electric rotary hammer drill. A shop-vac was used to collect dust during drilling. After drilling the hole, and prior to installation of the probe, the hole was temporarily sealed (e.g., using a rubber stopper) to minimize disturbance to sub-slab vapour concentrations. A stainless steel probe was installed inside the probe hole and connected to a valve. The base of the probes extended just into the gravel base below the slab. The probes were cemented into place using a concrete grout that does not emit volatile organic compounds. After the probe was installed, the valve to the probe was closed and at least an hour was allowed for the concrete seal to set before collecting a sample.

3.3 Quarterly Sub-Slab and Indoor Air Sampling

All newly installed soil vapour probes were sampled on a quarterly basis. The first sub-slab sampling program was carried out immediately following the probe installation. During all sampling events, sub-slab probes were first purged of stagnant air by removing a minimum of three probe volumes using a pump, in order to ensure samples were representative of the soil gas concentrations present and not diluted by stagnant air. Teflon®-line tubing was used all connections between the probe and the sampling equipment.

During purging, the flow rate and vacuum were recorded to enable the soil-air permeability to be estimated. Soil vapour samples were obtained for field screening using a SKC® Vac-U-Chamber™ and 1-litre SKC Tedlar® bag to eliminate cross-contamination from soil gas passing through a pump. The sampling flow rate was measured using an inline Bios® Defender 510-M primary flow meter. Vacuum measurements were taken using Dwyer® Magnehelic diaphragm pressure gauges. The measured vacuums ranged from 0 to 0.7 inch H₂O to 1.7 inch



H₂O, for soil gas flow rates between 140 and 310 mL/min (see Table 2). Field screening for fixed gases (oxygen, carbon dioxide and methane), organic vapours (using a photoionization detector) and combustible gases (using an RKI Eagle combustible gas detector) was conducted during purging. Purged gases were collected into a bag and then released outdoors.

Following purging and field screening, sub-slab soil gas samples were collected over approximately 20-30 minutes for laboratory analysis. Each sample was collected into an evacuated 1.4 L SUMMA canister equipped with a flow controller and vacuum gauge. All samples were submitted to Maxxam Analytics for analysis of aliphatic and aromatic hydrocarbon fractions, benzene, toluene, ethylbenzene and xylenes (BTEX), 1,3-butadiene, carbon tetrachloride, chloroform, naphthalene, trimethylbenzenes, bromodichloromethane, hexachlorobutadiene, 1,1,1,2-tetrachloroethane and trichloroethylene. These compounds were selected for analysis based on the list of contaminants of concern (COCs) previously identified in the 2014 Screening Level Risk Assessment Update.

Indoor air samples were also collected from each home on a quarterly basis. Indoor air samples were either collected prior to conducting the sub-slab vapour sampling, or at least 24 hours following collection of the sub-slab samples in order to avoid cross-contamination. Two indoor air samples were collected from each home: one from the basement (or crawlspace) and one from the main floor. The samples were collected from approximately 1.5 m above the floor using flow regulated 6L SUMMA canisters to allow for a 24 hour sampling period, which is considered representative of the possible exposure duration for a residential setting. Indoor air samples were collected into SUMMA canisters that had been individually clean certified (see clean certification results in Appendix A). All samples were submitted to Maxxam Analytics for analysis of aliphatic and aromatic hydrocarbon fractions, BTEX, 1,3-butadiene, carbon tetrachloride, chloroform, naphthalene, trimethylbenzenes, bromodichloromethane, hexachlorobutadiene, 1,1,1,2-tetrachloroethane and trichloroethylene. In two houses, differential pressure transducers were used to measure the pressure differential between indoor and sub-slab soil gas during sampling.

During each quarterly sampling event, an outdoor air sample was also collected in a 6L SUMMA canister over a 24 hours period to assess background concentrations. One duplicate sub-slab sample, one duplicate indoor air sample, and one trip blank were also collected during each quarterly sampling event for quality assurance/quality control (QA/QC) purposes.

Based on an elevated concentration of naphthalene measured in the sub-slab vapour sample collected from Home "B" Broadview Road NW during the third quarterly sampling event, Golder returned to the home in October to re-sample the sub-slab probe. A duplicate sample was also collected at this time for QA/QC purposes.

3.4 Drilling and Monitoring Well/Vapour Probe Installation

Prior to the commencement of the subsurface work, all proposed borehole and monitoring well locations were marked in the field by Golder personnel. The underground utilities were cleared by Alberta One Call and the Utility Locators of Calgary on March 3 and 6, 2014. A Licence of Occupation (obtained previously), Street Use Permit, Tree Protection Plan Agreement, Excavation Permit and Parking Ban were also obtained from the City of Calgary.



The drilling program was conducted from March 6 to 14, 2014. A total of eighteen boreholes were advanced at the Site using a mini Sonic Drill Rig operated by Major Drilling of Calgary, Alberta. Nested monitoring wells were installed in boreholes MW14-1A and MW14-1B, MW14-4A and MW14-4B, MW14-6A and MW14-6B. Deep monitoring wells were identified as “A” wells, while shallow wells were identified as “B” wells (see borehole logs in Appendix B). Single depth shallow monitoring wells were installed in boreholes MW14-2, MW14-3, MW14-5, MW14-7, MW14-8 and MW14-9. All boreholes completed as monitoring wells were advanced on City of Calgary property (see Figure 3). Boreholes VP14-01, VP14-02, VP14-03, VP14-04, and VP-14-05 were completed as multiple-depth soil vapour probes. These boreholes were placed on private property, with the exception of VP14-01 which was located on City of Calgary property. Locations of multiple-depth soil vapour probes are shown on Figure 3. Borehole locations were surveyed by measuring from fixed landmarks and roadways.

Boreholes advanced within the alleys located between Bowness Road and Broadview Road NW, and between Westmount Boulevard and Broadview Road NW (MW14-8 and MW14-9) were first advanced with a hydrovacuum operated by Badger Daylighting to a depth of approximately 1.5 m due to the presence of nearby gas lines. The Sonic drill rig was then used to complete the boreholes to the final depth required. Boreholes completed as shallow monitoring wells were drilled to depths ranging from 4.0 to 5.5 m bgs (*i.e.*, drilled to, or just past, bedrock surface). Shallow monitoring well screens were installed just above the bedrock surface. Boreholes to be completed as deep monitoring wells were drilled to depths ranging from 7.0 to 8.7 m bgs and well screens were placed entirely within bedrock. All multi-depth vapour probes boreholes were advanced to 4.0 m bgs.

The soil stratigraphy was logged using Golder’s Soil Classification System which is a modified version of the Unified Soil Classification System (USCS) Standard Practices for Soil Description. Soil samples were collected at approximate 0.75 m intervals, when lithology changed or when obvious indicators of impact were encountered. Each soil sample was placed into a re-sealable plastic bag for measurement of the headspace vapour concentration. Organic vapour concentrations in the bag headspace were measured using a MiniRae 3000 photoionization detector (PID) with a 10.6 eV lamp. The results of the headspace vapour testing can be found on the borehole logs in Appendix B. Based on the results of field screening and visual observation, one soil sample from each borehole (general “worst case” sample) was submitted to Maxxam Analytics for analysis of volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and petroleum hydrocarbons (PHCs). One composite sample was also collected for landfill characterization in support of cuttings disposal. The soil cuttings were placed in 205 L steel drums and temporarily stored on-Site pending subsequent disposal by G&R Envirocore of Calgary.

3.5 Monitoring Well/Soil Vapour Probe Construction

Construction details of the monitoring wells and soil vapour probes are provided on the borehole logs provided in Appendix B. Where boreholes were over-drilled, hydrated bentonite chips were used to plug the base on the borehole prior to monitoring well installation. Monitoring wells were constructed of 3 m long, 50 mm diameter PVC pipe and number 10 slot screen. A sand pack of 10/20 environmental grade silica sand was used to surround the well screen to approximately 0.3 m above the top of the screen. Bentonite chips hydrated with potable water were placed above the sand pack to just below ground surface. Stainless steel flush-mounted well casings were placed over the wells and cemented in place. For deep monitoring well installations, 1.5 m of screen was placed below the water table and within bedrock. Monitoring wells were assembled without the use of glues or solvents that might compromise the quality of water or soil vapour samples.



Following monitoring well installation, newly installed wells were developed using inertial lift pumps and surge blocks to remove approximately 10 well-volumes of water, or until dry.

Golder personnel returned to the Site on March 25th to survey the vertical position of newly installed monitoring wells. The top of well casing and ground surface beside each well were surveyed in relation to existing monitoring wells at the Site.

Multi-depth soil vapour probes consisted of two stainless steel Solinst vapour tips (0.15 m long by 2.5 cm in diameter), connected to ¼ inch diameter Teflon lined tubing with compression fittings, and placed at varying depths. A minimum 0.5 m thick hydrated bentonite seal was placed above and below each soil vapour probe, which was located within a sand pack that extended over an approximately 0.5 to 0.6 m vertical interval. Soil vapour probes were completed with compression fitting ball valves at surface that remained closed except when purging the probe and collecting soil vapour samples.

3.6 Quarterly Soil Vapour Sampling and Field Monitoring

Quarterly soil vapour samples were collected from all newly installed soil vapour probes and the following existing probes/monitoring wells located at or near to MW10-06: MW10-06 (deep vapour probe), MW10-06 (monitoring well), MW11-01 (shallow probe) and MW11-01 (deep probe).

The procedures documented in Golder's best practice manual for soil vapour characterization prepared for the SABCS (Golder, 2011c) and sampling guidance developed by Golder for Health Canada (Golder, 2008b) were followed. Golder's soil vapour sampling kit was used for sample collection. Similar to sub-slab sampling, the following protocol was followed for collection of representative soil vapour samples:

- Probe equilibration (one week minimum following installation);
- Probe performance check (flow and vacuum);
- Leak tracer test using helium (see Appendix C)
- Field screening for fixed gases (oxygen, carbon dioxide and methane) and organic vapours (see description below); and
- Purging and collection of soil vapour samples for laboratory analysis.

The probe performance check consisted of measurement of soil gas flow rate and vacuum. The sampling flow rate was measured using an inline Bios® Defender 510-M primary flow meter. Vacuum measurements were taken using Dwyer® Magnehelic diaphragm pressure gauges. The measured vacuums ranged from 0 to 3.5 inches H₂O, for soil gas purge rates between 230 to 800 mL/min (see Table 3). It is noted that lower soil gas flow rates than those used for the probe performance testing were used for soil gas sampling. The range in the measured vacuum reflects the variability in the soil-air permeability, which is expected based on the variability observed in the soil types at the Site. No measurements were obtained at VP14-01 (shallow probe) due to slowly rising vacuums that were greater than approximately 25 inch H₂O. The results suggest that this probe was located within or close to the capillary fringe or was plugged.

Prior to collection of the soil vapour samples for laboratory analyses, soil vapour probes were purged of air using a SKC® pump. Approximately three probe volumes of air were purged from each probe. Soil vapour samples were obtained for field screening using a SKC® Vac-U-Chamber™ and 1-litre SKC Tedlar® bag to eliminate cross-contamination from soil gas passing through a pump. Dedicated 6 mm-diameter Teflon tubing was also used to connect the probe valve to the soil vapour screening equipment. Highly chemical resistant, re-usable, 6 mm-diameter Teflon® tubing and stainless steel connections were used with the soil vapour sampling kit,



which included the SKC Vac-U-Chamber, pressure gauges, and flow meter. During the purging process, soil vapour samples were sequentially obtained after approximately 1, 2 and 3 probe volumes. The soil vapour samples were screened in the field using a PID, RKI Eagle 2 combustible gas detector, and GEM 2000 landfill gas detector for the following parameters: organic vapours, combustible gases, oxygen, carbon dioxide and methane. The sequential purge results are presented in Table 4 while soil vapour concentrations measured at the end of the purging process are presented in Table 3.

Following field screening, samples were collected into using 1.4 L SUMMA canisters with flow controllers set to collect samples over 20 minutes. The SUMMA canisters were connected directly to the dedicated valves on the soil vapour probes/well using new 6-mm diameter Teflon tubing and Swagelok connections. Initial and final canister vacuums were recorded using the vacuum gauge supplied by the laboratory. The canisters were shipped to Maxxam Analytics for analysis of aliphatic and aromatic hydrocarbon fractions, benzene, toluene, ethylbenzene and xylenes (BTEX), 1,3-butadiene, carbon tetrachloride, chloroform, naphthalene, trimethylbenzenes, bromodichloromethane, hexachlorobutadiene, 1,1,1,2-tetrachloroethane and trichloroethylene. No sample was collected from VP14-02 (deep) during the first quarter as the probe was blocked and the SUMMA canister would not fill.

3.7 Quarterly Groundwater Monitoring and Sampling

Newly installed monitoring wells (MW14-1A, MW14-1B, MW14-4A, MW14-4B, MW14-6A, MW14-6B, MW14-2, MW14-3, MW14-5, MW14-7, MW14-8 and MW14-9) and five existing monitoring wells (MW10-06, MW11-1A, MW10-01, MW10-07A and MW11-06) were monitored on a quarterly basis in 2014. Quarterly groundwater monitoring was carried out in February/March, June, August and November of 2014. Groundwater monitoring included measuring the depth to groundwater and NAPL (both dense and light) using an oil-water interface probe. The concentration of VOCs in the headspace of each well was also measured using a PID.

Three previously installed monitoring wells (MW10-1, MW10-7A and MW11-06) and seven newly installed monitoring wells (MW14-01A, MW14-2, MW14-4A, MW14-4B, MW14-5, MW14-6A, and MW15-6B) were sampled in February/March, 2014 (first quarter). During the second quarter, five newly installed wells (MW14-2, MW14-4A, MW14-6A, MW14-7 and MW14-8) were sampled; during the third quarter, monitoring wells MW10-1, MW10-7A, MW11-01A, MW11-06, MW14-01A, MW14-2, MW14-4A, MW14-4B, MW15-5, MW14-6A, MW14-6B, and MW14-8 were sampled; and during the fourth quarter, samples were collected from MW11-01A, MW14-1A, MW14-2, MW14-4A, MW14-6A, MW14-6B and MW14-8. Newly installed wells MW14-3 and MW14-9 were dry during all quarterly monitoring events and were not sampled. Monitoring well MW10-06 contained NAPL during all monitoring events and was not sampled.

Groundwater samples were collected using disposable bailers. An attempt was made to use low flow sampling; however, well recovery rates were generally too slow for this method to be effective. As such, a decision was made to use disposal bailers for all sampling across the Site. Each monitoring well was purged prior to sampling to ensure that a representative sample of formation water was collected. The pH, temperature, electrical conductivity, dissolved oxygen concentration, and redox condition of the groundwater in each well was monitored during purging using a YSI digital multimeter. Groundwater samples were collected once these parameters had stabilized to within approximately 10%. Groundwater samples were then collected in laboratory-prepared sample bottles, placed in chilled coolers and submitted to Maxxam Analytics in Calgary for analysis of VOCs, PAHs, BTEX and PHC fractions F1 and F2. One duplicate sample and one field blank sample were also collected during each quarterly sampling event and submitted to Maxxam Analytics for analysis of VOCs, PAHs,



BTEX and PHC fractions F1 and F2. All field work will be completed in a manner consistent with Golder's Standard Operating Procedures.

Purged groundwater was placed into sealed and labeled drums which were temporarily stored on City of Calgary property, prior to disposal by G&R Envirocore.

3.8 Monitoring of Water Level Transducers

In 2011, Golder installed three dedicated water level transducers at the Site as part of the Screening Level Risk Assessment Update. Solinst Leveloggers were installed in monitoring wells MW10-2, MW10-15 and MW10-18, just above the base of each well. A Solinst Barologer was also installed in monitoring well MW10-2 to provide data needed for atmospheric pressure compensation. In 2014, Golder returned to the locations of the transducers to download water level data. Prior to removing the transducer from each well, the depth to groundwater was measured using an interface probe in order to calibrate the transducers. On March 25, 2014, it was noted that monitoring well MW10-15 had been destroyed during redevelopment of the parcel of land. The land owner confirmed to Golder personnel that a landscape crew had removed the well cover with a skid steer. As such, the water level transducer was not found and is presume to be destroyed. Consequently, water level data was not available for MW10-15.

3.9 Bail-Down Testing

The scope of work for this investigation included completion of a short-duration bail-down test at MW10-6 in order to monitor the recovery of NAPL into the well and semi-quantitatively evaluate the potential LNAPL mobility, transmissivity, and the volume of LNAPL at this location. In 2014, DNAPL was encountered in MW10-6 as opposed to LNAPL and as such, the transmissivity and mobility of the NAPL was not determined. On March 25, 2014, a modified bail-down test was carried out by removing 0.43 m of DNAPL from the well using a geopump and the recovery measured using an interface probe in order to qualitatively assess the rate of recovery. After five hours, the DNAPL had only recovered by approximately 20%, the thickness of DNAPL in the well had not changed in over 3 hours, and the test was ceased.



4.0 REGULATORY FRAMEWORK AND GUIDELINES

4.1 Soil and Groundwater Guidelines

Soil and groundwater guidelines in Alberta are defined through the ESRD Alberta Tier 1 Soil and Groundwater Remediation Guidelines – May 2014 (AB Tier 1 Guidelines) and ESRD Alberta Tier 2 Soil and Groundwater Remediation Guidelines – May 2014 (AB Tier 2 Guidelines) (ESRD 2014a,b).

As part of the AB Tier 1 and Tier 2 Guideline approach, soil and groundwater guideline values are calculated for five types of land use: natural areas, agricultural, residential/parkland, commercial, and industrial. Land use determination is based on the most sensitive land use applicable to the site, or within 30 m of the site. Furthermore, soil grain size is also considered when comparing soil and groundwater quality data to Guidelines and when assessing contaminant groundwater transport. The AB Tier 1 and Tier 2 Guidelines calculate separate guideline values for coarse-grained soils (median grain size > 75 µm) and fine-grained soils (median grain size < 75 µm). The selection of appropriate guidelines is based on the soil type that controls contaminant migration at the site. Land use assessment and soil texture characterization is required to select the most appropriate AB Tier 1 or Tier 2 Guidelines for a given site.

Based on the Site's land use designation and soil type, the soil and groundwater guidelines selected for comparison are the 2014 AB Tier 1 Guidelines based residential/parkland land use for coarse-grained soil. The following information was evaluated to support the selection of these guidelines:

- Grain-size analysis was conducted on four soil samples collected as part of the 2011 HHRA (Golder 2011). The results indicated that the percentage of soil particle size less than 0.075 mm (the threshold for fine-grained soil) was between 31% and 89%, and was greater than 50% for three of four samples, indicating one sample was classified as coarse-grained and three soil samples were classified as fine-grained. However, based on visual observation, the majority of the unsaturated soils encountered at the Site were coarse-grained. Based on this information, coarse-grained soils are expected to control contaminant migration at the Site.
- The current City of Calgary land use designation for the Site is R-C2, Residential-Contextual One/Two Dwelling. Consequently, residential/parkland land use is considered applicable to the Site.
- The nearest surface water possibly capable of sustaining aquatic life is the Bow River located approximately 45 m south of the Site. Therefore, the FWAL pathway cannot be eliminated under a Tier 2 guideline approach.

It should be noted that the AB Tier 1 Guidelines are not applicable to Sites with “very coarse-textured” soils. As described in Section 5.1 of this report, the unsaturated zone soils at the Site include sand and gravel deposits, underlain by bedrock that includes fractures. Based on this information, the AB Tier 1 Guidelines would likely not be applicable based on the above definition; however for screening purposes, soil and groundwater chemistry data has in this report been compared to the AB Tier 1 Guidelines for residential land use.

For the purposes of assessing soil and groundwater quality at the Site, the elimination of the drinking water / DUA pathway under Tier 2, and Exposure Control approaches were not considered at this time given the requirement to complete hydrogeological studies and/or to obtain stakeholder and ESRD's acceptance of a proposed Exposure Control approach.



4.1.1 Application of the Soil and Groundwater Guidelines

The AB Tier 1 Guidelines were derived using relatively conservative parameters and assumptions, corresponding to defined generic exposure scenarios and five generic land use categories. As such, they are intended and expected to be protective of human health and the environment in the large majority of cases. However, there may be situations in which AB Tier 1 Guidelines are not applicable, either where conditions violate one or more assumptions underlying the modeling used in the guideline derivation, or where actual exposure conditions or receptors at a site are more sensitive than those considered in the development of the generic exposure scenario.

Conditions where the guidelines are not applicable include the following:

- Contaminants present within 30 cm of a building foundation;
- Unusual structural building features;
- Groundwater flow to stagnant waterbodies;
- Groundwater within 10 m of a surface waterbody;
- Very coarse textured materials;
- Fractured bedrock;
- Contamination source length greater than 10 m (unless source volume is less than 300 m³); and
- When inorganic contaminants occur in organic soils.

The AB Tier 1 Guidelines describe the assumptions for coarse-grained setting as follows:

4.2 Soil Vapour and Sub-Slab Vapour Criteria

In Alberta, there are currently no remediation guidelines for evaluating the significance of measured soil vapour concentrations (*i.e.*, the AB Tier 1 Guidelines are limited to soil and groundwater). In the absence of soil vapour guidelines, site-specific soil vapour/sub-slab vapour screening criteria were developed following the methodology outlined in AB Tier 1 Guidelines (ESRD 2014a) and the CCME Canada-Wide Standard for Petroleum Hydrocarbon Compounds (CWS-PHC) in Soil User Guidance (January 2008), as follows:

For parameters that are non-carcinogens and have toxicity reference values under AB Tier 1 Guidelines:

$$C_{sv} = \frac{(TC - Ca)(SAF)(BAF)}{(ET)(AF)}$$

For parameters that are carcinogens and have toxicity reference values under AB Tier 1 Guidelines:

$$C_{sv} = \frac{(RsC)(BAF)}{(ET)(AF)}$$



where:

Csv = site-specific soil vapour screening criteria ($\mu\text{g}/\text{m}^3$)

TC = inhalation tolerable concentration ($\mu\text{g}/\text{m}^3$);

RsC = risk specific concentration

Ca = background indoor/outdoor air concentration ($\mu\text{g}/\text{m}^3$)

SAF = soil vapour allocation factor (unitless)

BAF = biodegradation adjustment factor (10, if eligible; 1, if not eligible, assumed to be not eligible for all compounds)

ET = exposure term (unitless)

AF = attenuation factor between soil vapour and indoor air (unitless)

For SAF's and Ca's, the values in Table C-9 of the AB Tier 1 Guidelines (ESRD 2014a) were used. Although the AB Tier 1 Guidelines guidance (ESRD 2014a) allows for the use of soil allocation factors greater than 0.2 for some substances (generally petroleum hydrocarbon associated contaminants), in order to account for the many different chemicals identified and the possibility of not accounting for additive effects of substances acting on the same toxicological endpoints, a SAF of 0.2 was conservatively used for screening purposes.

The attenuation factor used was 0.01 for subslab soil vapour to indoor air based on recent work conducted by AENV (Personal Communication, 2011). The selection of an attenuation factor of 0.01 is conservative as it does not take into account the distance between the buildings and the source as there is uncertainty with respect to the depths of basements relative to the water table; as a result the "de minimus" subslab indoor air attenuation factor was utilized. Similarly, the biodegradation adjustment factor (BAF) was assumed to be 1.0 for all chemicals (no adjustment), which corresponds to the conservative assumption that no biodegradation occurs. For non-carcinogens, the inhalation tolerable concentration values in Table C-9 of the AB Tier 1 Guidelines (ESRD 2014a) were used. For carcinogenic substances, the RsC was calculated using the following equation:

$$RsC = \frac{ILCR}{UR}$$

where:

ILCR = incremental lifetime cancer risk (unitless)

UR = inhalation unit risk ($\mu\text{g}/\text{m}^3$)⁻¹

An ILCR of 1×10^{-5} is provided as the target risk level in the AB Tier 2 Soil and Groundwater Remediation Guidelines (ESRD 2014b). For the UR, the Inhalation UR values in Table C-9 of the AB Tier 1 Guidelines (ESRD 2014a) were used.

For select chemical parameters where toxicity reference values (*i.e.*, inhalation tolerable concentrations or inhalation unit risks) were not available, and detectable concentrations were measured, TRVs were obtained from the USEPA IRIS database (USEPA 2015a) or USEPA Regional Screening Levels (USEPA 2014), where available. Derived site-specific soil vapour screening criteria and presented in Table 5.

Since the release of the 2012/2013 Screening Level Risk Assessment Update, the toxicity reference values presented in the AB Tier 1 and AB Tier 2 Guidelines have been updated for select compounds, and as warranted, the calculated guidelines were updated. An RfC based on the AB Tier 1 Guidelines is used in this investigation to derive a guideline for naphthalene. This guideline is based on non-carcinogenic effects of naphthalene consistent with current ESRD policy. This represents a change from the 2012/2013 SLRA update where naphthalene was evaluated as a carcinogen using an inhalation unit risk. This revised approach is



considered protective of receptors at the Site. It is noted that the World Health Organization (WHO) developed an RfC in 2005 for naphthalene and indicates that the RfC is protective of carcinogenic effects as naphthalene is thought to act through a non-genotoxic mechanism (WHO 2005).

4.3 Indoor Air Criteria

Indoor air screening criteria used in this investigation were equal to the inhalation Tolerable Concentration (TC) for non-carcinogens or the risk specific concentration (RsC) calculated as described above for carcinogens. Where both non-carcinogenic and carcinogenic criteria were calculated, the most conservative criteria was applied. These screening criteria derivations are presented in Table 6.



5.0 RESULTS

5.1 Site Geology

The shallow soil stratigraphy encountered at the Site during the current and previous investigations generally comprised of the following units in sequence from the ground surface:

- Topsoil, underlain by
- Sandy silt/gravel to silty sand/gravel, underlain by
- Sand and gravel, with occasional sandy silt interbeds, underlain by
- Siltstone bedrock.

Topsoil up to 1.2 m in thickness was noted at a number of locations and there was evidence of fill soils (wood fragments and rootlets) at depth in MW14-3 (1.5 – 3.8 m bgs), MW14-7 (1.2 to 3.1 m bgs) and VP14-01 (3.4 m bgs). This indicates that these areas may have been disturbed during construction of homes and infrastructure in the area. There tends to be a greater thickness of the finer-grained sandy silt to silty sand unit in the central area of the Site. Bedrock has been encountered at depths between 3.7 m bgs (MW10-7A, MW14-7, VP14-01) and 7.0 m bgs (MW11-07). Bedrock elevations range from 1046.6 meters above sea level (masl) in MW11-06 to 1040.9 masl in MW4B and are presented on Table 7. Bedrock elevation contours are presented on Figure 4. In general, the soil-bedrock interface is lowest in elevation in the southeastern portion of the Site and highest in the northwestern portion. Details of the soil conditions encountered in each of the newly installed boreholes are presented in the borehole logs included in Appendix B.

5.2 Site Hydrogeology

The Site topography is relatively flat and there are no nearby upland areas. The nearest surface water body is the Bow River located approximately 45 m south of the Site.

Groundwater elevation data for the four quarterly monitoring events are summarized in Table 8. The groundwater (potentiometric) elevations during each quarter are shown on Figures 5 (March 2014), 6 (June 2014), 7 (August 2014) and 8 (November 2014). Based on bedrock elevations, groundwater levels generally remained above the bedrock surface over the course of the 2014 sampling program. A downward vertical hydraulic gradient was measured at nested wells MW14-1A and MW14-1B during all quarterly monitoring events, while an upward hydraulic gradient was measured between MW14-4A and MW14-4B during all quarterly events. This is interpreted to be due to a fine-grained unit (silt) identified just above the bedrock interface at MW14-4A/B, while silty gravel was identified above the bedrock interface at MW14-1A/B. The vertical gradient between MW16-6A and MW14-6B was downward in March, June and August (first, second and third quarters), but upward in November, 2014 (fourth quarter).

Shallow groundwater elevation contours measured in March 2014 (first quarter) are shown on Figure 5. The groundwater flow direction was generally to the south on the northern portion of the Site and to the northeast on the southern portion of the Site. Water levels measured in March may not have been indicative of static groundwater conditions as it is unclear if all of the newly installed wells had fully recovered prior to water level measurements. Groundwater elevations contours for June, August and November 2014 (Figures 6 to 8) show similar trends with groundwater flow being generally radial towards a low point near Broadview Road NW. The low groundwater point appears to vary between MW11-01A (June) to MW14-6B. This groundwater flow pattern may have an effect on NAPL transport and mobility, and may explain in part why DNAPL has only been detected



in MW10-06 located near Broadview Road NW (with the exception of wells on the CBC property). The variable bedrock surface and utility corridor backfill within Broadview Road NW may have an effect on the groundwater flow direction. The storm sewer below Broadview Road is a large, deep utility and therefore may act as a sink for groundwater flow when the water table is low.

Spacing of the 0.1 m elevation contours indicates that the groundwater gradient was much stronger in June (second quarter) 2014 in comparison to August (third quarter) and November (fourth quarter). This is likely related to high flow conditions within the nearby Bow River and increased precipitation during this time of year. June and August elevation contours also indicate a strong gradient in the northwest portion of the Site towards monitoring wells MW14-1B.

In December, 2011, level loggers were installed in monitoring wells MW10-2, MW10-15 and MW10-18, just above the bottom of each well. A Solinst barologer was also installed in monitoring well MW10-2 to enable atmospheric pressure compensation of the data. Golder personnel have periodically returned to the Site since installation to download the data and manually measure the groundwater depth using an interface probe in order to calibrate the transducers; however, in 2014 monitoring well MW10-05 (and associated transducer) had been destroyed. Data from the transducers installed in MW10-2 and MW10-18 is presented in Figures 9 and 10 below. Note that intermittent data for MW10-02 is missing due to an equipment malfunction.

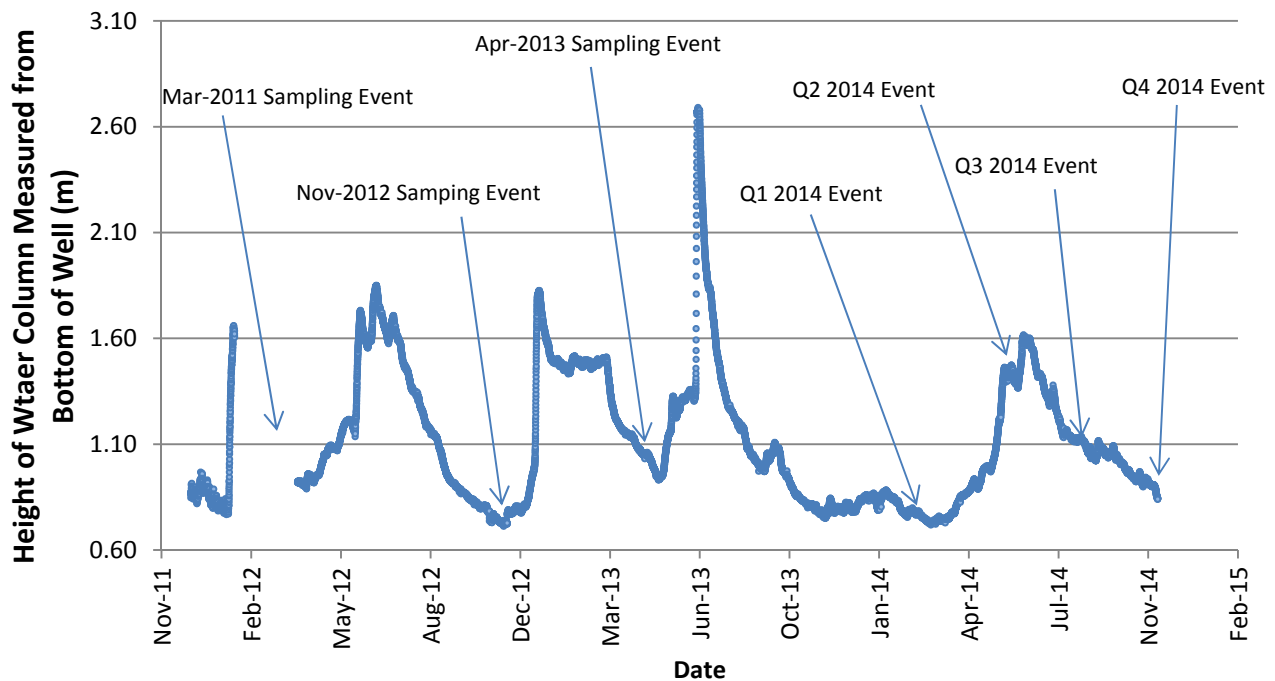


Figure 9: Height of Water Column in Monitoring Well MW10-02 - Dec 2011 to Nov 2015

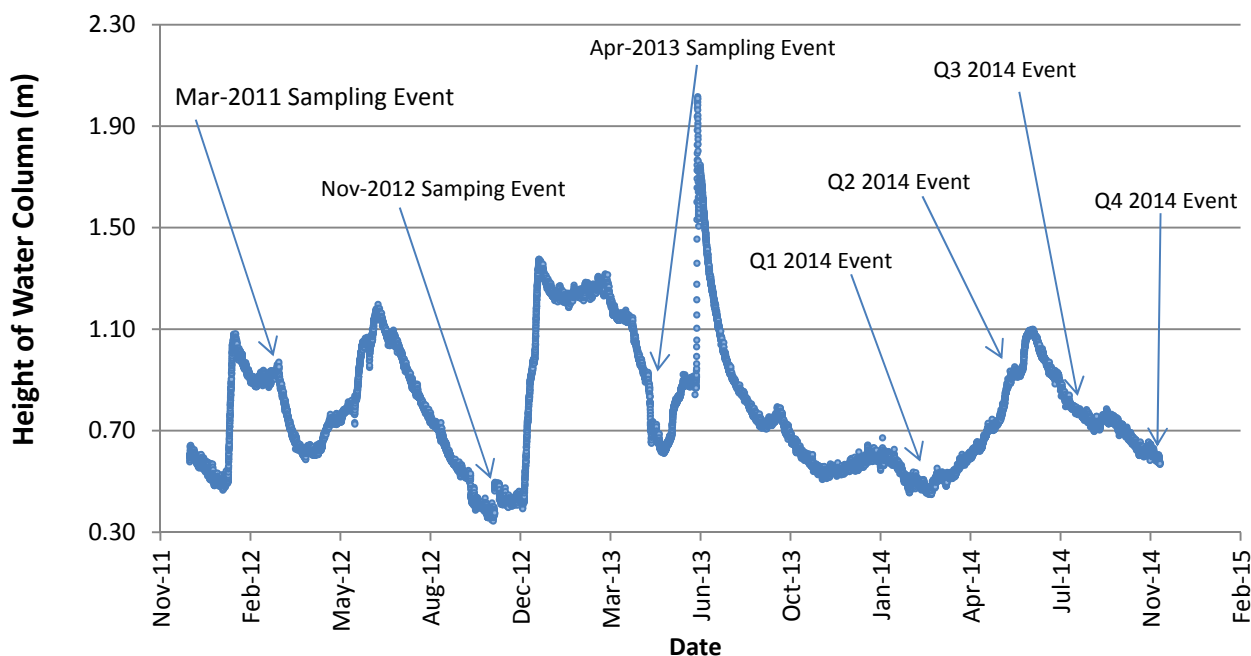


Figure 10: Height of Water Column in Monitoring Well MW10-18 - Dec 2011 to Nov 2015

The transducer data shows similar groundwater elevation trends in both of the monitored wells. The groundwater table is generally highest during the summer months (June and July). In 2012 and 2013, the groundwater table also rose significantly in January and remained high in February and March; however, this trend was not observed during the winter of 2014. This historical rise in water table in January is interpreted to coincide with ice dams forming in the Bow River, while the rise in June and July is thought to be the result of higher water level in the Bow River during freshet and precipitation during the summer months. Note the dramatic increase in groundwater table elevation noted in June 2013 was caused by flooding of the Bow River.

Based on the water level transducer data, the first quarterly groundwater and vapour sampling event of 2014 took place when water levels were likely at their lowest. The second quarterly event took place just prior to water levels being at their highest. Groundwater levels during the second quarterly event were approximately 0.5 to 0.7 m higher than the lowest levels measured in February 2014.

5.3 Field Observations - Soil

Soil sample headspace concentrations measured during the 2014 drilling program are included on the borehole logs in Appendix B. The headspace concentrations measured during drilling using a PID ranged from 0.9 to 99.3 ppm measured in MW14-4A near the bedrock interface. Creosote odour was also noted at this location and depth. Odour and/or staining were not noted at any other locations during the 2014 drilling program. During previous investigations carried out by Golder, staining and creosote odour was encountered at the following borehole locations:

- MW11-06 (6.1 to 6.7 m) – staining and odour;
- MW11-03A (5.5 to 8.5 m) - odour



- MW11-06 (6.1 to 7.9 m) – odour;
- MW10-6 (4 to 4.5 m) – staining/sheen;
- MW-7A/B (3.4 to 4.0 m) - staining/sheen;
- MW10-6 (4 to 4.5 m) – odour;
- MW-7A/B (2.4 to 7.6 m) – odour;
- MW10-10 (2.4 to 4.6 m) – odour; and
- MW10-16 (1.8 to 2.4 m) – odour.

5.4 NAPL Presence Groundwater Field Parameters

Groundwater monitoring and field parameter data collected in 2014 is summarized in Table 8. In 2014, NAPL was only detected in one well monitored (MW10-6). During the first quarter monitoring event, when groundwater levels were at their lowest, MW10-6 was essentially dry. Approximately 5 mm of NAPL and water was measured at the base of the well (likely trapped within the well base cap); however, it could not be determined if the NAPL was LNAPL or DNAPL. In June 2014 (second quarterly event), when water levels were nearing the highest, 1.0 m of DNAPL was measured in MW10-6, and approximately 0.49 m of DNAPL was detected in MW10-06 in August 2014 (third quarter). During the fourth quarter, DNAPL was detected in MW10-06; however, the thickness could not be measured with an interface probe due to the high viscosity of the product (likely due to colder temperatures). The thickness of DNAPL in MW10-06 appears to correlate with the elevation of the groundwater table, with more DNAPL detected when water levels are at their highest and less detected when water levels are lower.

During previous sampling events in February 2011 and November 2012, 0.001 m and 0.57 m of LNAPL were noted in well MW10-6. The different occurrences of NAPL in well MW10-6 indicate the density of NAPL is close to that of water (i.e., neutrally buoyant). A sample of the NAPL in MW10-6 was collected on March 25, 2014 for measurement of relative density by Maxxam Analytics. Results indicated that the relative density of the NAPL at that time was 1.031 (i.e., just marginally denser than water) (see analytical report is Appendix F).

Groundwater temperature, pH, dissolved oxygen and electrical conductivity were measured during purging of each well and during each quarterly monitoring and sampling event. The final measurements recorded prior to sample collected are presented on Table 8. Groundwater temperatures ranged from 1.5°C in MW14-5 in March, 2014 to 15.7°C in MW10-1 in August (third quarter), 2014. All pH measurements were within 7 to 8.5 with the exception of the pH measured in MW14-4A in August 2014 (5.25). These values were within the AB Tier 1 Guideline range of 6 to 8.5. Dissolved oxygen ranged from as low as 0.17 mg/L (MW11-01A) to 8.18 mg/L (MW14-8). Electrical conductivity ranged from 411.9 µS/cm (MW14-8) to 4,632 µS/cm (MW14-5).

During groundwater sampling, creosote odour was noted at MW10-07A, MW11-01A, MW11-06, MW14-1A, MW14-4A, MW14-6A, and MW14-6B during at least one of the monitoring events. Sheen was noted on the groundwater from MW14-4A, MW14-6A and MW14-6B.



5.5 Soil Vapour Field Screening

Field screening of soil vapour was conducted during each quarterly event and prior to sampling with the results reported in Tables 3 and 4. The sequential purge data generally indicated relatively consistent concentrations during purging. The soil vapour concentrations at the end of the purging process (Table 3) are summarized as follows:

- The minimum oxygen concentration was 17.4% (VP11-01B deep probe, August [third quarter] 2014). The maximum oxygen concentration was 20.9% measured at a number of locations and during multiple sampling events;
- The maximum carbon dioxide concentration was 1.8% (VP14-2 shallow probe);
- The maximum organic vapour (PID) concentration was 58 ppm (VP14-01 deep probe) during the first quarterly event, which decreased to 0 ppm during subsequent events; and
- The maximum combustible gas concentration was 70 ppm (MW10-6 well) during the first quarterly sampling event.

Overall, the results indicate a well oxygenated vadose zone, with relatively low carbon dioxide, low organic vapour and combustible gas concentrations. Oxygen was somewhat depleted at some locations, and carbon dioxide concentrations were elevated, indicating aerobic biodegradation of creosote related compounds or naturally occurring organics is occurring.

5.6 Analytical Results

5.6.1 Soil Analyses

In 2014, one soil sample from each investigation location (17 in total) was submitted to Maxxam Analytics for analysis of BTEX, PHC fractions F1 – F4, VOCs and PAHs. Soil analytical results are presented in Table 9 and in the laboratory analytical reports in Appendix F.

Concentrations of all VOCs were below the AB Tier 1 Guidelines for coarse-grained soils and residential land use in all samples analyzed. Concentrations of ethylbenzene, PHC fractions F2 and F3 exceeded the AB Tier 1 Guidelines in the sample collected from MW14-04A at the bedrock interface. The concentration of PHC fraction F2 in this sample also exceeded the AB Tier 2 vapour inhalation guideline. In the case of ethylbenzene, the drinking water pathway is exceeded but the concentration was below the guideline for vapour inhalation and direct contact by humans. Concentrations of a number of PAHs were also elevated above the AB Tier 1 Guidelines in this soil sample including naphthalene which also exceeded the AB Tier 2 vapour inhalation guideline.

In addition to the exceedances of the AB Tier 1 Guidelines noted in the sample from MW14-04, the concentration of PHC fraction F3 in the sample collected from MW14-02; the concentration of anthracene in the sample collected from MW14-01B; and the concentration of naphthalene in the samples collected from MW14-3, MW14-07, VP14-04 and VP14-05 also exceeded the AB Tier 1 Guidelines; however, the concentrations were below the AB Tier 2 vapour inhalation guidelines.



5.6.2 Groundwater Analyses

Groundwater analytical results are presented in Tables 10 and 11 and in the laboratory analytical reports included in Appendix F.

5.6.2.1 Dissolved Petroleum Hydrocarbons

The results of dissolved petroleum hydrocarbon analyses are presented in Table 10. Analytical results indicated that the concentrations of benzene, ethylbenzene and PHC fraction F2 in previously installed wells MW10-7A, MW11-01A and MW11-06 were above the most stringent AB Tier 1 Guidelines, which is consistent with historical data. Toluene concentrations in MW11-06 also exceeded the AB Tier 1 Guideline in 2014.

Results for wells installed in 2014 indicate exceedances of the AB Tier 1 Guidelines for PHC fraction F2 in bedrock wells MW14-1A and MW14-4A, and shallow well MW16-6B. The concentrations of ethylbenzene in deep wells MW14-1A and MW14-4A also exceeded the AB Tier 1 Guideline. Of the wells installed in 2014, benzene only exceeded the AB Tier 1 Guideline in MW14-4A during one of the four quarterly sampling events in 2014.

When compared to the AB Tier 2 Guidelines for the vapour inhalation pathway, the following exceedances were noted:

- PHC fraction F2 in MW10-7A (August [third quarter], 2014), MW11-01A (March and August [first and third quarters] 2014), MW14-1A (August [third quarter] 2014), MW14-4A (June, August and November [second, third and fourth quarters], 2014, and MW14-6B (March, August and November [first, third and fourth quarters], 2014);
- Benzene in MW11-06 both times sampled in 2014 (March and August [first and third quarters]).

5.6.2.2 PAHs

The results for PAHs are presented in Table 10. A number of PAH compounds including acenaphthene, anthracene, pyrene, phenanthrene, naphthalene, fluorene, fluoranthene and benzo(a)pyrene exceed the AB Tier 1 Guidelines in wells sampled in 2014. The individual PAH compound with the highest concentrations was naphthalene (up to 13 mg/L in MW11-06 in March 2014) followed by phenanthrene (2.0 mg/L in well MW14-6B in March 2014). The highest PAH concentrations were generally found in monitoring wells MW11-06 and MW10-7A, and MW14-6B. The results of the PAH analysis indicate that all wells sampled in 2014 had at least one PAH compound concentration that exceeded the most stringent AB Tier 1 Guidelines.

When compared to AB Tier 2 Guidelines for the vapour inhalation pathway, only naphthalene exceeded the vapour inhalation guideline of 0.47 mg/L. These exceedances were noted in MW14-1A, MW14-4A, MW14-6B, MW10-7A, MW11-01A and MW11-06.

5.6.2.3 VOCs

The results for VOCs are presented in Table 11. The only VOC parameters that exceeded the AB Tier 1 Guidelines were styrene at well MW11-06 (0.20 and 0.21 mg/L) and chloroform in MW14-1A (0.0019 mg/L). The styrene exceedance in MW11-06 is consistent with historical results from 2012. In 2014, no VOCs exceeded the AB Tier 2 vapour inhalation guidelines.

5.6.3 Soil Vapour Analyses

This section presents the soil vapour results, excluding the sub-slab results which are addressed separately (refer to Section 5.6.5). Soil vapour samples were analyzed for compounds identified as COCs in the previous investigation conducted by Golder. These compounds included: aliphatic and aromatic hydrocarbon fractions,



BTEX, 1,3-butadiene, carbon tetrachloride, chloroform, naphthalene, trimethylbenzenes, bromodichloromethane, hexachlorobutadiene, 1,1,1,2-tetrachloroethane and trichloroethylene. Analytical results are presented on Table 12 and in the laboratory analytical reports included in Appendix F. Soil vapour analytical results from previous investigation are summarized in Appendix G.

In comparison to the calculated soil vapour screening criteria, only the samples collected from MW10-6 (well) and MW10-6 (deep probe), and one sub-slab sample (refer to Section 5.6.2) had exceedances. MW10-06 is located in Broadview Road and the west portion of the Site. Naphthalene concentrations in MW10-06 exceeded the screening criteria in the deep probe during the second and third quarterly sampling events. In MW10-6 (well), chloroform, naphthalene, 1,2,3-trimethylbenzene, 1,2,3-trimethylbenzene, xylenes (total), aliphatic hydrocarbon C₈ – C₁₀, and aromatic hydrocarbons C₈ – C₁₂ also exceeded the screening criteria in multiple sampling events. The highest concentrations were measured in August 2014 (third quarter), and corresponded to a period of mid-range groundwater levels. The highest naphthalene concentration was reported in MW10-6 (well) in August 2014 (24,700 µg/m³). Previously the highest naphthalene concentration measured in this well was 32,000 µg/m³ in April 2013.

Concentration of COCs in all samples collected in 2014 from the newly installed soil vapour probes and one pre-existing vapour probe (VP11-01B) were below the calculated screening levels.

5.6.4 Outdoor Air

Results of outdoor air sampling are presented on Table 13 along with the results of sub-slab vapour and indoor air sampling. One outdoor air sample was collected during each of the four quarterly sampling events. Outdoor air samples were tested for the same suite of compounds as those analysed for in the soil vapour samples. Results indicate that benzene was detected in the outdoor air sampling from the second, third and fourth quarter events, while carbon tetrachloride and toluene were detected in all four outdoor sampling. Chloroform was detected in the sample collected during the third quarterly event. All concentrations were below the calculated screening criteria for indoor air.

5.6.5 Sub-Slab Vapour and Indoor Air

Result of sub-slab vapour and indoor air sampling are presented on Table 13 and in the laboratory analytical reports in Appendix F. Sub-slab and indoor air samples were tested for the same suite of compounds as those analysed for in the soil vapour samples. The results from each home are presented on a separate table (Table 13a to 13f). The following exceedances of the residential sub-slab and indoor air screening criteria were noted:

- General: Various COCs were consistently detected in the sub-slab soil vapour; however, only in one occurrence (see Home “B” Broadview below) did a concentration exceed the sub-slab screening criteria.
- Home “A” Broadview Road NW: All sub-slab vapour concentrations were below the sub-slab screening criteria. Chloroform exceeded the indoor screening criteria in indoor air samples collected during the second, third and fourth quarterly sampling event. The concentration of bromodichloromethane in one of the indoor air samples collected during the fourth quarter (main floor of home) exceeded the indoor screening criteria. No indoor air samples were collected during the first quarter.
- Home “B” Broadview Road NW: All sub-slab vapour concentrations were below the sub-slab screening criteria with the exception of naphthalene during the third quarter event. The indoor air samples (basement and main floor) collected at the same time did not exhibit elevated naphthalene concentrations and were below the indoor screening criteria. Based on the elevated naphthalene result, sub-slab vapour was re-



sampled and retested (see 3rd Quarter Repeat Results on Table 13b), and results of the re-sample indicated concentrations for all COCs below the sub-slab screening criteria. Chloroform concentrations in indoor air exceeded the indoor screening criteria in samples collected during all four quarterly events. The concentration trichloroethylene in one of the indoor air samples collected during the fourth quarter (basement) also exceeded the screening criteria. The concentration of benzene in one of the two duplicate samples collected during the third quarter exceeded the indoor air screening criteria, while the second duplicate sample had a benzene concentration below the screening criteria. Based on the results of the data quality review (see Appendices C and D), this data was considered suspect and should be interpreted with caution.

- Home “C” Broadview Road NW: All sub-slab vapour concentrations were also below the sub-slab screening criteria. Chloroform concentrations in indoor air exceeded the indoor screening criteria in samples collected during the first, second and third quarterly sampling events. Concentrations of all other compounds were below the indoor screening criteria.
- Home “E” Broadview Road NW: All sub-slab vapour concentrations were below the sub-slab screening criteria. Chloroform concentrations in indoor air exceeded the indoor screening criteria in samples collected during the first, second and third quarterly sampling events. Concentrations of all other compounds were below the indoor screening criteria.
- Home “F” Broadview Road NW: All sub-slab vapour concentrations were below the sub-slab screening criteria. Chloroform concentrations in indoor air exceeded the indoor screening criteria in samples collected during all four quarterly events. Hexachlorobutadiene exceeded the indoor screening criteria in one indoor air sample collected during the third quarterly sampling event.



6.0 DISCUSSION

6.1 Soil

The lithology encountered during the 2014 investigation was consistent with that identified during previous investigations at the Site. Visual observations confirmed that the Site is generally underlain by coarse-grained sands and gravels underlain by siltstone bedrock. Significant thicknesses of fill (up to 3m in thickness at some locations) were identified during the 2014 investigation and are interpreted to be related to construction of homes/in-fill homes and utilities in the area. The depth to bedrock increases from west to east across the Site with bedrock being shallowest at the northwest corner of the Site and deepest in the southeast portion of the Site.

Results of laboratory analysis carried out on soil samples in 2014 indicate that the highest concentrations of PAHs and petroleum hydrocarbons are present in the sample collected from MW14-04 located south west of MW10-6 near the soccer field. This is consistent with the results of field screening during the drilling program which identified that the highest soil headspace concentration measured at the Site was at this location (99.3 ppm). Staining and creosote odour were also noted near the bedrock interface during drilling of this borehole. Based on this data, the location of monitoring well MW14-04 has been impacted by creosote.

6.2 Groundwater

Consistent with historical data, groundwater elevations measured on the western portion of the study area in 2014 indicate radial groundwater flow towards Broadview Road NW. This groundwater flow pattern may have an effect on NAPL transport and mobility, and may explain in part why DNAPL has only been detected in MW10-06 located near Broadview Road NW (with the exception of wells on the CBC property). The presence of DNAPL in this area may also be related to orientation of the bedrock interface with slopes downwards from the north to Broadview Road in the south on the western portion of the Site; however, it should be noted that DNAPL migration can be effected by a number of factors including DNAPL head, preferential pathways, presence of confining layers (geology), and others.

One of the objectives of the 2014 investigation was to delineate the extent of NAPL in the proximity of MW10-06. Based on the results of groundwater monitoring at MW14-1A/B, MW14-2, MW14-3, MW14-4A/B, MW14-5 and MW14-6A/B in 2014, NAPL was not detected any location besides MW10-06. This data suggests that the extent of NAPL detected in MW10-06 is localized to this area.

2014 groundwater analytical results for wells installed prior to 2014 were generally consistent with historical results with benzene, naphthalene, and PHC fraction F2 concentrations exceeding the AB Tier 2 Guidelines for the inhalation pathway. Groundwater results for wells installed in 2014 indicate that all newly installed wells are impacted by PAHs and monitoring wells MW14-1A, MW14-4A, and MW14-6B are also impacted by PHCs. The elevated naphthalene and F2 concentrations in groundwater are consistent with a creosote source.

Similar to historical results, the highest PHC and PAH concentrations were generally found at MW10-7A, MW11-01A, and MW11-06; however, concentrations in newly installed well MW14-1A, MW14-4A and MW14-6B were also significantly elevated. These results are consistent with observations of creosote-like sheens and odours at these monitoring well locations. These locations are generally located along Broadview Road and 19th Street NW. It should be noted that groundwater from MW10-6 was not sampled in 2014 due presence of DNAPL.



The highest concentrations of PHC F1, F2 and BTEX have generally been measured at wells along Broadview Road NW and along 19th Street NW, as well as more isolated impacts around southern well MW11-6 and the western well on the CBC property (see Golder 2014). The trend for naphthalene is similar with the highest concentrations measured at wells MW11-01A, MW11-06, MW14-1A, MW14-4A and MW14-6B. While naphthalene concentrations were much lower outside of these wells, almost all wells had naphthalene detections indicating widespread low concentration impacts at the Site area wells, which is consistent with historic results. The concentration of naphthalene measured in MW11-06 (11 to 15 mg/L) is near to the solubility limit for this compound in water (approximately 31 to 34 mg/L for single component [Dragun 1998]) and likely near the solubility of naphthalene from creosote (multi-component mixture), indicating that DNAPL may be present in the vicinity of this well despite not being detected in the monitoring well during sampling events from 2011 to 2014.

Naphthalene, benzene and PHC Fraction F2 were the only compounds detected at concentrations above the AB Tier 2 Guidelines for the inhalation pathway in 2014. Chloroform had historically (2011) exceeded the AB Tier 2 Guideline for the inhalation pathway in MW10-7A and MW10-9B; however, chloroform was not interpreted to be related to the creosote impacts at the Site.

6.3 Soil Vapour, Sub-Slab Vapour and Indoor Air

As previously discussed only the soil vapour samples collected from MW10-06 (well and probe), and one sub-slab sample, had exceedances of the soil vapour screening criteria. Elevated soil vapour concentrations of some COCs were consistently been detected in MW10-06 (well and probe) during this 2014 investigation. MW10-06 is located in Broadview Road, in the west portion of the Site. Concentrations measured in MW10-06 (monitoring well) were significantly higher than those measured in the vapour probe at this location. This may be attributable to biodegradation between the source and the shallower vapour probe. The elevated concentrations of COCs detected in soil vapour from MW10-06 (well) and MW10-06 (vapour probe) are likely related to the presence of DNAPL at this location. The soil vapour concentrations of COCs measured at other locations in 2014, including in probes installed on private property, were below the screening criteria, indicating that there is not a significant deep soil vapour source in the general vicinity of MW10-06.

Comparison of the contaminant concentration in the monitoring well at MW10-06 versus the deep vapour probe at the same location indicate that the concentrations in the probe are significantly lower than those measured within the well. This suggests that biodegradation is occurring between the source zone and the shallower probe. Evidence of biodegradation was not as clear based on other soil vapour data collected as concentrations measured in both shallow and deep vapour probes were generally quite low and variable between probes; however oxygen was somewhat depleted at a number of locations indicating that some level of aerobic biodegradation is likely occurring.

Low concentrations of various COCs were detected in the sub-slab soil vapour samples; however, only in one occurrence did a concentration exceed the sub-slab screening criteria. Naphthalene was elevated above the residential sub-slab/soil vapour screening criteria in the sub-slab vapour sample collected from Home “B” Broadview Road NW during only the third quarter sampling event. All other sub-slab concentrations measured in 2014 were below the screening criteria. In comparison to groundwater elevations at the Site, the third quarterly sampling event took place when water levels were mid-range and between their lowest and highest elevations. It should be noted that the highest soil vapour concentrations in MW10-06 (including naphthalene) were generally identified during this same sampling event (third quarter) in August, 2014.



Although the concentration of naphthalene in the sub-slab sample was elevated, the corresponding concentrations of naphthalene in indoor air (basement and main floor) were below the indoor air screening criteria indicating that there was not a risk to building occupants as a result of naphthalene intrusion from the subsurface. A review of oxygen concentrations in the sub-slab sample collected during the third quarter indicates that oxygen was not depleted (*i.e.*, 20.9%) and carbon dioxide was not elevated (0 to 0.08%) in the sample, as would be expected if increased biodegradation was occurring in the presence of higher contaminant concentrations. Based on the elevated result, the sub-slab probe was subsequently resampled and the elevated naphthalene result was not repeated. All COC concentrations were below the sub-slab screening criteria in the repeat sample. Results of the 2014 sampling program indicate that the naphthalene exceedance in sub-slab vapour was isolated to the third quarterly sampling event. Further sampling would be required to determine if the elevated concentration is anomalous or related to actual subsurface conditions.

The indoor air sampling over the four quarters of 2014 did not identify elevated COC concentrations above the indoor screening criteria that were considered attributable to contaminant source vapour intrusion into the five homes assessed. Some compounds such as chloroform, bromodichloromethane, benzene and trichloroethylene were detected in indoor air at elevated concentrations compared to the indoor screening criteria; however, these results were concluded to be associated with background sources within homes.

The results of indoor air analysis indicates that chloroform was identified in all homes at concentrations above the indoor screening criteria; however, in all cases with the exception of two, concentrations in the sub-slab samples were below detection, or equal to or lower than those measured in indoor air. In the two cases where sub-slab concentrations exceeded indoor air concentrations, sub-slab concentrations were only between 1.3 and 1.6 times greater. In a vapour intrusion scenario, sub-slab vapour concentrations are expected to be approximately ten times greater than those measured in indoor air. Given the typically non-detect or lower concentrations for chloroform in the sub-slab, the source of chloroform in indoor air is likely not related to a subsurface source. In addition, chloroform is not considered a chemical associated with the historic creosote contamination, and its presence in indoor air is more likely related to background sources within homes or less likely from vapour intrusion from soil/groundwater impacted by chloroform (from other sources), if present. Golder's scope of work did not include an investigation of the source of chloroform.

Some common sources of chloroform in indoor air include cleaning products, aerosol sprays and use of chlorinated water. Domestic chlorinated tap water has been recognized as a potentially important source of chloroform in indoor air (Environment Canada 1999). A significant contribution of chloroform to indoor air is expected to result from bathing, showering and dish washing due to the frequency and duration of these activities and the temperature of water used for these activities. Chloroform may also be generated when chlorine treated water reacts with organic matter dissolved in the groundwater or in soil. Chloroform is often detected in soil and groundwater in urban areas as a result of sources such as the unintended releases of chlorinated water include leaking distribution lines for drinking water and wastewater (sewer mains), firefighting, irrigation of lawns, gardens, parks and golf courses, and leaks from swimming pools (Ivahnenko, and Barbash 2004). The concentration of chloroform in Calgary drinking water in 2013 was measured to be 26.2 µg/L, on average (personal communication, City of Calgary March 20, 2014). This concentration is well below the Guideline for Canadian Drinking Water Quality for total trihalomethanes of 100 µg/L. Residential properties have commonly been found to have background concentrations of chloroform in indoor air ranging from 0.5 to 5.6 µg/m³ (WHO 2004; Kline and Goers 2009; Health Canada 2007). The reported indoor air concentrations found in this study are within this range of typical background concentrations.



Similar to chloroform, concentrations of benzene and bromodichloromethane were detected in indoor air samples collected from Home “A” Broadview Road NW (fourth quarter only) at concentrations above the indoor screening criteria; benzene and trichloroethylene were detected in the indoor air samples collected from Home “B” Broadview Road NW (third and fourth quarters) at concentration above the indoor screening criteria; and hexachlorobutadiene was detected in an indoor air sample collected from Home “F” Broadview Road NW (third quarter only) at a concentration above the indoor screening criteria. In all of these cases, with the exception of one (*i.e.*, benzene in Home “B” Broadview Road NW during the third quarter- see further discussion below), the concentrations measured in the sub-slab were lower than those measured in indoor air, or below the detection limit. Although the detection of these compounds in sub-slab vapour are likely attributable to the subsurface creosote source (with the exception of bromodichloromethane which may also be the result of breakdown of chlorine in municipal water), comparison of sub-slab and indoor air data indicates that vapour intrusion is not occurring to a significant extent and that indoor air concentrations are more likely related to background sources within the homes. Indoor air concentrations are likely not attributable to just background sources in outdoor air as concentrations measured within the homes were generally greater than those measured in the outdoor air samples. The elevated concentration of trichloroethylene in the indoor sample collected from the basement of Home “B” Broadview Road NW during the fourth quarterly event ($37.4 \mu\text{g}/\text{m}^3$) is inconsistent with data collected during the previous quarters.

In the one of the two duplicate indoor air samples collected from the basement of Home “B” Broadview Road NW during the third quarter event, the concentration of benzene ($3.17 \mu\text{g}/\text{m}^3$) marginally exceeded the residential indoor screening criteria of $3.03 \mu\text{g}/\text{m}^3$, and the concentration of benzene in the sub-slab sample ($33.7 \mu\text{g}/\text{m}^3$) was approximately 10 times greater than the indoor air concentration. This elevated benzene indoor air concentration was a single event, and not consistent with the results for the other quarterly sampling events. Although the highest benzene sub-slab concentration occurred coincidentally with this indoor air result, this sub-slab concentration is not dissimilar to sub-slab concentrations reported during the second and fourth quarterly sampling events (*i.e.*, $26.3 \mu\text{g}/\text{m}^3$ and $24.1 \mu\text{g}/\text{m}^3$) when benzene indoor air concentrations were reported as below the indoor screening criteria. Based on the ratios of concentrations of the other detected compounds (*e.g.*, carbon tetrachloride, benzene, toluene, naphthalene and aromatic hydrocarbons $\text{C}_{10}\text{-C}_{12}$) in the sub-slab sample versus the ratios of the same compounds in indoor air, there does not appear to be a correlation between the two sets of results, indicating that there is likely a contribution from background sources within the home to the indoor concentrations. In a vapour intrusion scenario, it is expected that the ratios of compound concentrations in sub-slab vapour would be generally similar to the concentration ratios in indoor air. Differences in these ratios suggest that additional sources (background source) are contributing to indoor air concentrations. It should also be noted that an elevated naphthalene concentration was detected in the sub-slab sample corresponding to this indoor air sample, but this elevated sub-slab results did not translate in a corresponding elevated indoor air naphthalene concentration. The indoor naphthalene concentrations were approximately $1/300^{\text{th}}$ of the concentration measured in the sub-slab sample in this case. The indoor air benzene concentrations in this home during the first, second and fourth quarter sampling events were all below the indoor screening criteria. This indicates that the elevated concentration was isolated to that sampling event. Furthermore, as described in Appendix C, the quality checks for this specific duplicate sample did not meet target quality criteria for benzene, and therefore the benzene result should be interpreted with caution. The other sample of the duplicate pair had a benzene concentration well below the indoor screening criteria, and consistent with results reported during the other sampling events in this home.



SUPPLEMENTARY SUBSURFACE INVESTIGATION AND VAPOUR INTRUSION ASSESSMENT

Indoor air benzene concentrations were also elevated above the indoor screening criteria in both indoor samples (4.42 $\mu\text{g}/\text{m}^3$ for the basement, and 6.46 $\mu\text{g}/\text{m}^3$ for the main floor) collected during the fourth quarter event at Home "A" Broadview Road NW. However, the sub-slab concentration (2.89 $\mu\text{g}/\text{m}^3$) was lower than the indoor concentrations, indicating that soil vapour intrusive was not the source of the elevated benzene indoor air concentrations. A background source within the home is anticipated to be the primary contribution in this case.



7.0 CONCLUSIONS AND RECOMMENDATIONS

This report presents the results of the supplementary subsurface investigation and vapour intrusion assessment carried out by Golder in 2014 at the primarily residential area of West Hillhurst, Calgary, Alberta, located north of the Bow River and the former Canada Creosote Site. Wood-preserving operations historically took place on the Canada Creosote Site and involved the use of tars, creosote, and petroleum oils. Previous soil vapour investigations carried out by Golder identified potentially unacceptable risk to building occupants in the isolated area in the vicinity of monitoring well MW10-06. Based on these results, it was recommended that further investigation and monitoring be carried out to evaluate the potential for soil vapour intrusion into houses in the area of monitoring well MW10-6.

The objectives of this investigation were to:

- Evaluate the potential for vapour intrusion into residences due to the presence of NAPL in the area of monitoring well MW10-6;
- Assess exposure and risk to residents in the vicinity of monitoring well MW10-6 through direct measurement of indoor air;
- Investigate the effects of seasonality on vapour intrusion, soil vapour concentrations and NAPL presence in monitoring well MW10-6;
- Evaluate the degree of attenuation and biodegradation between the source and residences; and
- Where possible, delineate the extent of NAPL in the vicinity of monitoring well MW10-6 and further characterize soil and groundwater conditions in this area.

Groundwater elevations measured on the western portion of the study area in 2014 indicate radial groundwater flow towards Broadview Road NW. Data from water level transducers installed in two monitoring wells at the Site indicates that water levels were at their lowest in February and March of 2014 and at their highest in June and July 2014. Based on bedrock elevations, groundwater levels generally remained above the bedrock surface over the course of the 2014 sampling program. The first quarterly groundwater and vapour sampling event of 2014 took place when water levels were likely at their lowest (March) while the second quarterly event took place just prior to water levels being at their highest (June).

Thirteen groundwater monitoring wells, with several being nested pairs, were installed at nine locations in 2014 to delineate the extent of NAPL and further characterize the area of impact. Results of quarterly groundwater monitoring in 2014 of the new and some previously installed monitoring wells indicated that NAPL was not detected at any location besides previously installed monitoring well MW10-06. This data suggests that the extent of NAPL detected in MW10-06 is localized to this area at this time. Results of soil and groundwater analysis identified the highest concentrations of PAHs in MW14-04 located near the corner of Memorial Drive and 19th Street and southwest of monitoring well MW10-06. Similar to historical results, the highest PHC and PAH concentrations were generally found at MW10-7A, MW11-01A, and MW11-06; however, concentrations in newly installed well MW14-1A, MW14-4A and MW14-6B were also significantly elevated. These locations are generally located along Broadview Road and 19th Street NW, and in the southwest portion of the Site.



Groundwater monitoring indicates impact to groundwater and concentrations of select analytes above Alberta Tier 1 Guidelines for potable water use at several monitoring wells. Drinking water is not currently consumed on-Site as the area is municipally serviced; however, administrative controls or covenants may need to be put in place to prevent hypothetical future groundwater consumption.

Soil vapour concentrations of COCs measured since 2011 and during this 2014 investigation were all below the soil vapour screening criteria established for the project at all locations across the Site, including private property, except MW10-06 (monitoring well and vapour probe) and during one 2014 sub-slab sampling event at one of the homes assessed. Elevated soil vapour concentrations above the screening criteria for some COCs have consistently been detected in MW10-06 (well and probe) since 2012 and throughout the quarterly sampling of this 2014 investigation. MW10-06 is located within Broadview Road, in the west portion of the Site. The elevated soil vapour concentrations at MW10-06 are likely attributable to the presence of DNAPL at this location. NAPL has not been identified at any other location investigated within the Site as part of Golder's investigations conducted between 2011 and 2014. DNAPL is known to be present on the CBC property, but this property was not specifically assessed as part of the Golder investigations. The soil vapour concentrations of COCs measured at other locations in 2014, including a number of probes within 10 to 20 m of MW10-06, were below the screening criteria, indicating that there is not a significant deep soil vapour source in general vicinity of MW10-06.

Sub-slab and crawl space soil vapour concentrations measured beneath all five residences assessed during the four quarterly sampling events in 2014 were all below the soil vapour screening criteria established for the project, except for naphthalene during one sampling event at one residence. Naphthalene exceeded the sub-slab screening criteria in one sample collected in 2014 during the third quarter; however, the corresponding concentrations of naphthalene in the indoor air samples (basement and main floor) were below the indoor screening criteria indicating that there was not a risk to building occupants as a result of naphthalene intrusion from the subsurface. In response to this elevated occurrence of naphthalene in the sub-slab soil vapour, sub-slab soil vapour was resampled, retested and all COC concentrations, including naphthalene, were below the sub-slab screening criteria in the repeat sample. It is not clear whether this one time elevated sub-slab naphthalene results was reflective of actual subsurface conditions or anomalous, indicating the elevated concentrations are not persistent.

The indoor air sampling over the four quarters of 2014 did not identify elevated COC concentrations above the indoor screening criteria that were considered attributable to contaminant source vapour intrusion into the five homes assessed. Some compounds such as chloroform, bromodichloromethane, benzene and trichloroethylene were detected in indoor air at elevated concentrations compared to the indoor screening criteria. However, in all of these cases, with the exception of two, the concentrations measured in the sub-slab sample were below detection limits or lower than those measured in the indoor air sampled. This indicates that vapour intrusion is not occurring to a significant extent at the homes assessed and that indoor air concentrations are more likely related to background sources within the homes.

Results of sub-slab and indoor air sampling within five residences (indoor air only within one of the five) identified concentrations of chloroform in all homes at concentrations above the indoor screening criteria. Based on a comparison between sub-slab and indoor air results, the source of chloroform in indoor air is not interpreted to be related to a subsurface source and is more likely related to background sources within the homes. Some common sources of chloroform in indoor air include cleaning products, aerosol sprays and use of chlorinated water.



Indoor air concentrations measured above the screening criteria may represent a potential health concern; however, the data collected in 2014 indicates these results are primarily attributable to background sources within the homes, and not a result of vapour intrusion from the creosote contaminant source. It is recommended that steps be taken to identify the source of these compounds within the homes and that the sources be managed to reduce potential risk.

The relatively low soil vapour concentrations measured at the Site (excluding MW10-6) represent a relatively weak vapour source consistent with a dissolved phase source and a water table that was sufficiently high such that the DNAPL source zones are likely submerged below the water table. Consistent with historical results at MW10-06, where NAPL was detected, the vapour concentrations were significantly higher in this localized area.

The measured elevated oxygen concentrations and somewhat elevated carbon dioxide concentrations (carbon dioxide is produced from aerobic biodegradation) are indicators that aerobic biodegradation is occurring within the vadose zone and is resulting in attenuation of creosote vapour concentrations. In addition, comparison of the contaminant concentration in the monitoring well at MW10-06 versus the deep vapour probe at the same location indicate that the concentrations in the probe are significantly lower than those measured within the well. This suggests that biodegradation is occurring between the source zone and the shallower probe. Evidence of biodegradation was not as clear based on other soil vapour data collected as concentrations measured in both shallow and deep vapour probes were generally quite low and variable between probes; however oxygen was somewhat depleted at a number of locations indicating that some level of aerobic biodegradation is likely occurring.

Groundwater level monitoring conducted between 2012 and 2014 indicates that groundwater levels at the Site are affected by water levels in the Bow River. The first quarterly groundwater and vapour sampling event of 2014 took place when water levels were likely at their lowest (March); however, the soil vapour concentrations measured in MW10-06 (well) were generally lowest during this sampling event. The highest groundwater levels were likely present in June of 2014 while the highest soil vapour concentrations in MW10-06 (well) were measured during the third quarterly event in August, 2014, when groundwater levels were mid-range and between the high and low marks. Based on the data collected in 2014, there does not appear to be a clear correlation between depth to groundwater (*i.e.*, seasonality) and soil vapour concentrations at the Site. This may be attributable to the fact that groundwater levels were not interpreted to fall below the elevation of bedrock in 2014, thus not exposing DNAPL to the vadose zone.

Based on the results of the supplementary subsurface investigation and vapour intrusion assessment, Golder recommends the following:

- On-going monitoring of groundwater wells across the Site to assess changes in presence of NAPL. If NAPL is encountered at any additional locations, further soil vapour assessment may be required to assess if vapour intrusion is occurring; and,
- Follow-up monitoring and sampling of sub-slab and indoor air within the five homes assessed to determine if the conditions encountered in 2014 remain consistent, and to verify the irregular naphthalene, benzene and trichloroethylene concentrations measured in one of the residences.



8.0 REPORT LIMITATIONS

This report has been prepared for the exclusive use of Alberta Environment and Sustainable Resource Development. The report, which specifically includes all tables, figures and appendices, is based on data and information collected during the site investigation activities conducted by Golder Associates Ltd., and is based solely on the conditions of the Site at the time of the field investigations, supplemented by historical information and data obtained by Golder Associates Ltd. as described in this report.

The assessment of environmental conditions and possible hazards at this Site has been made using the results of chemical analysis of groundwater and soil vapour samples collected from a limited number of locations. The site conditions between sampling locations have been inferred based on conditions observed. Subsurface conditions may vary from these sample locations. Additional study, including further subsurface investigation, can reduce the inherent uncertainties associated with this type of study. However, it is never possible, even with exhaustive sampling and testing, to dismiss the possibility that part of a site may be contaminated and remain undetected.

The services performed as described in this report were conducted in a manner consistent with that level of care and skill normally exercised by other members of the engineering and science professions currently practicing under similar conditions, subject to the time limits and financial and physical constraints applicable to the services.

Any use which a third party other than Alberta Environment and Sustainable Resource Development makes of this report, or any reliance on, or decisions made based on it, are the responsibilities of such third parties. Golder 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.

The content of this report is based on information collected during the sampling dates mentioned in the report, our present understanding of the site conditions, and our professional judgement in light of such information at the time of this report. This report provides a professional opinion and, therefore, no warranty is expressed, implied, or made as to the conclusions, advice and recommendations offered in this report. This report does not provide a legal opinion regarding compliance with applicable laws. With respect to regulatory compliance issues, it should be noted that regulatory statutes and the interpretation of regulatory statutes are subject to change.

The findings and conclusions of this report are valid only as of the date of this report. If new information is discovered in future work, including excavations, borings, or other studies, Golder Associates Ltd. should be requested to re-evaluate the conclusions of this report, and to provide amendments as required



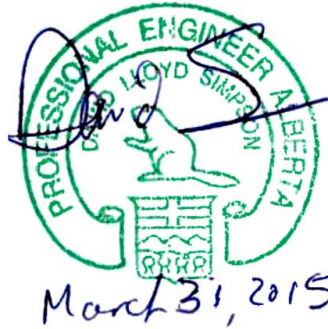
9.0 CLOSURE

We trust that this report meets your current needs. If you have any questions or concerns, please do not hesitate to contact Julie Burghardt at (403) 532-5795.

GOLDER ASSOCIATES LTD.



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TABLES

**Table 2: 2014 Sub-Slab Soil Vapour Purging and Field Screening Results
Canada Creosote Site - North Bow
Supplementary Subsurface Investigation and Vapour Intrusion Assessment**

2014 Quarter 1 Field Results ¹								
Well ID	Purge Volume	Vacuum ("H ₂ O)	Flow Rate (mL/min)	Combustible Gas (ppm)	CO ₂ (%)	O ₂ (%)	PID (ppm)	CH ₄ (%LEL)
Home "A" - SS1	1	0.5	205	0	0.36	20.9	0	0
	2	-	-	0	0.3	20.9	0	0
	3	0.5	205	0	0.35	20.7	0	0
	4	-	-	0	0.36	20.7	0	0
Home "B" - SS1	1	0.2	205	15	0	20.9	0	0
	2	-	-	0	0	20.9	0	0
	3	0.3	200	0	0	20.9	0	0
Home "C" - SS1	1	0.7	210	0	0.1	20.9	0	0
	2	-	-	0	0.1	20.9	0	0
	3	0.7	310	0	0.1	20.9	0	0
Home "C" - SS2	1	0.5	250	0	0.17	20.9	0	0
	2	-	-	0	0.18	20.9	0	0
	3	0.5	250	0	0.18	20.9	0	0
Home "F" - SS1	1	0	200	20	0.02	20.9	0	0
	2	-	-	15	0.02	20.6	0	0
	3	0	200	10	0.02	20.6	0	0
	4	-	-	10	0.02	20.5	0	0

2014 Quarter 2 Field Results ¹								
Well ID	Purge Volume	Vacuum ("H ₂ O)	Flow Rate (mL/min)	Combustible Gas (ppm)	CO ₂ (%)	O ₂ (%)	PID (ppm)	CH ₄ (%LEL)
Home "A"- SS1	1	0	155	0	0.47	19.9	0	0
	2	0	155	0	0.46	19.6	0	0
	3	0	155	0	0.46	19.4	0	0
Home "B" - SS1	1	0	145	0	0	20.9	0	0
	2	0	150	0	0	20.9	0	0
	3	0	150	0	0	20.9	0	0
	4	0	150	0	0	20.9	0	0
Home "C" - SS1	1	0	150	0	0.44	20.4	0	0
	2	0	150	0	0.475	20.1	0	0
	3	0	150	0	0.43	19.9	0	0
Home "C" - SS2	1	0	150	0	0.35	19.9	0	0
	2	0	150	0	0.34	19.9	0	0
	3	0	150	0	0.37	19.7	0	0
Home "F" - SS1	1	0	150	0	0.67	19.4	0	0
	2	0	150	0	0.65	19.4	0	0
	3	0	150	0	0.65	19.4	0	0

Notes:

ppm - parts per million

PID - photoionization detector

LEL - lower explosive limit

- = No Reading

¹ RKI 2 multi-gas detector was used.

**Table 2: 2014 Sub-Slab Soil Vapour Purging and Field Screening Results
Canada Creosote Site - North Bow
Supplementary Subsurface Investigation and Vapour Intrusion Assessment**

2014 Quarter 3 Field Results ¹								
Well ID	Purge Volume	Vacuum ("H ₂ O)	Flow Rate (mL/min)	Combustible Gas (ppm)	CO ₂ (%)	O ₂ (%)	PID (ppm)	CH ₄ (%LEL)
Home "A" - SS1	1	0	150	0	1.3	19	0	0
	2	0	150	0	1.3	19.1	0	0
	3	0	150	0	1.4	19.1	0	0
Home "B" - SS1	1	0	150	0	0	20.9	0	0
	2	0	150	0	0	20.9	0	0
	3	0	150	0	0	20.9	0	0
Home "B" - SS1 (resample)	1	0	200	0	0.08	20.9	0	0
	2	0	200	0	0.08	20.9	0	0
	3	0	200	0	0.08	20.9	0	0
Home "C" - SS1	1	0	135	0	0.7	20.1	0	0
	2	0	135	0	0.7	20	0	0
	3	0	135	0	0.7	19.8	0	0
Home "C"- SS2	1	0	140	0	0.7	20.3	0	0
	2	0	140	0	0.6	20.3	0	0
	3	0	140	0	0.6	20.3	0	0
Home "F" - SS1	1	0	140	0	1.3	19.2	0	0
	2	0	140	0	1.3	19.1	0	0
	3	0	140	0	1.3	19.2	0	0

2014 Quarter 4 Field Results ¹								
Well ID	Purge Volume	Vacuum ("H ₂ O)	Flow Rate (mL/min)	Combustible Gas (ppm)	CO ₂ (%)	O ₂ (%)	PID (ppm)	CH ₄ (%LEL)
Home "A"- SS1	1	0	150	0	0.98	20.4	0	0
	2	0	150	0	0.97	20.4	0	0
	3	0	150	0	0.97	20.4	0	0
Home "B"- SS1	1	0	160	0	0.08	20.9	0	0
	2	0	160	0	0.08	20.9	0	0
	3	0	160	0	0.08	20.9	0	0
Home "C"- SS1	1	0	150	0	0.78	20.8	0	0
	2	0	150	0	0.74	20.9	0	0
	3	0	150	0	0.76	20.9	0	0
Home "C" - SS2	1	0	150	0	0.58	20.9	0	0
	2	0	150	0	0.6	20.9	0	0
	3	0	150	0	0.62	20.9	0	0
Home "F" - SS1	1	0	140	0	0.86	19.9	0	0
	2	0	140	0	0.88	19.9	0	0
	3	0	140	0	0.85	19.7	0	0

Notes:

- ppm - parts per million
- PID - photoionization detector
- LEL - lower explosive limit
- = No Reading
- ¹ RKI 2 multi-gas detector was used.

**Table 3: 2014 Soil Vapour Field Screening and Leak Test Results
Canada Creosote Site - North Bow
Supplementary Subsurface Investigation and Vapour Intrusion Assessment**

Location										He Tracer Test		
	Date	Depth ⁴ (mbgs)	Flow (mL/min)	Vacuum ("H ₂ O)	PID ¹ (ppm)	Combustible Gas ¹ (ppm)	CH ₄ [*] (%)	CO ₂ [*] (%)	O ₂ [*] (%)	He Under Shroud (ppm)	He In Sample (ppm)	Leakage (%)
MW10-6 deep probe	19-Mar-14	1.65-2.44	500	1	0	0	0	0.5	20.4	-	-	-
	4-Jun-14		250	0	0	0	0	0.7725	19	-	-	-
	14-Aug-14		270	0	0	0	0	1.7	17.6	-	-	-
	13-Nov-14		270	0	0	0	0	0.9875	20.9	-	-	-
MW10-6 well	20-Mar-14	3.04-3.69	800	0	48	70	0	0.3	20.9	-	-	-
	3-Jun-14	3.04-3.28	830	0	52	20	0	0.49	19.6	-	-	-
	15-Aug-14	3.04-3.42	750	0	14	0	0	1.3	18.3	-	-	-
	13-Nov-14	3.04-3.58	750	0	14	0	0	0.7475	20.1	-	-	-
VP11-01 B shallow probe	19-Mar-14	1.21-1.82	500	0.6	0	0	0	0.5	19.5	-	-	-
	4-Jun-14		500	0	0	0	0	0.6825	19.5	-	-	-
	14-Aug-14		500	0	0	0	0	1.5	18.5	-	-	-
	10-Nov-14		500	0	0	0	0	0.7225	20.7	-	-	-
VP11-01 B deep probe	19-Mar-14	2.13-2.74	500	0.6	0	0	0	0.5	19.7	-	-	-
	4-Jun-14		500	0	0	0	0	0.7125	19.2	-	-	-
	14-Aug-14		500	0	0	0	0	1.3	17.4	-	-	-
	12-Nov-14		500	0	0	0	0	>1	20.5	-	-	-
VP14-1 Shallow probe	19-Mar-14	1.22-1.83	250	20	-	-	-	-	-	-	-	-
	2-Jun-14		-	-	-	-	-	-	-	-	-	-
	12-Aug-14		-	-	-	-	-	-	-	-	-	-
	7-Nov-14		250	0.8	0	0	0	0.5875	20.7	-	-	-
VP14-1 Deep probe	19-Mar-14	2.44-3.05	240	0.6	58	20	0	0.3	19.4	300000	0	0
	2-Jun-14		250	0	0	0	0	0.37	19.8	-	-	-
	12-Aug-14		250	0	0	0	0	0.7	18.4	-	-	-
	7-Nov-14		250	0	0	0	0	0.945	20.4	-	-	-
VP14-2 Shallow probe	17-Mar-14	1.22-1.83	250	1.6	0	0	0	0	20	400000	0	0
	2-Jun-14		250	2.7	0	0	0	0.4375	19.7	-	-	-
	12-Aug-14		250	3.5	0	0	0	1.8	18.6	-	-	-
	10-Nov-14		250	1.9	0	0	0	0.71	20.9	-	-	-
VP14-2 Deep probe	17-Mar-14	2.44-3.05	250	1.3	0	0	0	0.2	20.5	350000	0	0
	2-Jun-14		250	0	0	0	0	0.315	19.8	-	-	-
	12-Aug-14		250	0	0	0	0	1.5	17.8	-	-	-
	10-Nov-14		250	0	0	0	0	0.795	20.9	-	-	-
VP14-3 Shallow probe	17-Mar-14	1.52-2.13	250	0.5	0	0	0	0.1	20.9	300000	1100	0.37
	3-Jun-14		250	0	0	0	0	0.5025	20.1	-	-	-
	12-Aug-14		250	0	0	0	0	1.2	19.3	-	-	-
	6-Nov-14		260	0.6	0	0	0	0.55	20.4	-	-	-
VP14-3 Deep probe	17-Mar-14	2.74-3.35	230	0	0	0	0	0.2	20.9	300000	275	0.09
	3-Jun-14		240	0	0	0	0	0.335	20.3	-	-	-
	12-Aug-14		250	0	0	0	0	1	19.6	-	-	-
	7-Nov-14		250	0	0	0	0	0.745	20.8	-	-	-
VP14-4 Shallow probe	18-Mar-14	0.91-1.52	250	0	0	0	0	0.2	20.9	300000	0	0
	3-Jun-14		250	0	0	0	0	0.9775	19.4	-	-	-
	12-Aug-14		250	0	0	0	0	1.6	18.9	-	-	-
	6-Nov-14		250	0	0	0	0	0.6525	20.7	-	-	-
VP14-4 Deep probe	18-Mar-14	2.13-2.74	230	0	0	0	0	0.3	20.9	300000	0	0
	3-Jun-14		260	0	0	0	0	0.5	19.6	-	-	-
	12-Aug-14		250	0	0	0	0	1.3	18.9	-	-	-
	6-Nov-14		250	0	0	0	0	0.9225	20.4	-	-	-
VP14-5 Shallow probe	18-Mar-14	0.91-1.52	250	0	0	0	0	0.1	20.7	300000	0	0
	2-Jun-14		250	0	0	0	0	0.6525	20.3	-	-	-
	13-Aug-14		250	0	0	0	0	0.8	20.1	-	-	-
	7-Nov-14		250	0	0	0	0	0.31	20.9	-	-	-
VP14-5 Deep probe	18-Mar-14	2.13-2.74	260	0.6	0	0	0	0.2	20.8	300000	0	0
	2-Jun-14		250	0	0	0	0	0.5625	20.4	-	-	-
	13-Aug-14		250	0	0	0	0	1	19.7	-	-	-
	7-Nov-14		250	0	0	0	0	0.4025	20.9	-	-	-

Notes:

mbgs - metres below ground surface.

PID - photoionization detector

NR = No Reading

1. RKI 2 multi-gas detector was used.

2. Percent leakage for the Helium tracer testing was calculated as 100 times the concentration in soil gas probe divided by concentration in shroud.

3. Soil gas readings at end of purging process.

4. For wells, the base of screened interval is water table.

* - Readings from Gem 2000. CH₄ measured using infrared detector.

Indicates sample could not be collected due to excessive vacuum (likely due to a blockage).

Supplementary Subsurface Investigation and Vapour Intrusion Assessment

Well ID	2014 Quarter 1 Field Results ¹					
	Purge Volume	Combustible Gas (ppm)	CO ₂ (%)	O ₂ (%)	PID (ppm)	CH ₄ (%LEL)
MW10-6 deep probe	1	15	0.5	20.5	0	0
	2	0	0.5	20.6	0	0
	3	0	0.6	20.8	38	0
	4	0	0.5	20.4	0	0
	5	0	0.5	20.4	0	0
MW10-6 well	1	125	0.2	20.9	0	0
	2	110	0.3	20.8	42	0
	3	70	0.3	20.9	46	0
	4	70	0.3	20.9	48	0
MW11-01 B shallow probe	1	0	0.5	19.7	0	0
	2	0	0.5	19.7	0	0
	3	0	0.5	19.5	0	0
MW11-01 B deep probe	1	0	0.5	19.9	0	0
	2	0	0.5	19.7	58	0
	3	0	0.5	19.5	0	0
	4	0	0.5	19.7	0	0
VP14-1 Shallow probe	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
VP14-1 Deep probe	1	25	0.3	19.2	0	2
	2	30	0.2	19.4	0	0
	3	20	0.3	19.3	0	0
	4	15	0.3	19.4	58	0
	5	20	0.3	19.4	58	0
VP14-2 Shallow probe	1	0	0	19.5	0	0
	2	0	0	20.1	0	0
	3	0	0	20	0	0
VP14-2 Deep probe	1	0	0.2	20.6	0	0
	2	0	0.2	20.4	0	0
	3	0	0.2	20.5	0	0
	4	0	0.2	20.7	0	0
VP14-3 Shallow probe	1	0	0	20.9	0	0
	2	5	0	20.9	0	0
	3	0	0.1	20.9	0	0
VP14-3 Deep probe	1	45	0.2	20.9	0	0
	2	0	0.2	20.9	0	0
	3	0	0.2	20.9	0	0
VP14-4 Shallow probe	1	15	0.2	20.5	0	0
	2	0	0.2	20.9	0	0
	3	0	0.2	20.9	0	0
VP14-4 Deep probe	1	0	0.2	20.9	0	0
	2	0	0.3	20.9	0	0
	3	0	0.3	20.9	0	0
VP14-5 Shallow probe	1	0	0.1	20.9	0	0
	2	0	0.1	20.9	0	0
	3	0	0.1	20.7	0	0
VP14-5 Deep probe	1	0	0.2	20.8	0	0
	2	0	0.1	20.9	0	0
	3	0	0.2	20.8	0	0

Notes:

ppm - parts per million
 PID - photoionization detector
 LEL - lower explosive limit
 "-" not measured

¹ RKI 2 multi-gas detector was used.

**Table 4: 2014 Soil Vapour Field Screening and Purging Results
Canada Creosote Site - North Bow
Supplementary Subsurface Investigation and Vapour Intrusion Assessment**

Well ID	2014 Quarter 2 Field Results ¹					
	Purge Volume	Combustible Gas (ppm)	CO ₂ (%)	O ₂ (%)	PID (ppm)	CH ₄ (%LEL)
MW10-6 deep probe	1	0	0.75	18.9	0	0
	2	0	0.78	19	0	0
	3	0	0.77	19	0	0
MW10-6 well	1	5	0.52	19.6	43	0
	2	25	0.5	19.6	48	0
	3	20	0.49	19.6	52	0
MW11-01 B shallow probe	1	0	0.69	19.5	0	0
	2	0	0.7	19.5	0	0
	3	0	0.68	19.5	0	0
MW11-01 B deep probe	1	0	0.69	19.2	0	0
	2	0	0.72	19	0	0
	3	0	0.71	19.2	0	0
VP14-1 Shallow probe	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
VP14-1 Deep probe	1	0	0.34	19.3	0	0
	2	0	0.36	19.4	0	0
	3	0	0.37	19.8	0	0
VP14-2 Shallow probe	1	0	0.31	19.3	0	0
	2	0	0.39	19.7	0	0
	3	0	0.44	19.7	0	0
VP14-2 Deep probe	1	0	0.3	19.7	0	0
	2	0	0.3	19.7	0	0
	3	0	0.32	19.8	0	0
VP14-3 Shallow probe	1	0	0.5	19.9	0	0
	2	0	0.5	20.1	0	0
	3	0	0.5	20.1	0	0
VP14-3 Deep probe	1	0	0.32	20.1	0	0
	2	0	0.34	20.1	0	0
	3	0	0.34	20.3	0	0
VP14-4 Shallow probe	1	0	0.98	19.2	1	0
	2	0	0.97	19.3	0	0
	3	0	0.98	19.4	0	0
VP14-4 Deep probe	1	0	0.5	19.4	0	0
	2	0	0.5	19.6	0	0
	3	0	0.5	19.6	0	0
VP14-5 Shallow probe	1	0	0.67	20.3	0	0
	2	0	0.67	20.3	0	0
	3	0	0.65	20.3	0	0
VP14-5 Deep probe	1	45	0.56	20	0	0
	2	0	0.55	20.1	0	0
	3	0	0.56	20.4	0	0

Notes:

ppm - parts per million

PID - photoionization detector

LEL - lower explosive limit

"-" not measured

¹ RKI 2 multi-gas detector was used.

**Table 4: 2014 Soil Vapour Field Screening and Purging Results
Canada Creosote Site - North Bow
Supplementary Subsurface Investigation and Vapour Intrusion Assessment**

Well ID	2014 Quarter 3 Field Results ¹					
	Purge Volume	Combustible Gas (ppm)	CO ₂ (%)	O ₂ (%)	PID (ppm)	CH ₄ (%LEL)
MW10-6 deep probe	1	0	1.6	17.5	0	0
	2	0	1.6	17.5	0	0
	3	0	1.7	17.6	0	0
MW10-6 well	1	5	1.2	18.3	13	0
	2	0	1.3	18	14	0
	3	0	1.3	18.3	14	0
MW11-01 B shallow probe	1	0	1.5	18.4	0	0
	2	0	1.5	18.4	0	0
	3	0	1.5	18.5	0	0
MW11-01 B deep probe	1	0	1.3	17.5	0	0
	2	0	1.3	17.5	0	0
	3	0	1.3	17.4	0	0
VP14-1 Shallow probe	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
VP14-1 Deep probe	1	0	0.6	18.3	0	0
	2	0	0.7	18.3	0	0
	3	0	0.7	18.4	0	0
VP14-2 Shallow probe	1	0	1.6	18.5	0	0
	2	0	1.8	18.5	0	0
	3	0	1.8	18.6	0	0
VP14-2 Deep probe	1	0	1.4	17.9	0	0
	2	0	1.5	17.8	0	0
	3	0	1.5	17.8	0	0
VP14-3 Shallow probe	1	5	1.1	19.6	0	0
	2	0	1.2	19.4	0	0
	3	0	1.2	19.3	0	0
VP14-3 Deep probe	1	0	0.9	19.4	0	0
	2	0	0.9	19.4	0	0
	3	0	1	19.6	0	0
VP14-4 Shallow probe	1	0	1.5	18.7	0	0
	2	0	1.6	18.8	0	0
	3	0	1.6	18.9	0	0
VP14-4 Deep probe	1	0	1.3	18.9	0	0
	2	0	1.3	18.9	0	0
	3	0	1.3	18.9	0	0
VP14-5 Shallow probe	1	0	0.8	20.3	0	0
	2	0	0.9	20.3	0	0
	3	0	0.8	20.1	0	0
VP14-5 Deep probe	1	0	0.9	20.2	0	0
	2	0	0.9	19.6	0	0
	3	0	1	19.7	0	0

Notes:

ppm - parts per million
 PID - photoionization detector
 LEL - lower explosive limit
 "-" not measured

¹ RKI 2 multi-gas detector was used.

**Table 4: 2014 Soil Vapour Field Screening and Purging Results
Canada Creosote Site - North Bow
Supplementary Subsurface Investigation and Vapour Intrusion Assessment**

Well ID	2014 Quarter 4 Field Results ¹					
	Purge Volume	Combustible Gas (ppm)	CO ₂ (%)	O ₂ (%)	PID (ppm)	CH ₄ (%LEL)
MW10-6 deep probe	1	0	>1	20.6	0	0
	2	0	>1	20.8	0	0
	3	0	0.99	20.9	0	0
MW10-6 well	1	0	0.66	20.6	9	0
	2	0	0.74	20.3	13	0
	3	0	0.75	20.1	14	0
MW11-01 B shallow probe	1	0	0.73	20.9	0	0
	2	0	0.73	20.9	0	0
	3	0	0.72	20.9	0	0
MW11-01 B deep probe	1	0	>1	20.6	0	0
	2	0	>1	20.4	0	0
	3	0	>1	20.5	0	0
VP14-1 Shallow probe	1	0	0.62	20.4	0	0
	2	0	0.63	20.6	0	0
	3	0	0.59	20.7	0	0
VP14-1 Deep probe	1	0	>1	20.3	0	0
	2	0	>1	20.4	0	0
	3	0	0.95	20.4	0	0
VP14-2 Shallow probe	1	0	0.73	20.8	0	0
	2	0	0.7	20.9	0	0
	3	0	0.71	20.9	0	0
VP14-2 Deep probe	1	0	0.81	20.9	0	0
	2	0	0.8	20.9	0	0
	3	0	0.8	20.9	0	0
VP14-3 Shallow probe	1	0	0.59	20.2	0	0
	2	0	0.59	20.4	0	0
	3	0	0.55	20.4	0	0
VP14-3 Deep probe	1	5	0.73	20.8	0	0
	2	0	0.74	20.6	0	0
	3	0	0.75	20.8	0	0
VP14-4 Shallow probe	1	0	0.65	20.7	0	0
	2	0	0.65	20.7	0	0
	3	0	0.65	20.7	0	0
VP14-4 Deep probe	1	0	0.92	20.2	0	0
	2	0	0.92	20.2	0	0
	3	0	0.92	20.4	0	0
VP14-5 Shallow probe	1	0	0.32	20.9	0	0
	2	0	0.33	20.9	0	0
	3	0	0.31	20.9	0	0
VP14-5 Deep probe	1	0	0.4	20.9	0	0
	2	0	0.44	20.9	0	0
	3	0	0.4	20.9	0	0

Notes:

ppm - parts per million
 PID - photoionization detector
 LEL - lower explosive limit
 "-" not measured

¹ RKI 2 multi-gas detector was used.

**Table 5: Soil Vapour and Sub-Slab Vapour Screening Criteria Derivation
Canada Creosote Site - North Bow
Supplementary Subsurface Investigation and Vapour Intrusion Assessment**

Parameters	Residential Soil Vapour and Sub-Slab Vapour Screening Criteria ¹ (µg/m ³)	Derivation of Soil Vapour Guideline		Non-Carcinogenic			Carcinogenic							
		Non-carcinogen	Carcinogen	Jurisdiction	TC	Ca	Jurisdiction	Inhalation Unit Risk	ILCR	RsC	SAF	BAF	ET	AF
		µg/m ³	µg/m ³	-	mg/m ³	mg/m ³	-	(mg/m ³) ⁻¹	-	mg/m ³	-	-	-	1.00E-02
Volatile Organics														
Benzene	3.03E+02	6.00E+02	3.03E+02	IRIS	3.00E-02	0.00E+00	A	3.30E-03	1.00E-05	3.03E-03	2.00E-01	1.00E+00	1.00E+00	1.00E-02
Bromodichloromethane	2.70E+01	-	2.70E+01	-	-	0.00E+00	RSL	3.70E-02	1.00E-05	2.70E-04	2.00E-01	1.00E+00	1.00E+00	1.00E-02
1,3-Butadiene	3.33E+01	4.00E+01	3.33E+01	IRIS	2.00E-03	0.00E+00	IRIS	3.00E-02	1.00E-05	3.33E-04	2.00E-01	1.00E+00	1.00E+00	1.00E-02
Carbon Tetrachloride	6.36E+01	6.36E+01	-	A	3.18E-03	0.00E+00	-	-	-	-	2.00E-01	1.00E+00	1.00E+00	1.00E-02
Chloroform	4.35E+01	7.69E+02	4.35E+01	A	4.48E-02	6.30E-03	A	2.30E-02	1.00E-05	4.35E-04	2.00E-01	1.00E+00	1.00E+00	1.00E-02
Ethylbenzene	1.99E+04	1.99E+04	-	A	1.00E+00	7.50E-03	-	-	-	-	2.00E-01	1.00E+00	1.00E+00	1.00E-02
Hexachlorobutadiene	4.55E+01	-	4.55E+01	-	-	6.00E-05	A	2.20E-02	1.00E-05	4.55E-04	2.00E-01	1.00E+00	1.00E+00	1.00E-02
Naphthalene	4.10E+01	4.10E+01	-	A	3.00E-03	9.50E-04	-	-	-	-	2.00E-01	1.00E+00	1.00E+00	1.00E-02
1,1,1,2-Tetrachloroethane	1.35E+02	-	1.35E+02	-	-	0.00E+00	IRIS	7.40E-03	1.00E-05	1.35E-03	2.00E-01	1.00E+00	1.00E+00	1.00E-02
Toluene	7.51E+04	7.51E+04	-	A	3.80E+00	4.42E-02	-	-	-	-	2.00E-01	1.00E+00	1.00E+00	1.00E-02
Trichloroethylene	1.20E+01	1.20E+01	2.44E+02	IRIS	2.00E-03	1.40E-03	IRIS	4.10E-03	1.00E-05	2.44E-03	2.00E-01	1.00E+00	1.00E+00	1.00E-02
	7.72E+02	7.72E+02	1.64E+03	A	4.00E-02	1.40E-03	A	6.10E-04	1.00E-05	1.64E-02	2.00E-01	1.00E+00	1.00E+00	1.00E-02
1,2,3-Trimethylbenzene	1.00E+02	1.00E+02	-	RSL	5.00E-03	0.00E+00	-	-	-	-	2.00E-01	1.00E+00	1.00E+00	1.00E-02
1,2,4-Trimethylbenzene	1.40E+02	1.40E+02	-	RSL	7.00E-03	0.00E+00	-	-	-	-	2.00E-01	1.00E+00	1.00E+00	1.00E-02
Xylene (Total)	3.56E+03	3.56E+03	-	A	1.80E-01	1.82E-03	-	-	-	-	2.00E-01	1.00E+00	1.00E+00	1.00E-02
Aliphatic >C ₆ -C ₈	3.66E+05	3.66E+05	-	A	1.84E+01	9.11E-02	-	-	-	-	2.00E-01	1.00E+00	1.00E+00	1.00E-02
Aliphatic >C ₈ -C ₁₀	1.92E+04	1.92E+04	-	A	1.00E+00	3.88E-02	-	-	-	-	2.00E-01	1.00E+00	1.00E+00	1.00E-02
Aliphatic >C ₁₀ -C ₁₂	2.00E+04	2.00E+04	-	A	1.00E+00	0.00E+00	-	-	-	-	2.00E-01	1.00E+00	1.00E+00	1.00E-02
Aliphatic >C ₁₂ -C ₁₆	2.00E+04	2.00E+04	-	A	1.00E+00	0.00E+00	-	-	-	-	2.00E-01	1.00E+00	1.00E+00	1.00E-02
Aromatic >C ₈ -C ₁₀	3.25E+03	3.25E+03	-	A	2.00E-01	3.75E-02	-	-	-	-	2.00E-01	1.00E+00	1.00E+00	1.00E-02
Aromatic >C ₁₀ -C ₁₂	4.00E+03	4.00E+03	-	A	2.00E-01	0.00E+00	-	-	-	-	2.00E-01	1.00E+00	1.00E+00	1.00E-02
Aromatic >C ₁₂ -C ₁₆	4.00E+03	4.00E+03	-	A	2.00E-01	0.00E+00	-	-	-	-	2.00E-01	1.00E+00	1.00E+00	1.00E-02

Notes:
 All concentrations in µg/m³, unless otherwise noted.
 A - Alberta Environment and Sustainable Resource Development Tier 1 Soil and Groundwater Remediation Guidelines, Appendix C: Protocols for Calculating Tier 1 Soil and Groundwater Remediation Guidelines, Table C-7 (May 2014).
 IRIS = Integrated Risk Information System - US EPA (United States Environmental Protection Agency). 2015. A-Z List of Substances. Accessed February 2015. Available online at: <http://cfpub.epa.gov/ncea/iris/index.cfm?fuseaction=iris.showSubstanceList>.
 RSL = Regional Screening Levels - US EPA. 2014. Regional Screening Level (RSL) Residential Air Supporting Tables. November 2014. Available online at: <http://www.epa.gov/region9/superfund/prg/>.
 AF = Attenuation Factor (between soil vapour and indoor air); BAF = Biodegradation Adjustment Factor; Ca = background concentration; ET = Exposure Term; ILCR = Incremental Lifetime Cancer Risk; RsC = Risk-specific Concentration; SAF = Soil Allocation Factor.
 1. Where both non-carcinogenic and carcinogenic guidelines were calculated, the most conservative guideline was applied.
 Table to be read in conjunction with accompanying report. See Section 3.2.4 for information and equations used in Soil Vapour Guideline Development.
 Values of 0 and 0.2 were assumed for Ca and SAF, respectively, for TRVs from US EPA IRIS or RSL.

**Table 6: Indoor Air Screening Criteria Derivation
Canada Creosote Site - North Bow
Supplementary Subsurface Investigation and Vapour Intrusion Assessment**

Parameters	Indoor Residential Air Screening Criteria ¹	Non-Carcinogenic			Carcinogenic			
		Jurisdiction	Inhalation Tolerable Concentration	Ca	Jurisdiction	Inhalation Unit Risk	ILCR	RsC
		-	mg/m ³	mg/m ³	-	(mg/m ³) ⁻¹	-	mg/m ³
Volatile Organics								
Benzene	3.03E+00	IRIS	3.00E-02	0.00E+00	A	3.30E-03	1.00E-05	3.03E-03
Bromodichloromethane	2.70E-01	-	-	0.00E+00	RSL	3.70E-02	1.00E-05	2.70E-04
1,3-Butadiene	3.33E-01	IRIS	2.00E-03	0.00E+00	IRIS	3.00E-02	1.00E-05	3.33E-04
Carbon Tetrachloride	3.18E+00	A	3.18E-03	0.00E+00	-	-	-	-
Chloroform	4.35E-01	A	4.48E-02	6.30E-03	A	2.30E-02	1.00E-05	4.35E-04
Ethylbenzene	1.00E+03	A	1.00E+00	7.50E-03	-	-	-	-
Hexachlorobutadiene	4.55E-01	-	-	6.00E-05	A	2.20E-02	1.00E-05	4.55E-04
Naphthalene	3.00E+00	A	3.00E-03	9.50E-04	-	-	-	-
1,1,1,2-Tetrachloroethane	1.35E+00	-	-	0.00E+00	IRIS	7.40E-03	1.00E-05	1.35E-03
Toluene	3.80E+03	A	3.80E+00	4.42E-02	-	-	-	-
Trichloroethylene	2.00E+00	IRIS	2.00E-03	1.40E-03	IRIS	4.10E-03	1.00E-05	2.44E-03
	1.64E+01	A	4.00E-02	1.40E-03	A	6.10E-04	1.00E-05	1.64E-02
1,2,3-Trimethylbenzene	5.00E+00	RSL	5.00E-03	0.00E+00	-	-	-	-
1,2,4-Trimethylbenzene	7.00E+00	RSL	7.00E-03	0.00E+00	-	-	-	-
Xylene (Total)	1.80E+02	A	1.80E-01	1.82E-03	-	-	-	-
Aliphatic >C ₆ -C ₈	1.84E+04	A	1.84E+01	9.11E-02	-	-	-	-
Aliphatic >C ₈ -C ₁₀	1.00E+03	A	1.00E+00	3.88E-02	-	-	-	-
Aliphatic >C ₁₀ -C ₁₂	1.00E+03	A	1.00E+00	0.00E+00	-	-	-	-
Aliphatic >C ₁₂ -C ₁₆	1.00E+03	A	1.00E+00	0.00E+00	-	-	-	-
Aromatic >C ₈ -C ₁₀	2.00E+02	A	2.00E-01	3.75E-02	-	-	-	-
Aromatic >C ₁₀ -C ₁₂	2.00E+02	A	2.00E-01	0.00E+00	-	-	-	-
Aromatic >C ₁₂ -C ₁₆	2.00E+02	A	2.00E-01	0.00E+00	-	-	-	-

Notes:

All concentrations in µg/m³, unless otherwise noted.

A - Alberta Environment and Sustainable Resource Development Tier 1 Soil and Groundwater Remediation Guidelines, Appendix C: Protocols for Calculating Tier 1 Soil and Groundwater Remediation Guidelines, Table C-7 (May 2014).

IRIS = Integrated Risk Information System - US EPA (United States Environmental Protection Agency). 2015. A-Z List of Substances. Accessed February 2015. Available online at: <http://cfpub.epa.gov/ncea/iris/index.cfm?fuseaction=iris.showSubstanceList>.

RSL = Regional Screening Levels - US EPA. 2014. Regional Screening Level (RSL) Residential Air Supporting Tables. November 2014. Available online at: <http://www.epa.gov/region9/superfund/prg/>.

Ca = background concentration; ILCR = Incremental Lifetime Cancer Risk

1. Where both non-carcinogenic and carcinogenic guidelines were calculated, the most conservative guideline was applied.

HC - Health Canada Contaminated Sites Program, Federal Contaminated Sites Risk Assessment in Canada, Part II: Health Canada Toxicological Reference Values (TRVs) and Chemical-specific factors (September 2010).

Table to be read in conjunction with accompanying report. See Section 3.2.4 for information and equations used in Soil Vapour Guideline Development.

Table 7: Summary of Bedrock Elevations
Canada Creosote Site - North Bow
Supplementary Subsurface Investigation and Vapour Intrusion Assessment

Sample ID	Ground Surface Elevation (masl)	Observed Depth to Bedrock (mbgs)*	Bedrock Elevation (masl)
MW14-1A	1052.749	4.9	1047.87
MW14-2	1050.923	4.6	1046.35
MW14-3	1051.047	3.8	1047.24
MW14-4A	1051.229	5.2	1046.05
MW14-5	1050.860	5.0	1045.83
MW14-6A	1050.607	4.9	1045.73
MW14-7	1050.464	3.7	1046.80
MW14-8	1050.442	4.6	1045.87
MW14-9	1053.061	4.6	1048.49
MW10-3A	1050.674	6.5	1044.17
MW10-7A	1050.008	3.7	1046.35
MW11-01A	1050.392	4.9	1045.49
MW11-03A	1050.174	6.4	1043.77
MW11-04A	1050.354	5.2	1045.15
MW11-06	1050.865	4.3	1046.57
MW11-07	1050.666	7.0	1043.67
MW1A	-	7.1	1043.52
MW2B	-	7.3	1043.19
MW3B	-	7.8	1042.78
MW4B	-	9.2	1040.87
MW5B	-	8.5	1041.68
MW6B	-	7.0	1043.58
MW7B	-	7.0	1043.45

Notes:

mbgs - metres below ground surface

masl - metres above sea level

" - " - data not available

* Based on observations during drilling by Golder or borehole logs provided in historical reports

Table to be read in conjunction with accompanying report.

Table 8: Summary of Groundwater Monitoring Results
Canada Creosote Site - North Bow
Supplementary Subsurface Investigation and Vapour Intrusion Assessment

Sample ID	Date monitored	Temperature (°C)	pH	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Top of Casing Elevation (masl)	Ground Surface Elevation (masl)	Depth to Static Water Level (mbtoc)	Depth to Static Water Level (mbgs)	Depth to NAPL (mbtoc)	Total Depth (mbtoc)	Static Water Level Elevation (masl)
MW2-B*	30-Oct-12	8.29	8.43	508	7.71	1050.420	-	3.597	-	ND	9.54	1046.823
MW3-A*	30-Oct-12	11.82	7.25	846	4.02	1050.570	-	4.142	-	ND	5.70	1046.428
MW3-B*	30-Oct-12	nc	nc	nc	nc	1050.530	-	3.847	-	5.485 (DNAPL)	9.99	NA
MW4-A*	30-Oct-12	11.00	7.32	1256	3.79	1049.980	-	3.453	-	ND	5.66	1046.527
MW4-B*	30-Oct-12	8.32	8.28	563	3.01	1050.010	-	3.252	-	ND	11.47	1046.758
MW6-A*	30-Oct-12	nc	nc	nc	nc	1050.580	-	3.937	-	ND	5.69	1046.643
MW6-B*	30-Oct-12	nc	nc	nc	nc	1050.510	-	3.649	-	8.818 (DNAPL)	9.54	NA
MW6-B*	30-Oct-12	nc	nc	nc	nc	1050.510	-	3.649	-	8.818 (DNAPL)	9.54	NA
MW14-1A	20-Mar-14	4.8	7.33	1254	4.62	1052.686	1052.749	6.215	6.278	ND	6.98	1046.471
	6-Jun-14	nc	nc	nc	nc			5.995	6.058	ND	6.93	1046.691
	5-Aug-14	10.0	7.31	1216	5.39			6.039	6.102	ND	6.92	1046.647
	5-Nov-14	9.45	7.35	1818	6.31			6.104	6.167	ND	6.92	1046.582
MW14-1B	20-Mar-14	nc	nc	nc	nc	1052.777	1052.846	4.445	4.514	ND	4.47	1048.332
	6-Jun-14	nc	nc	nc	nc			4.413	4.482	ND	4.45	1048.364
	5-Aug-14	nc	nc	nc	nc			4.362	4.431	ND	4.44	1048.415
	5-Nov-14	nc	nc	nc	nc			DRY	DRY	DRY	4.42	DRY
MW14-2	20-Mar-14	3.6	7.76	1457	3.76	1050.866	1050.923	4.175	4.232	ND	4.87	1046.691
	6-Jun-14	8.1	7.49	1694	6.67			3.823	3.880	ND	4.85	1047.043
	4-Aug-14	12.5	7.33	1952	5.55			3.895	3.952	ND	4.85	1046.971
	4-Nov-14	9.3	7.41	1651	6.86			3.898	3.955	ND	4.85	1046.968
MW14-3	19-Mar-14	nc	nc	nc	nc	1050.991	1051.047	DRY	DRY	DRY	3.60	DRY
	6-Jun-14	nc	nc	nc	nc			DRY	DRY	DRY	3.60	DRY
	4-Aug-14	nc	nc	nc	nc			DRY	DRY	DRY	3.59	DRY
	4-Nov-14	nc	nc	nc	nc			DRY	DRY	DRY	3.59	DRY
MW14-4A	19-Mar-14	6.4	7.88	1185	2.42	1051.183	1051.229	3.720	3.766	ND	8.14	1047.463
	6-Jun-14	9.7	7.34	616.6	7.41			3.495	3.541	ND	8.12	1047.688
	4-Aug-14	10.7	5.25	741	5.13			3.615	3.661	ND	8.11	1047.568
	5-Nov-14	9.11	7.6	669	3.14			3.879	3.925	ND	8.09	1047.304
MW14-4B	19-Mar-14	3.1	7.92	649	6.09	1051.151	1051.199	4.065	4.113	ND	5.28	1047.086
	6-Jun-14	nc	nc	nc	nc			3.529	3.577	ND	5.26	1047.622
	4-Aug-14	13.2	7.08	1265	6.06			3.727	3.775	ND	5.25	1047.424
	5-Nov-14	nc	nc	nc	nc			3.893	3.941	ND	5.25	1047.258
MW14-5	19-Mar-14	1.5	7.62	954	7.81	1050.803	1050.860	4.085	4.142	ND	4.94	1046.718
	6-Jun-14	nc	nc	nc	nc			3.643	3.700	ND	4.92	1047.160
	4-Aug-14	14.0	7.48	4632	4.35			3.780	3.837	ND	4.91	1047.023
	5-Nov-14	nc	nc	nc	nc			3.959	4.016	ND	4.88	1046.844
MW14-6A	19-Mar-14	639	8.28	553	2.74	1050.562	1050.607	6.710	6.755	ND	7.55	1043.852
	6-Jun-14	8.5	8.5	591	4.01			4.101	4.146	ND	7.44	1046.461
	4-Aug-14	11.4	8.13	675	2.90			3.990	4.035	ND	7.44	1046.572
	4-Nov-14	7.04	7.89	682	5.2			3.700	3.745	ND	7.43	1046.862
MW14-6B	19-Mar-14	4.9	7.75	825	2.77	1050.564	1050.653	3.955	4.044	ND	4.77	1046.609
	6-Jun-14	nc	nc	nc	nc			3.553	3.642	ND	4.76	1047.011
	4-Aug-14	13.6	7.10	1250	3.30			3.661	3.750	ND	4.75	1046.903
	4-Nov-14	7.51	7.66	654	5.13			3.841	3.930	ND	4.75	1046.723
MW14-7	20-Mar-14	nc	nc	nc	nc	1050.405	1050.464	3.530	3.589	ND	3.58	1046.875
	6-Jun-14	nc	nc	nc	nc			3.473	3.532	ND	3.55	1046.932
	4-Aug-14	nc	nc	nc	nc			3.491	3.550	ND	3.56	1046.914
	4-Nov-14	nc	nc	nc	nc			DRY	DRY	DRY	3.56	DRY
MW14-8	19-Mar-14	nc	nc	nc	nc	1050.359	1050.442	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN
	6-Jun-14	7.5	7.82	501.4	8.18			2.966	3.049	ND	3.87	1047.393
	4-Aug-14	12.2	7.57	411.9	5.69			3.146	3.229	ND	3.87	1047.213
	5-Nov-14	9.82	7.69	515	7.24			3.338	3.421	ND	3.87	1047.021
MW14-9	20-Mar-14	nc	nc	nc	nc	1053.013	1053.061	DRY	DRY	DRY	3.83	DRY
	6-Jun-14	nc	nc	nc	nc			DRY	DRY	DRY	3.82	DRY
	4-Aug-14	nc	nc	nc	nc			DRY	DRY	DRY	3.81	DRY
	4-Nov-14	nc	nc	nc	nc			DRY	DRY	DRY	3.81	DRY

Notes:

- mbtoc - metres below top of casing
- mbgs - metres below ground surface
- masl - metres above sea level
- NAPL - non-aqueous phase liquid
- DNAPL - dense, non-aqueous phase liquid
- LNAPL - light, non-aqueous phase liquid
- NA - not calculated due to presence of NAPL
- nc - information not collected
- ND - none detected

* - Well elevation data from Jacques Whitford report "Phase II Environmental Site Assessment, CBC Building, 1724 Westmount Blvd NW, Calgary, Alberta" dated July 26, 2006

Table to be read in conjunction with accompanying report.

A denotes deeper well, B denotes shallow well.

** - Approximately 5 mm of NAPL and water in slip cap. Could not differentiate between LNAPL and DNAPL

*** - Thickness of DNAPL could not be measured with interface probe due to high viscosity.

Table 10: Summary of Groundwater BTEX and PAH Results
Canada Creosote Site - North Bow
Supplementary Subsurface Investigation and Vapour Intrusion Assessment

Table with columns for Sample Name, Location Date, Alberta Tier 1 Res/PrKind, Alberta Tier 2 Res/PrKind, and various monitoring wells (MW10-1 to MW10-6). Rows include BTEX (Benzene, Toluene, Ethylbenzene, Xylenes, F1, F2) and PAH (2-Methylnaphthalene, Acenaphthene, Acenaphthylene, Acridine, Anthracene, B[a]P, Benzo[a]anthracene, Benzo[a]pyrene, Benzo[b]fluoranthene, Benzo[c]phenanthrene, Benzo[e]pyrene, Benzo[g,h,i]perylene, Benzo[k]fluoranthene, Chrysene, Dibenz[ah]anthracene, Fluoranthene, Fluorene, Indeno[1,2,3-cd]pyrene, Naphthalene, Perylene, Phenanthrene, Pyrene, Quinoline).

Table with columns for Sample Name, Location Date, Alberta Tier 1 Res/PrKind, Alberta Tier 2 Res/PrKind, and monitoring wells (MW10-7A to MW11-06). Rows include BTEX and PAH (2-Methylnaphthalene, Acenaphthene, Acenaphthylene, Acridine, Anthracene, B[a]P, Benzo[a]anthracene, Benzo[a]pyrene, Benzo[b]fluoranthene, Benzo[c]phenanthrene, Benzo[e]pyrene, Benzo[g,h,i]perylene, Benzo[k]fluoranthene, Chrysene, Dibenz[ah]anthracene, Fluoranthene, Fluorene, Indeno[1,2,3-cd]pyrene, Naphthalene, Perylene, Phenanthrene, Pyrene, Quinoline).

Notes:

All concentrations in mg/L unless otherwise noted.
^ - Alberta Tier 1 Guidelines, Residential Land Use, Coarse-Grained Soils, Basements (ESRD 2014)
NG - No Guideline
NGR - No Guideline Required (calculated value > solubility, or > 1,000,000 mg/L).
NC - not calculated
* - Detection limits raised due to dilution to bring analyte within the calibrated range.
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.
(2) Detection limits raised due to matrix interference.
(3) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.
Bold values indicate exceedance of the lowest guideline.
Values highlighted in yellow exceed the vapour inhalation guideline.
Values highlighted in red exceed the drinking water guideline.
Values exceed both vapour inhalation and drinking water guidelines.
Values italicized- detection limit exceeds lowest guideline.

Table 10: Summary of Groundwater BTEX and PAH Results
Canada Creosote Site - North Bow
Supplementary Subsurface Investigation and Vapour Intrusion Assessment

Table with columns for Sample Name, Location, Date, QA/QC, Alberta Tier 1 Res/Prkind, Alberta Tier 2 Res/Prkind, and various monitoring wells (MW1A-MW14-8). Rows include BTEX (Benzene, Toluene, Ethylbenzene, Xylenes, F1, F2) and PAH (2-Methylnaphthalene, Acenaphthene, Acenaphthylene, Acridine, Anthracene, B(a)P, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(c)phenanthrene, Benzo(e)pyrene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-cd)pyrene, Naphthalene, Perylene, Phenanthrene, Pyrene, Quinoline).

Notes:

All concentrations in mg/L unless otherwise noted.

A - Alberta Tier 1 Guidelines, Residential Land Use, Coarse-Grained Soils, Basements (ESRD 2014)

NG - No Guideline

NGR - No Guideline Required (calculated value > solubility, or > 1,000,000 mg/L).

NC - not calculated

* - Detection limits raised due to dilution to bring analyte within the calibrated range.

(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

(2) Detection limits raised due to matrix interference.

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

Bold values indicate exceedance of the lowest guideline.

Values highlighted in yellow exceed the vapour inhalation guideline.

Values highlighted in red exceed the drinking water guideline.

Values exceed both vapour inhalation and drinking water guidelines.

Values italicized - detection limit exceeds lowest guideline.

Table 11: Summary of Groundwater VOC Results
Canada Creosote Site - North Bow
Supplementary Subsurface Investigation and Vapour Intrusion Assessment

Table with columns for Sample Name Location Date QA/QC, Tier 1 Res/Prknd most stringent of fine and coarse, Alberta Tier 1 Res/Prknd for coarse grained soil Vapour Inhalation Pathway, Alberta Tier 1 Res/Prknd Drinking Water Pathway, and monitoring wells MW10-1, MW10-3A, MW10-6, MW10-7A, MW10-7B, MW10-9B, MW10-16, MW10-18, MW11-01A, MW11-03A, MW11-04A, MW11-06, DUP 1 (MW11-06), MW11-06, MW1A, MW2A, MW2B, MW3A, MW4A, MW4B. Rows list various VOCs like 1,1,1,2-Tetrachloroethane, 1,1,1-Trichloroethane, etc.

Notes:
All concentrations in mg/L unless otherwise noted.
NG - No Guideline

Bold values indicate exceedance of the lowest guideline.
Values highlighted in yellow exceed the vapour inhalation guideline.
Values highlighted in red exceed the drinking water guideline.
Values exceed both vapour inhalation and drinking water guidelines.

Table with columns for Sample Name Location Date QA/QC, Tier 1 Res/Prknd most stringent of fine and coarse, Alberta Tier 1 Res/Prknd for coarse grained soil Vapour Inhalation Pathway, Alberta Tier 1 Res/Prknd Drinking Water Pathway, and monitoring wells MW14-1A, MW14-2, MW14-4A, MW14-4B, MW14-5, MW14-6A, MW14-6B, MW14-7, MW14-8. Rows list various VOCs like 1,1,1,2-Tetrachloroethane, 1,1,1-Trichloroethane, etc.

Notes:
All concentrations in mg/L unless otherwise noted.
NG - No Guideline

Bold values indicate exceedance of the lowest guideline.
Values highlighted in yellow exceed the vapour inhalation guideline.
Values highlighted in red exceed the drinking water guideline.
Values exceed both vapour inhalation and drinking water guidelines.

**Table 13a: Sub-Slab Vapour and Indoor Air Results - Home "A" Broadview Rd. NW
Canada Creosote Site - North Bow
Supplementary Subsurface Investigation and Vapour Intrusion Assessment**

Sampling Date	1st Quarter Results		2nd Quarter Results			3rd Quarter Results			4th Quarter Results			Outdoor Air and Screening Criteria				Residential Sub-Slab Soil Vapour Screening Level (µg/m³)	Residential Indoor Air Screening Level (µg/m³)
	Sample ID	SS1 / 2396	SS1B / 3018 (Duplicate)	SS1 / 2526	IN1 / 14517	IN2 / 7825	SS1 / 1540	IN1 / 271	IN2 / 14524	SS1/ 2504	IN1/ 14146	IN2/ 14531	OD1 / 14271	OD1 / 14891	OD1/ 14520		
Sample Location	Sub-Slab	Sub-Slab	Sub-Slab	Indoor-Air - Basement	Indoor Air - Main Floor	Sub-Slab	Indoor-Air - Basement	Indoor Air - Main Floor	Sub-Slab	Indoor-Air - Basement	Indoor Air - Main Floor	Outdoor Air					
Benzene	1.08	1.14	3.72	0.98	0.67	3.15	2.28	0.61	2.89	4.42	6.46	<0.575	0.4	0.57	0.96	303	3.03
Bromodichloromethane	<0.268	<0.268	<1.3	<0.27	<0.27	<1.3	<0.27	<0.27	<0.27	<0.27	0.3	<0.268	<0.27	<0.27	<0.27	27.0	0.270
1,3-Butadiene	<0.332	<0.332	<1.1	<0.11	<0.11	<1.1	<0.11	<0.11	<0.11	<0.11	<0.11	<0.332	<0.11	<0.11	<0.11	33.3	0.333
Carbon Tetrachloride	<0.315	<0.315	<0.50	0.82	0.82	<1.9	0.87	0.89	<0.31	1.29	1.5	0.540	0.580	0.690	0.700	63.6	3.18
Chloroform	<0.244	<0.244	<0.73	1.05	0.84	<0.73	2.95	0.5	0.28	2.88	5.25	<0.244	<0.24	0.29	<0.24	43.5	0.435
Ethylbenzene	1.44	1.53	<0.87	0.89	1.48	<0.87	1.57	<0.87	<0.87	2.25	2.31	<0.869	<0.87	<0.87	<0.87	19900	1000
Hexachlorobutadiene	<0.427	<0.427	<5.3	<0.43	<0.43	<5.3	<0.43	<0.43	<0.43	<0.43	<0.43	<0.427	<0.43	<0.43	<0.43	45.5	0.455
Naphthalene	3.32	3.51	1.2	1.12	0.59	<1.0	1.84	0.4	3.1	<0.26	0.66	<0.26	0.36	<0.26	<0.26	41.0	3.00
1,1,1,2-Tetrachloroethane	<0.687	<0.687	<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	<0.687	<0.69	<0.69	<0.69	135	1.35
Toluene	5.15	5.40	13.9	6.65	15.00	11.9	7.63	3.89	8.87	13.30	16.20	1.23	3.19	1.82	0.96	75100	3800
Trichloroethylene	<1.61	<1.61	<1.6	<0.27	<0.27	<1.6	<0.27	<0.27	<0.27	<0.27	<0.27	<1.61	<0.27	<0.27	<0.27	12.0	2.00
1,2,3-Trimethylbenzene	<2.46	<2.46	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.46	<2.5	<2.5	<2.5	100	5.00
1,2,4-Trimethylbenzene	7.61	7.84	<0.98	1.89	<0.98	<2.5	4.2	<2.5	<2.5	2.6	2.7	<2.46	<2.5	<2.5	<2.5	140	7.00
Xylene (Total)	9.37	10.1	1.8	3.7	10.1	1.6	4.8	1.8	<1.4	8.1	9.2	<2.61	2.5	<1.4	<1.4	3560	180
Aliphatic >C6-C8	<5.0	<5.0	<5.0	5.8	5.6	<5.0	8.6	6.1	<5.0	12.4	15.4	<5.0	<5.0	<5.0	<5.0	366200	18400
Aliphatic >C8-C10	28.1	34.0	<5.0	15.0	9.8	<5.0	18.5	<5.0	<5.0	21.4	29.2	<5.0	<5.0	<5.0	<5.0	19200	1000
Aliphatic >C10-C12	193	214	68.1	18.6	8.3	80.9	38.6	7.5	40.4	12.9	33.8	<5.0	<5.0	<5.0	<5.0	20000	1000
Aliphatic >C12-C16	298	223	206	5.2	<5.0	178	5.4	<5.0	12.8	<5.0	12.9	<5.0	<5.0	<5.0	<5.0	20000	1000
Aromatic >C8-C10	49.2	52.0	117.0	<5.0	<5.0	85.9	9.0	<5.0	67.2	9.1	8.7	<5.0	<5.0	<5.0	<5.0	3250	200
Aromatic >C10-C12	32.9	33.2	19.6	7.7	<5.0	13.7	16.9	<5.0	16.1	13.9	20.2	<5.0	<5.0	<5.0	<5.0	4000	200
Aromatic >C12-C16	31.0	15.9	32	<5.0	<5.0	29.7	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	4000	200

Notes:
 All units in µg/m3 unless otherwise noted.
 Calculations for Screening Levels will be provided in final report.
Italicized - detection limit exceeds Screening Level Criteria
 Highlighted concentrations exceed the Residential Soil Vapour Screening Criteria

Table 13b: Sub-Slab Vapour and Indoor Air Results - Home "B" Broadview Rd. NW
Canada Creosote Site - North Bow
Supplementary Subsurface Investigation and Vapour Intrusion Assessment

Sample Location	1st Quarter Results				2nd Quarter Results			3rd Quarter Results				3rd Quarter Repeat Results		4th Quarter Results			Outdoor Air and Screening Criteria				Residential Sub Slab Soil Vapour Screening Level (µg/m³)	Residential Indoor Air Screening Level (µg/m3)
	Sample ID	2014/03/13	2014/03/11	2014/03/11	2014/03/11	2014/06/05	2014/06/05	2014/06/05	2014/08/15	2014/08/13	2014/08/13	2014/08/13	2014/10/02	2014/10/02	2014/11/11	2014/11/11	2014/11/11	2014/01/24	2014/06/05	8/6/2014		
Sub-Slab	Indoor Air-Basement	Indoor Air-Basement (Duplicate)	Indoor Air-Main Floor	Sub-Slab	Indoor Air-Basement	Indoor Air-Main Floor	Sub-Slab	Indoor Air-Basement	Indoor Air-Basement (Duplicate)	Indoor Air-Main Floor	Sub-Slab	Sub-Slab (Duplicate)	Sub-Slab	Indoor Air-Basement	Indoor Air-Main Floor	Outdoor Air						
Benzene	11.4	1.39	1.36	1.78	26.3	1.24	1.33	33.7	1.33	3.17	1.33	7.13	11.4	24.1	0.8	0.85	<0.575	0.4	0.57	0.96	303	3.03
Bromodichloromethane	<0.268	<0.268	<0.268	<0.268	<1.3	<0.27	<0.27	<1.3	<0.27	<0.27	<0.27	<0.34	0.69	<0.27	<0.27	<0.27	<0.268	<0.27	<0.27	<0.27	27.0	0.270
1,3-Butadiene	<0.332	<0.332	<0.332	<0.398	<1.1	<0.11	<0.11	<1.1	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.332	<0.11	<0.11	<0.11	33.3	0.333
Carbon Tetrachloride	0.584	0.747	0.781	0.753	0.57	0.61	0.6	<1.9	0.66	0.62	0.67	0.45	0.77	0.52	0.66	0.69	0.540	0.580	0.690	0.700	63.6	3.18
Chloroform	4.46	3.54	3.42	3.89	1.35	3.07	5.28	1.03	2.02	2.02	2.03	1.49	1.66	2.35	2.32	2.38	<0.244	<0.24	0.29	<0.24	43.5	0.435
Ethylbenzene	0.929	<0.869	<0.869	<0.869	<0.87	<0.87	<0.87	3.81	1.04	1.27	0.97	2.43	3.09	<0.87	<0.87	<0.87	<0.869	<0.87	<0.87	<0.87	19900	1000
Hexachlorobutadiene	0.437	<0.427	<0.427	<0.427	<5.3	<0.43	<0.43	<5.3	<0.43	<0.43	<0.43	<0.53	1.42	<0.43	<0.43	<0.43	<0.427	<0.43	<0.43	<0.43	45.5	0.455
Naphthalene	3.7	0.42	0.41	0.33	3.7	1.08	0.84	344	0.72	1.03	1.01	15	15	5.44	<0.26	<0.26	<0.26	0.36	<0.26	<0.26	41.0	3.00
1,1,1,2-Tetrachloroethane	<0.687	<0.687	<0.687	<0.687	<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	<3.4	<3.4	<0.69	<0.69	<0.69	<0.687	<0.69	<0.69	<0.69	135	1.35
Toluene	46.9	3.05	2.97	3.26	39.3	4.82	4.93	44.4	9.96	15.4	8.61	8.39	13.9	22.6	4.12	4.44	1.23	3.19	1.82	0.96	75100	3800
Trichloroethylene	<1.61	<1.61	<1.61	<1.61	<1.6	<0.27	<0.27	<1.6	<0.27	<0.27	<0.27	<0.27	0.44	<0.27	37.4	<0.27	<1.61	<0.27	<0.27	<0.27	12.0	2.00
1,2,3-Trimethylbenzene	<2.46	<2.46	<2.46	<2.46	<2.5	<2.5	<2.5	24.7	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.46	<2.5	<2.5	<2.5	100	5.00
1,2,4-Trimethylbenzene	<2.46	<2.46	<2.46	<2.46	<2.5	<2.5	<2.5	27.3	<2.5	<2.5	<2.5	5	6.3	<2.5	<2.5	<2.5	<2.46	<2.5	<2.5	<2.5	140	7.00
Xylene (Total)	4.44	<2.61	<2.61	<2.61	3.4	2	2.2	22.8	4.2	6.1	3.9	7.2	9.3	3.2	2.4	2.4	<2.61	2.5	<1.4	<1.4	3560	180
Aliphatic >C6-C8	23.9	<5.0	<5.0	7	6.5	8.3	10.1	8.1	11.7	23.4	15	<5.0	5.6	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	366200	18400
Aliphatic >C8-C10	20.4	<5.0	<5.0	<5.0	19.3	6.9	5	13.5	18.6	18	16.3	14	18	<5.0	6.5	11.7	<5.0	<5.0	<5.0	<5.0	19200	1000
Aliphatic >C10-C12	20.5	<5.0	<5.0	<5.0	109	6.2	8.3	56.8	11.4	9.7	10.8	32.8	32.7	24.1	10.6	13.5	<5.0	<5.0	<5.0	<5.0	20000	1000
Aliphatic >C12-C16	<5.0	<5.0	<5.0	<5.0	66.8	<5.0	<5.0	43.2	<5.0	<5.0	<5.0	38.6	14.1	8.3	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	20000	1000
Aromatic >C8-C10	231	<5.0	<5.0	<5.0	216	6.6	8	280	9.8	7.8	7.9	54	70.8	133	<5.0	5.2	<5.0	<5.0	<5.0	<5.0	3250	200
Aromatic >C10-C12	12.1	8.3	8.4	5.7	14.2	5.3	9.4	205	11.2	6	8.9	28.8	30.8	13.5	6.3	8	<5.0	<5.0	<5.0	<5.0	4000	200
Aromatic >C12-C16	<5.0	<5.0	<5.0	<5.0	8.5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	8.9	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	4000	200

Notes:
 All units in µg/m3 unless otherwise noted.
 Calculations for Screening Levels will be provided in final report.
Italicized - detection limit exceeds Screening Level Criteria
 Highlighted concentrations exceed the Residential Soil Vapour Screening Criteria

**Table 13d: Sub-Slab Vapour and Indoor Air Results - Home "E" Broadview Rd. NW
Canada Creosote Site - North Bow
Supplementary Subsurface Investigation and Vapour Intrusion Assessment**

Sampling Date	1st Quarter Results		2nd Quarter Results		3rd Quarter Results		4th Quarter Results		Outdoor Air and Screening Criteria				Residential Sub-Slab Soil Vapour Screening Level (µg/m ³)	Residential Indoor Air Screening Level (µg/m ³)
	Sample ID	IN1 / T2566	IN2 / 14908	1N1 / 7842	1N2 / 320	IN1 / 7835	IN2 / 280	IN1/14251	IN2/14273	OD1 / 14271	OD1 / 14891	OD1/ 14520		
Sample Location	Indoor Air - Crawl Space	Indoor Air - Main Floor	Indoor Air - Crawl Space	Indoor Air - Main Floor	Indoor Air - Crawl Space	Indoor Air - Main Floor	Indoor Air - Crawl Space	Indoor Air - Main Floor	Outdoor Air					
Benzene	<0.575	<0.575	0.23	0.32	0.4	0.6	0.41	0.49	<0.575	0.4	0.57	0.96	303	3.03
Bromodichloromethane	<0.268	<0.268	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.268	<0.27	<0.27	<0.27	27.0	0.270
1,3-Butadiene	<0.332	<0.332	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.332	<0.11	<0.11	<0.11	33.3	0.333
Carbon Tetrachloride	0.567	0.507	0.59	0.65	0.71	0.73	0.71	0.74	0.540	0.580	0.690	0.700	63.6	3.18
Chloroform	<0.244	0.889	0.26	0.82	0.33	0.59	<0.24	0.39	<0.244	<0.24	0.29	<0.24	43.5	0.435
Ethylbenzene	<0.869	<0.869	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87	<0.869	<0.87	<0.87	<0.87	19900	1000
Hexachlorobutadiene	<0.427	<0.427	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.427	<0.43	<0.43	<0.43	45.5	0.455
Naphthalene	<0.26	<0.26	0.35	0.55	0.59	0.44	<0.26	0.35	<0.26	0.36	<0.26	<0.26	41.0	3.00
1,1,1,2-Tetrachloroethane	<0.687	<0.687	<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	<0.687	<0.69	<0.69	<0.69	135	1.35
Toluene	1.25	2.30	30.3	148	9.66	33.3	1.57	3.67	1.23	3.19	1.82	0.96	75100	3800
Trichloroethylene	<1.61	<1.61	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<1.61	<0.27	<0.27	<0.27	12.0	2.00
1,2,3-Trimethylbenzene	<2.46	<2.46	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.46	<2.5	<2.5	<2.5	100	5.00
1,2,4-Trimethylbenzene	<2.46	<2.46	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.46	<2.5	<2.5	<2.5	140	7.00
Xylene (Total)	<2.61	<2.61	<1.7	<1.7	<1.4	<1.4	<1.4	<1.4	<2.61	2.5	<1.4	<1.4	3560	180
Aliphatic >C6-C8	<5.0	<5.0	<5.0	<5.0	<5.0	5.5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	366200	18400
Aliphatic >C8-C10	9.5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	19200	1000
Aliphatic >C10-C12	5.4	9.0	<5.0	<5.0	<5.0	5.4	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	20000	1000
Aliphatic >C12-C16	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	6	<5.0	<5.0	<5.0	<5.0	20000	1000
Aromatic >C8-C10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	3250	200
Aromatic >C10-C12	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	4000	200
Aromatic >C12-C16	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	4000	200

Notes:

All units in µg/m³ unless otherwise noted.

Calculations for Screening Levels will be provided in final report.

Italicized - detection limit exceeds Screening Level Criteria

Highlighted concentrations exceed the Residential Soil Vapour Screening Criteria

**Table 13e: Sub-Slab Vapour and Indoor Air Results - Home "F" Broadview Rd. NW
Canada Creosote Site - North Bow
Supplementary Subsurface Investigation and Vapour Intrusion Assessment**

Sampling Date	1st Quarter Results			2nd Quarter Results			3rd Quarter Results			4th Quarter Results			Outdoor Air and Screening Criteria				Residential Sub Slab Soil Vapour Screening Level (µg/m ³)	Residential Indoor Air Screening Level (µg/m ³)
	2014/02/11	2014/02/12	2014/02/12	2014/06/05	2014/06/10	2014/06/05	8/14/2014	8/13/2014	8/12/2014	2014/11/06	2014/11/06	2014/11/06	2014/01/24	2014/06/05	8/6/2014	2014/11/11		
Sample ID	SS1 / 2564	IN1 / 14146	IN2 / 14244	SS1 / 3008	1N1 / 7849	1N2 / 14273	SS1 / 1161	IN1 / 14917	IN2 / 294	SS1/2389	IN1/309	IN2/ 17189	OD1 / 14271	OD1 / 14891	OD1/ 14520	OD1/17177		
Sample Location	Subslab - Mechanical Room	Indoor Air - Basement Spare Room	Indoor Air - Upstairs Living Room	Subslab - Mechanical Room	Indoor Air - Basement Spare Room	Indoor Air - Upstairs Living Room	Subslab - Mechanical Room	Indoor Air - Basement Spare Room	Indoor Air - Upstairs Living Room	Subslab - Mechanical Room	Indoor Air - Basement Spare Room	Indoor Air - Upstairs Living Room	Outdoor Air					
Benzene	1.58	2	2.02	16.3	0.73	0.34	13.8	1.73	1.59	7.79	1.76	2.36	<0.575	0.4	0.57	0.96	303	3.03
Bromodichloromethane	<0.335	<0.268	<0.268	<1.3	<0.27	<0.27	<1.3	<0.27	<0.27	<0.27	<0.27	<0.27	<0.268	<0.27	<0.27	<0.27	27.0	0.270
1,3-Butadiene	<0.111	<0.553	<0.553	<1.1	<0.11	<0.11	<1.1	<0.11	<0.11	<0.11	<0.11	<0.11	<0.332	<0.11	<0.11	<0.11	33.3	0.333
Carbon Tetrachloride	<0.315	0.638	0.602	<0.50	0.6	0.6	<1.9	0.62	0.66	<0.31	0.73	0.73	0.540	0.580	0.690	0.700	63.6	3.18
Chloroform	1.62	1.95	1.90	<0.73	7.97	0.56	<0.73	4.35	1.87	<0.24	0.71	0.78	<0.244	<0.24	0.29	<0.24	43.5	0.435
Ethylbenzene	1.51	1.15	1.16	<0.87	<0.87	<0.87	<0.87	1.56	1.33	<0.87	1.49	1.31	<0.869	<0.87	<0.87	<0.87	19900	1000
Hexachlorobutadiene	<0.427	<0.427	<0.427	<5.3	<0.43	<0.43	<5.3	0.48	<0.43	<0.43	<0.43	<0.43	<0.427	<0.43	<0.43	<0.43	45.5	0.455
Naphthalene	0.65	0.56	<0.26	2.3	0.77	0.51	<2.6	1.31	0.86	1.41	0.44	0.3	<0.26	0.36	<0.26	<0.26	41.0	3.00
1,1,1,2-Tetrachloroethane	<0.687	<0.687	<0.687	<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	<0.687	<0.69	<0.69	<0.69	135	1.35
Toluene	8.47	9.27	9.83	35.80	3.60	3.03	30.30	10.30	9.78	15.30	8.99	7.28	1.23	3.19	1.82	0.96	75100	3800
Trichloroethylene	<1.61	<1.61	<1.61	<1.6	<0.27	<0.27	<1.6	<0.27	<0.27	<0.27	<0.27	<0.27	<1.61	<0.27	<0.27	<0.27	12.0	2.00
1,2,3-Trimethylbenzene	<2.46	<2.46	<2.46	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.46	<2.5	<2.5	<2.5	100	5.00
1,2,4-Trimethylbenzene	2.47	<2.46	<2.46	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.46	<2.5	<2.5	<2.5	140	7.00
Xylene (Total)	8.48	4.84	5.02	2.2	<2.6	<2.6	31.4	6.3	5.4	<1.4	6	4.9	<2.61	2.5	<1.4	<1.4	3560	180
Aliphatic >C6-C8	14.6	10.7	8.4	5.8	10.6	<5.0	5.9	9	9.6	<5.0	16	8.3	<5.0	<5.0	<5.0	<5.0	366200	18400
Aliphatic >C8-C10	48.6	<5.0	<5.0	12.7	13.9	6.7	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	19200	1000
Aliphatic >C10-C12	78.0	21.8	27.0	72.1	9.9	7.0	39.6	7.9	9.0	37.3	31.6	30.2	<5.0	<5.0	<5.0	<5.0	20000	1000
Aliphatic >C12-C16	74.7	<5.0	<5.0	80	<5.0	<5.0	14	<5.0	<5.0	13.7	6.4	5.5	<5.0	<5.0	<5.0	<5.0	20000	1000
Aromatic >C8-C10	71.8	<5.0	<5.0	187	<5.0	<5.0	170	<5.0	<5.0	116	5.6	<5.0	<5.0	<5.0	<5.0	<5.0	3250	200
Aromatic >C10-C12	17.5	<5.0	<5.0	19	5.3	<5.0	9.5	<5.0	<5.0	13.9	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	4000	200
Aromatic >C12-C16	14.0	<5.0	<5.0	10.5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	4000	200

Notes:

All units in µg/m³ unless otherwise noted.

Calculations for Screening Levels will be provided in final report.

Italicized - detection limit exceeds Screening Level Criteria

Highlighted concentrations exceed the Residential Soil Vapour Screening Criteria



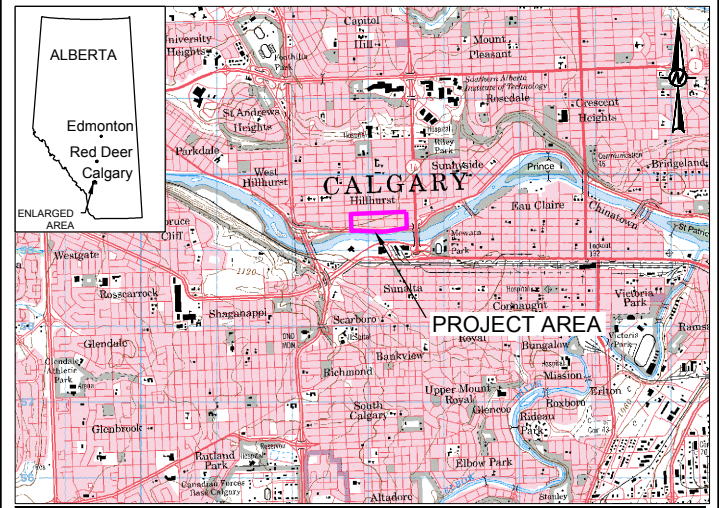
FIGURES

L:\2013\1324131-1324-024\0200\Report\A13132402046000A003.dwg | Layout: Site Loc | Modified: Y:\weng 03/18/2015 10:23 AM | Plotted: E:\weng 03/26/2015



LEGEND

SITE LOCATION



KEY MAP
NOT TO SCALE

REFERENCE(S)
IMAGE OBTAINED FROM GOOGLE EARTH, USED UNDER LICENSE.
IMAGERY DATE: SEPTEMBER 22, 2012. GOOGLE EARTH IMAGE IS NOT TO SCALE.
TOPOGRAPHIC MAPS 830/1 OBTAINED FROM CanMatrix © 2000 HER MAJESTY THE QUEEN IN RIGHT OF CANADA. DEPARTMENT OF NATURAL RESOURCES. ALL RIGHTS RESERVED.
DATUM: NAD 83, PROJECTION: UTM ZONE 11.



PROJECT **NORTH BOW - SUPPLEMENTARY SUBSURFACE INVESTIGATION AND VAPOUR INTRUSION ASSESSMENT**

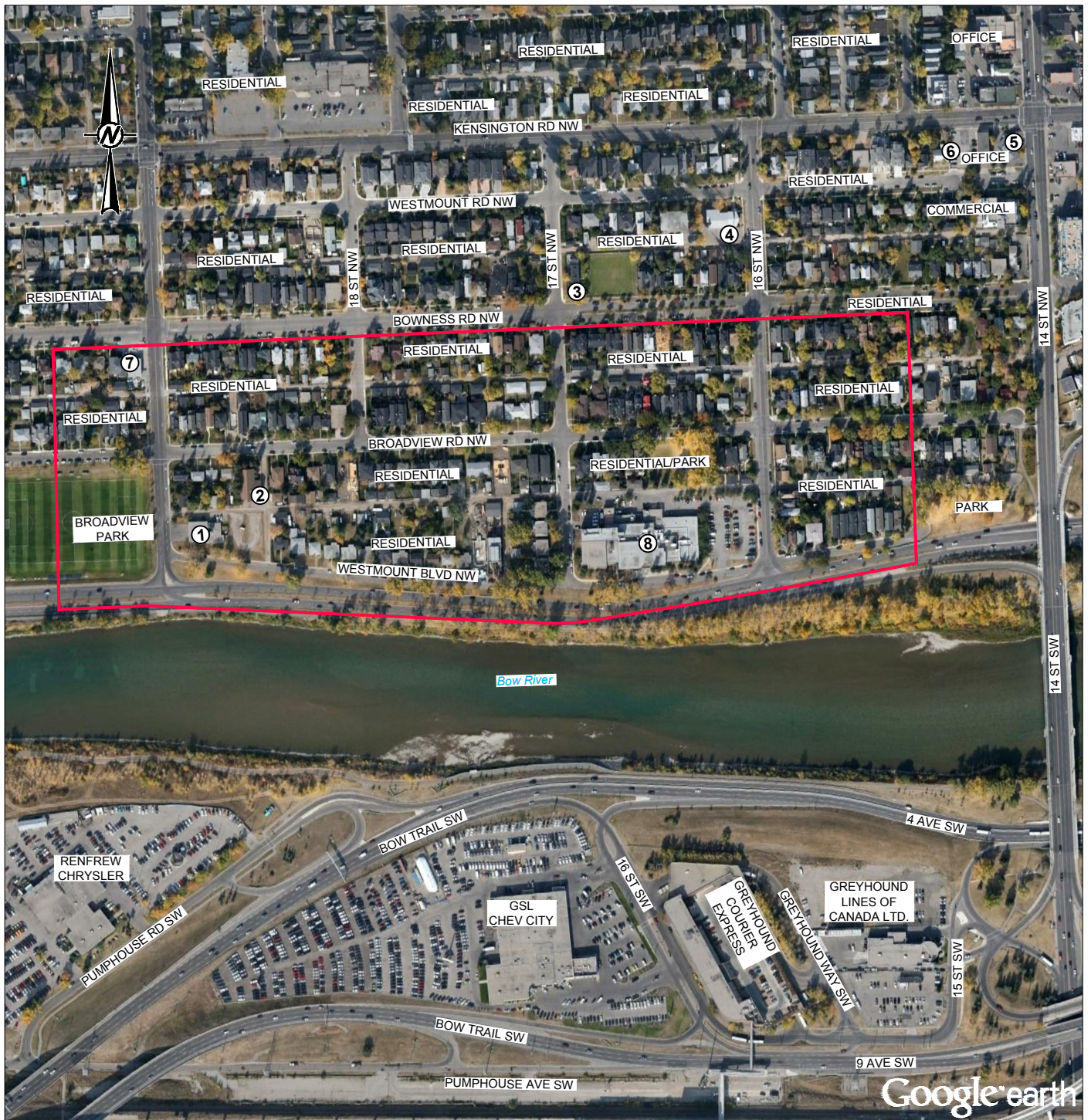
TITLE **SITE LOCATION PLAN**

PROJECT No.	13.1324.0204.6000	FILE No.	13132402046000A003
DESIGN	JMB 2015-02-23	SCALE	AS SHOWN
CADD	YW 2015-03-18		
CHECK	JMB 2015-03-20		
REVIEW	DLS 2015-03-20		



FIGURE:1

Google earth



LEGEND

- SITE LOCATION
- ① EMS/FIRE HALL #6 (4 MWs NOTED)
- ② ST. BONIFACE GERMAN CHURCH
- ③ BOW VALLEY LAWN BOWLING CLUB
- ④ ETHIOPIAN EVANGELICAL CHURCH IN CALGARY
- ⑤ LINDAL CEDAR HOMES (6 MWs NOTED)
- ⑥ MULTI TENANT COMMERCIAL (2 MWs NOTED)
- ⑦ THE POINTE GAS (2 USTs)
- ⑧ CBC BUILDING (10 MWs NOTED)

REFERENCE

IMAGE OBTAINED FROM GOOGLE EARTH. USED UNDER LICENSE.
 IMAGERY DATE: SEPT. 22, 2012. GOOGLE EARTH IMAGE IS NOT TO SCALE.
 DATEUM: NAD83, PROJECTIO: UTM ZONE 11.

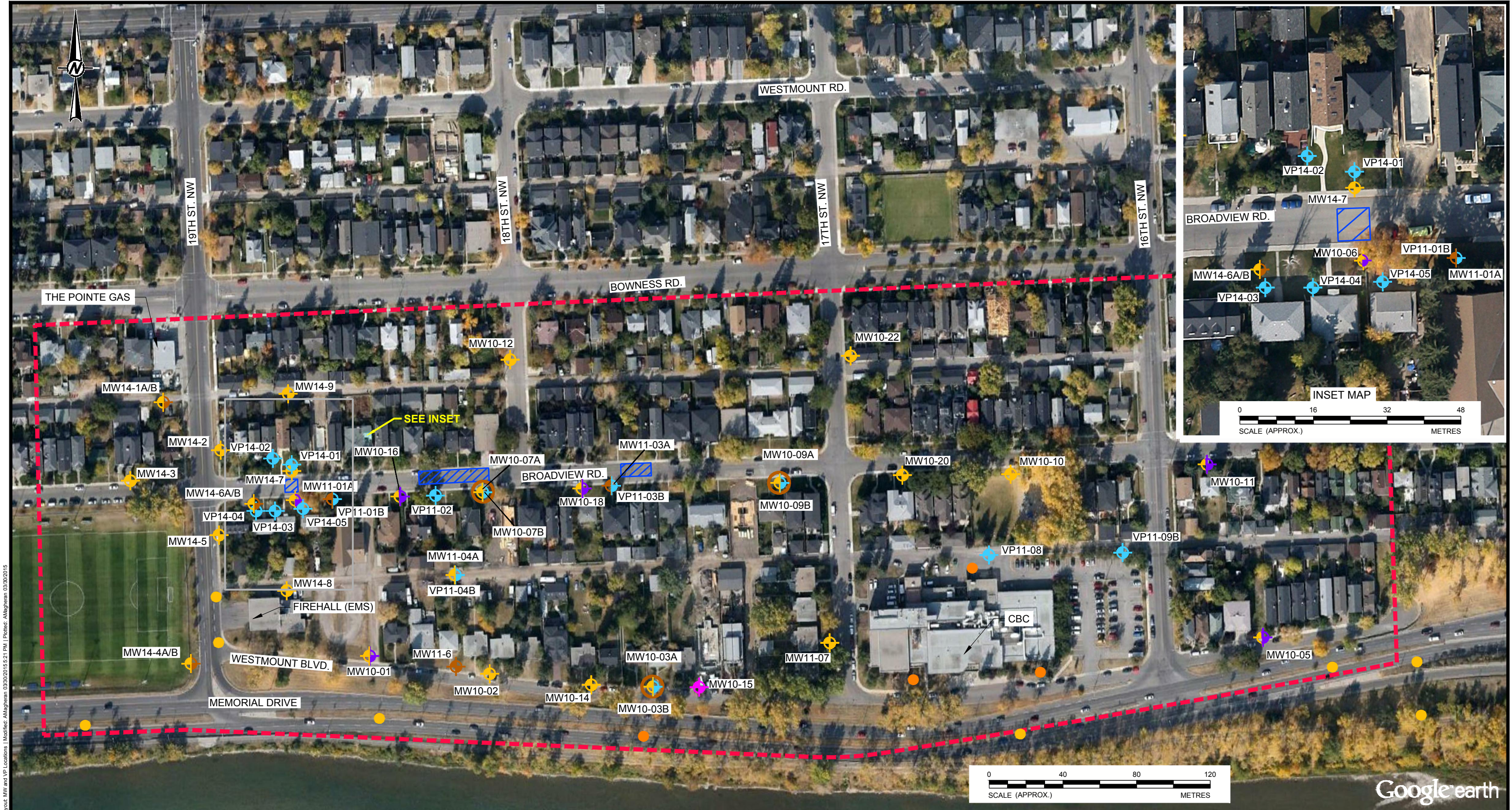


PROJECT		NORTH BOW - SUPPLEMENTARY SUBSURFACE INVESTIGATION AND VAPOUR INTRUSION ASSESSMENT		
TITLE		SITE PLAN		
PROJECT No.	13.1324.0204.6000	FILE No.	13132402046000A002	
DESIGN	JMB	2015-02-23	SCALE	AS SHOWN
CADD	BSW	2015-02-25		
CHECK	JMB	2015-03-20		
REVIEW	DLS	2015-03-20		



FIGURE: 2

L:\2015\1324\13-1324-0204\000\Report\A13132402046000A002.dwg | Layout: Site Plan | Modified: YWang 03/18/2015 10:24 AM | Plotted: BWheeler 03/26/2015



L:\2013\131324\204\6000\Report\A131324\204\6000\001.dwg | Layout: MW and VP Locations | Modified: Almaghean 03/20/2015 5:21 PM | Plotted: Almaghean 03/20/2015

LEGEND		
1929	HOUSE NUMBER	
	DEEP MONITORING WELL LOCATION	HISTORICAL WELL WITH MEASURABLE DNAPL
	MULTI-DEPTH VAPOUR PROBE LOCATION	HISTORICAL WELL WITH DNAPL AND/OR LNAPL SHEEN
	SINGLE-DEPTH VAPOUR PROBE LOCATION	STUDY AREA
	SHALLOW MONITORING WELL LOCATION	HISTORICAL NAPL ZONES
	MONITORING WELL DESTROYED	

REFERENCE
 IMAGE OBTAINED FROM GOOGLE EARTH, USED UNDER LICENSE.
 IMAGERY DATE: SEPT. 22, 2012. GOOGLE EARTH IMAGE IS NOT TO SCALE.

PROJECT		NORTH BOW - SUPPLEMENTARY SUBSURFACE INVESTIGATION AND VAPOUR INTRUSION ASSESSMENT	
TITLE		MONITORING WELL AND VAPOUR PROBE LOCATIONS	
PROJECT No. 13.1324.0204.6000		FILE No. 13132402046000A001	
DESIGN	JMB 2015-02-23	SCALE	AS SHOWN
CADD	YW 2015-03-18		
CHECK	JMB 2015-03-20		
REVIEW	DLS 2015-03-20		
		FIGURE:3	



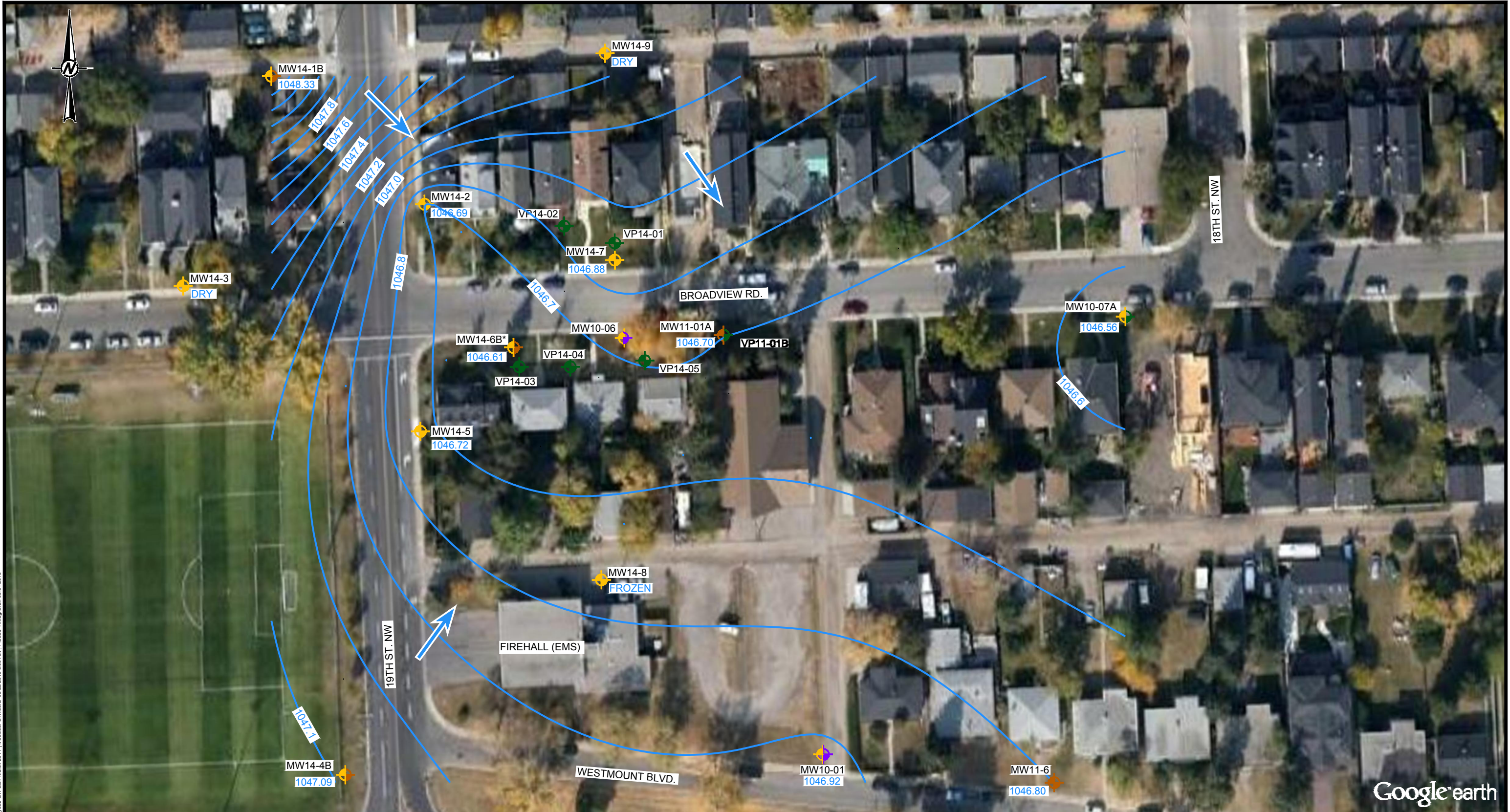
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LEGEND	
1929	HOUSE NUMBER
◆/○	DEEP MONITORING WELL LOCATION
●	HISTORICAL WELL WITH MEASURABLE DNAPL
●	HISTORICAL WELL WITH DNAPL AND/OR LNAPL SHEEN
◆	MONITORING WELL DESTROYED
◆	SHALLOW MONITORING WELL LOCATION
◆	SINGLE-DEPTH VAPOR PROBE LOCATION
---	STUDY AREA
1046.0	BEDROCK CONTOUR (masl)
1047.87	BEDROCK ELEVATION (masl)
▨	HISTORICAL NAPL ZONES

REFERENCE
 IMAGE OBTAINED FROM GOOGLE EARTH, USED UNDER LICENSE.
 IMAGERY DATE: SEPT. 22, 2012. GOOGLE EARTH IMAGE IS NOT TO SCALE.

NOTES
 masl = METRES ABOVE SEA LEVEL

PROJECT		NORTH BOW - SUPPLEMENTARY SUBSURFACE INVESTIGATION AND VAPOUR INTRUSION ASSESSMENT	
TITLE		BEDROCK ELEVATION CONTOURS	
PROJECT No.		13.1324.0204.6000	FILE No.
DESIGN		JMB	2015-02-27
CADD		YW	2015-03-18
CHECK		JMB	2015-03-20
REVIEW		DLS	2015-03-20
SCALE		AS SHOWN	
		FIGURE:4	



L:\3013\1324131-1324-024\0246000\004.dwg | Layout: GW Elev. March 2014 | Modified: B:\wheeler\03/26/2015 8:09 AM | Plotter: AMTgraphics 03/31/2015

LEGEND

- 1929 HOUSE NUMBER
- DEEP MONITORING WELL LOCATION
- MULTI-DEPTH VAPOUR PROBE LOCATION
- SHALLOW MONITORING WELL LOCATION
- SINGLE -DEPTH VAPOUR PROBE LOCATION
- STUDY AREA
- GROUNDWATER**
- 1047.09 GROUNDWATER ELEVATION (masl)
- APPROXIMATE DIRECTION OF GROUNDWATER FLOW
- 1047.8 GROUNDWATER ELEVATION (masl)

REFERENCE

IMAGE OBTAINED FROM GOOGLE EARTH, USED UNDER LICENSE.
 IMAGERY DATE: SEPT. 22, 2012. GOOGLE EARTH IMAGE IS NOT TO SCALE.

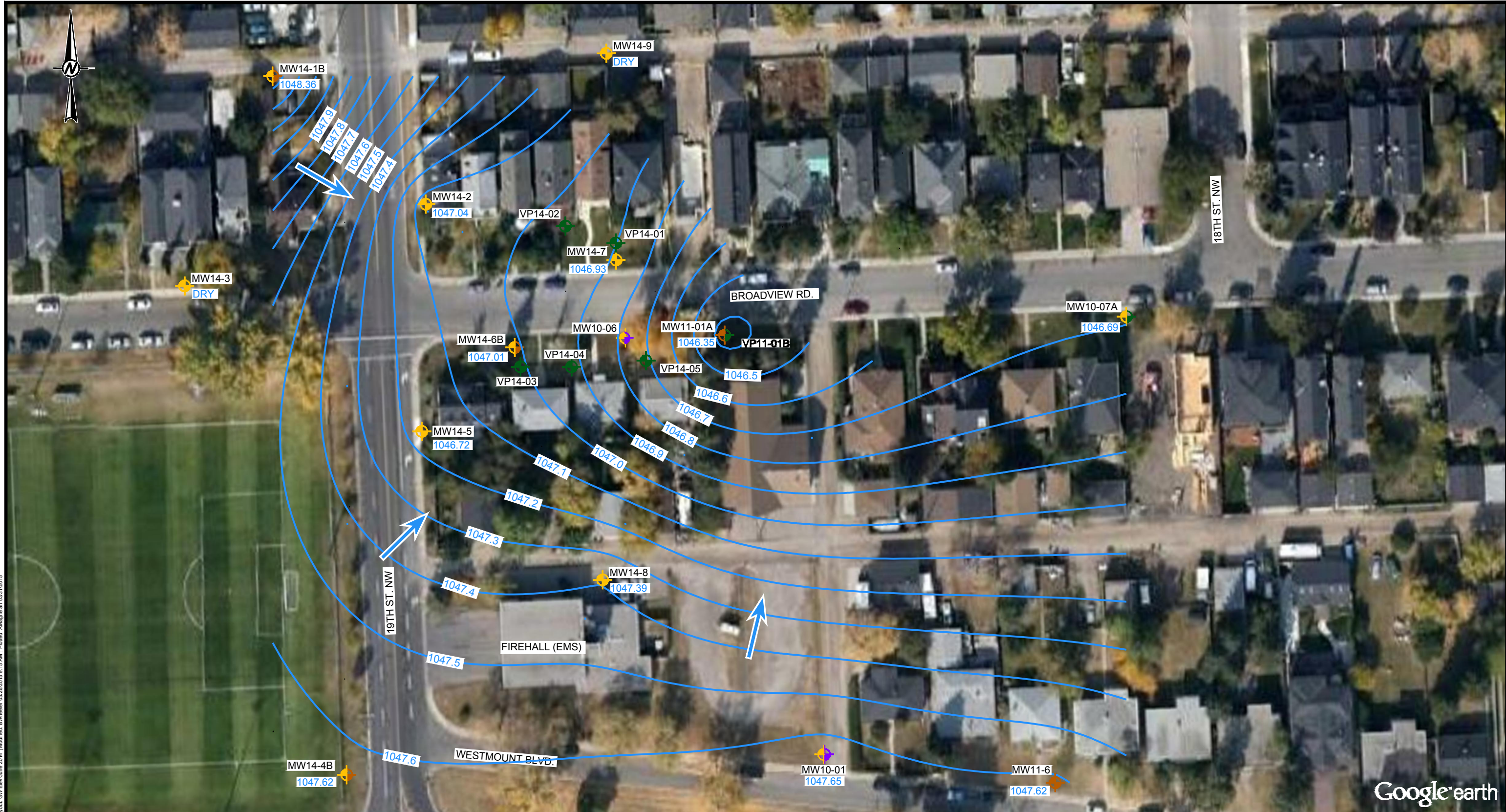
NOTES

masl = METRES ABOVE SEA LEVEL
 DNAPL = DENSE, NON-AQUAEUS PHASE LIQUID
 * MAY NOT BE REPRESENTATIVE OF STATIC CONDITION



PROJECT		NORTH BOW - SUPPLEMENTARY SUBSURFACE INVESTIGATION AND VAPOUR INTRUSION ASSESSMENT	
TITLE		SHALLOW GROUNDWATER ELEVATIONS AND FLOW DIRECTION - MARCH 2014	
PROJECT No.	13.1324.0204.6000	FILE No.	13132402046000A004
DESIGN	JMB 2015-02-25	SCALE	AS SHOWN
CADD	YW 2015-03-18	FIGURE:5	
CHECK	JMB 2015-03-20		
REVIEW	DLS 2015-03-20		





L:\2013\1324131-1324-024\024\024\024.dwg | Layout: GW Elev - June 2014 | Modified: 03/28/2015 9:15 AM | Plotted: Almagueran 03/31/2015

LEGEND

- | | | | |
|------|-------------------------------------|---------|---|
| 1929 | HOUSE NUMBER | --- | STUDY AREA |
| | DEEP MONITORING WELL LOCATION | 1047.65 | GROUNDWATER ELEVATION (masl) |
| | MULTI-DEPTH VAPOUR PROBE LOCATION | | APPROXIMATE DIRECTION OF GROUNDWATER FLOW |
| | SHALLOW MONITORING WELL LOCATION | | GROUNDWATER ELEVATION (masl) |
| | SINGLE -DEPTH VAPOUR PROBE LOCATION | | |

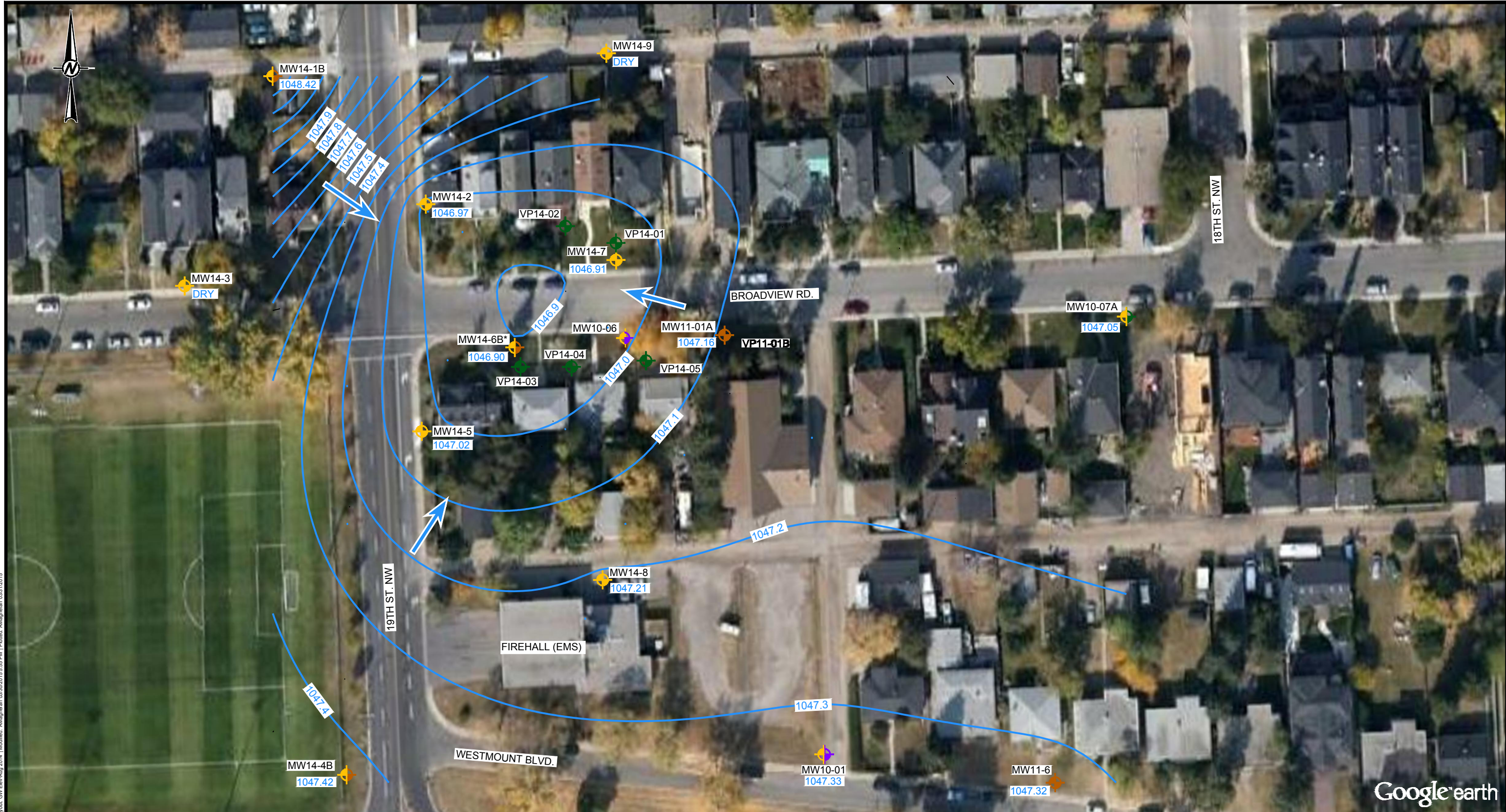
REFERENCE
 IMAGE OBTAINED FROM GOOGLE EARTH, USED UNDER LICENSE.
 IMAGERY DATE: SEPT. 22, 2012. GOOGLE EARTH IMAGE IS NOT TO SCALE.

NOTES
 masl = METRES ABOVE SEA LEVEL
 DNAPL = DENSE, NON-AQUAEUOUS PHASE LIQUID
 * MAY NOT BE REPRESENTATIVE OF STATIC CONDITION



PROJECT		NORTH BOW - SUPPLEMENTARY SUBSURFACE INVESTIGATION AND VAPOUR INTRUSION ASSESSMENT	
TITLE		SHALLOW GROUNDWATER ELEVATIONS AND FLOW DIRECTION - JUNE 2014	
PROJECT No.	13.1324.0204.6000	FILE No.	13132402046000A006
DESIGN	JMB 2015-03-03	SCALE	AS SHOWN
CADD	YW 2015-03-18		
CHECK	JMB 2015-03-20		
REVIEW	DLS 2015-03-20		

FIGURE:6



L:\3013\1324131-1324-024\0246000A007.dwg | Layout: GW Elev-Aug 2014 | Modified: Almaghan (2015-03-18 5:55 PM) | Plotted: Almaghan (2015-03-18 5:55 PM)

LEGEND

- 1929 HOUSE NUMBER
- DEEP MONITORING WELL LOCATION
- MULTI-DEPTH VAPOUR PROBE LOCATION
- SHALLOW MONITORING WELL LOCATION
- SINGLE -DEPTH VAPOUR PROBE LOCATION
- STUDY AREA
- GROUNDWATER**
- 1047.42 GROUNDWATER ELEVATION (masl)
- APPROXIMATE DIRECTION OF GROUNDWATER FLOW
- 1047.4 GROUNDWATER ELEVATION (masl)

REFERENCE

IMAGE OBTAINED FROM GOOGLE EARTH, USED UNDER LICENSE.
IMAGERY DATE: SEPT. 22, 2012. GOOGLE EARTH IMAGE IS NOT TO SCALE.

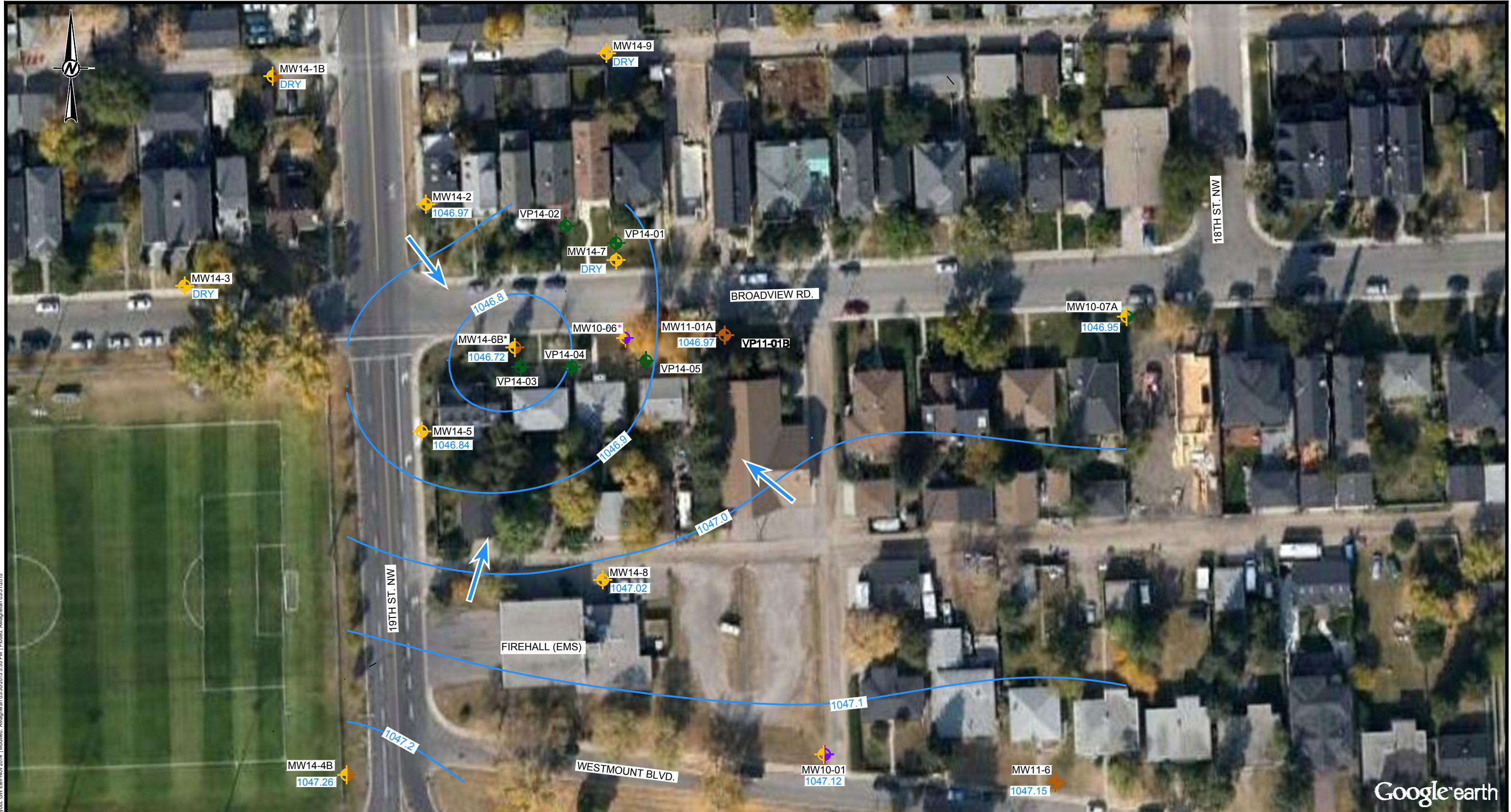
NOTES

masl = METRES ABOVE SEA LEVEL
DNAPL = DENSE, NON-AQUAEUS PHASE LIQUID
* MAY NOT BE REPRESENTATIVE OF STATIC CONDITION



PROJECT		NORTH BOW - SUPPLEMENTARY SUBSURFACE INVESTIGATION AND VAPOUR INTRUSION ASSESSMENT	
TITLE		SHALLOW GROUNDWATER ELEVATIONS AND FLOW DIRECTION - AUGUST 2014	
PROJECT No.	13.1324.0204	FILE No.	13132402046000A007
DESIGN	JMB 2015-03-03	SCALE	AS SHOWN
CADD	YW 2015-03-18		
CHECK	JMB 2015-03-20		
REVIEW	DLS 2015-03-20		

FIGURE:7



L:\3013\1324\131324-024\0200\Report\13132402046000A008.dwg | Layout: GW Elev-Nov-2014 | Modified: Almaghan (10/30/2015 5:55 PM) | Plotted: Almaghan (03/31/2015)

LEGEND

- 1929 HOUSE NUMBER
- DEEP MONITORING WELL LOCATION
- MULTI-DEPTH VAPOUR PROBE LOCATION
- SHALLOW MONITORING WELL LOCATION
- SINGLE -DEPTH VAPOUR PROBE LOCATION
- STUDY AREA
- MONITORING WELL CONTAINED DNAPL
- GROUNDWATER
- 1047.26 GROUNDWATER ELEVATION (masl)
- APPROXIMATE DIRECTION OF GROUNDWATER FLOW
- 1047.17 GROUNDWATER ELEVATION (masl)

REFERENCE

IMAGE OBTAINED FROM GOOGLE EARTH, USED UNDER LICENSE.
IMAGERY DATE: SEPT. 22, 2012. GOOGLE EARTH IMAGE IS NOT TO SCALE.

NOTES

masl = METRES ABOVE SEA LEVEL
DNAPL = DENSE, NON-AQUAEUS PHASE LIQUID
* MAY NOT BE REPRESENTATIVE OF STATIC CONDITION



PROJECT		NORTH BOW - SUPPLEMENTARY SUBSURFACE INVESTIGATION AND VAPOUR INTRUSION ASSESSMENT	
TITLE		SHALLOW GROUNDWATER ELEVATIONS AND FLOW DIRECTION - NOVEMBER 2014	
PROJECT No.	13.1324.0204	FILE No.	13132402046000A008
DESIGN	JMB 2015-03-03	SCALE	AS SHOWN
CADD	YW 2015-03-18		
CHECK	JMB 2015-03-20		
REVIEW	DLS 2015-03-20		
		FIGURE:8	



APPENDIX A

Canister Clean Certification

Your Project #: 13-1324-0204
 Site#: MEDIA PREP

Attention:Julie Burghardt

Golder Associates Ltd
 102, 2535-3rd Ave SE
 Calgary, AB
 CANADA T2A 7W5

Report Date: 2013/12/30

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B3M0381

Received: 2013/12/20, 12:59

Sample Matrix: Air Sampling Media
 # Samples Received: 28

Analyses	Date		Laboratory Method	Reference
	Quantity	Extracted		
BTEX Fractionation in Air (TO-15mod)	1	N/A	2013/12/03 BRL SOP-00304	EPA TO-15mod
BTEX Fractionation in Air (TO-15mod)	3	N/A	2013/12/04 BRL SOP-00304	EPA TO-15mod
BTEX Fractionation in Air (TO-15mod)	1	N/A	2013/12/05 BRL SOP-00304	EPA TO-15mod
BTEX Fractionation in Air (TO-15mod)	2	N/A	2013/12/06 BRL SOP-00304	EPA TO-15mod
BTEX Fractionation in Air (TO-15mod)	1	N/A	2013/12/09 BRL SOP-00304	EPA TO-15mod
BTEX Fractionation in Air (TO-15mod)	3	N/A	2013/12/11 BRL SOP-00304	EPA TO-15mod
BTEX Fractionation in Air (TO-15mod)	2	N/A	2013/12/13 BRL SOP-00304	EPA TO-15mod
BTEX Fractionation in Air (TO-15mod)	1	N/A	2013/12/16 BRL SOP-00304	EPA TO-15mod
Volatile Organics in Air (TO-15) (1)	1	N/A	2013/11/28 BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	1	N/A	2013/12/02 BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	1	N/A	2013/12/03 BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	5	N/A	2013/12/04 BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	2	N/A	2013/12/05 BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	2	N/A	2013/12/06 BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	1	N/A	2013/12/09 BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	1	N/A	2013/12/10 BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	4	N/A	2013/12/11 BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	2	N/A	2013/12/12 BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	3	N/A	2013/12/13 BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	2	N/A	2013/12/16 BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	1	N/A	2013/12/17 BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	1	N/A	2013/12/18 BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	1	N/A	2013/12/23 BRL SOP-00304	EPA TO-15

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

(1) Air sampling canisters have been cleaned in accordance with U.S. EPA Method TO14A. At the end of the cleaning, evacuation, and pressurization cycles, one canister was selected and was pressurized with Zero Air. This canister was then analyzed via TO14A on a GC/MS. The canister must have been found to contain <0.2 ppbv concentration of all target analytes in order for the batch to have been considered clean. Each canister also underwent a leak check prior to shipment.

Please Note: SUMMA® canister samples will be retained by Maxxam for a period of 5 calendar days or as contractually agreed from the date of this report, after which time they will be cleaned for reuse. If you require a longer sample storage period, please contact your service representative.

Your Project #: 13-1324-0204
Site#: MEDIA PREP

Attention:Julie Burghardt

Golder Associates Ltd
102, 2535-3rd Ave SE
Calgary, AB
CANADA T2A 7W5

Report Date: 2013/12/30

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B3M0381

Received: 2013/12/20, 12:59

Encryption Key



Marinela Sim

30 Dec 2013 17:08:47 -05:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Theresa Stephenson, Project Manager

Email: TStephenson@maxxam.ca

Phone# (905)817-5763

=====
This report has been generated and distributed using a secure automated process.

Maxxam 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.

Maxxam Job #: B3M0381
 Report Date: 2013/12/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		UJ3050	UJ3051		UJ3052		
Sampling Date		2013/12/20 13:28	2013/12/20 13:28		2013/12/20 13:28		
	Units	1.4L SUMMA # 1382	1.4L SUMMA #2 2564	QC Batch	1.4L SUMMA #3 1530	RDL	QC Batch
Volatile Organics							
1,3-Butadiene	ppbv	<0.50	<0.50	3468709	<0.50	0.50	3468632
Chloroform	ppbv	<0.15	<0.15	3468709	<0.15	0.15	3468632
Carbon Tetrachloride	ppbv	<0.30	<0.30	3468709	<0.30	0.30	3468632
Bromodichloromethane	ppbv	<0.20	<0.20	3468709	<0.20	0.20	3468632
Trichloroethylene	ppbv	<0.30	<0.30	3468709	<0.30	0.30	3468632
Benzene	ppbv	<0.18	<0.18	3468709	<0.18	0.18	3468632
Toluene	ppbv	<0.20	<0.20	3468709	<0.20	0.20	3468632
Ethylbenzene	ppbv	<0.20	<0.20	3468709	<0.20	0.20	3468632
p+m-Xylene	ppbv	<0.37	<0.37	3468709	<0.37	0.37	3468632
o-Xylene	ppbv	<0.20	<0.20	3468709	<0.20	0.20	3468632
1,3,5-Trimethylbenzene	ppbv	<0.50	<0.50	3468709	<0.50	0.50	3468632
1,2,4-Trimethylbenzene	ppbv	<0.50	<0.50	3468709	<0.50	0.50	3468632
Hexachlorobutadiene	ppbv	<3.0	<3.0	3468709	<3.0	3.0	3468632
Naphthalene	ppbv	<2.0	<2.0	3468709	<2.0	2.0	3468632
Xylene (Total)	ppbv	<0.60	<0.60	3468709	<0.60	0.60	3468632
1,1,1,2-Tetrachloroethane	ppbv	<0.50	<0.50	3468709	<0.50	0.50	3468632
Surrogate Recovery (%)							
Bromochloromethane	%	86	81	3468709	96		3468632
D5-Chlorobenzene	%	80	76	3468709	93		3468632
Difluorobenzene	%	87	82	3468709	98		3468632
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							

Maxxam Job #: B3M0381
 Report Date: 2013/12/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		UJ3053		UJ3054		UJ3055		
Sampling Date		2013/12/20 13:28		2013/12/20 13:28		2013/12/20 13:28		
	Units	1.4L SUMMA #4 421	QC Batch	1.4L SUMMA #5 1387	QC Batch	1.4L SUMMA #6 3017	RDL	QC Batch
Volatile Organics								
1,3-Butadiene	ppbv	<0.50	3468904	<0.50	3468934	<0.50	0.50	3468557
Chloroform	ppbv	<0.15	3468904	<0.15	3468934	<0.15	0.15	3468557
Carbon Tetrachloride	ppbv	<0.30	3468904	<0.30	3468934	<0.30	0.30	3468557
Bromodichloromethane	ppbv	<0.20	3468904	<0.20	3468934	<0.20	0.20	3468557
Trichloroethylene	ppbv	<0.30	3468904	<0.30	3468934	<0.30	0.30	3468557
Benzene	ppbv	<0.18	3468904	<0.18	3468934	<0.18	0.18	3468557
Toluene	ppbv	<0.20	3468904	<0.20	3468934	<0.20	0.20	3468557
Ethylbenzene	ppbv	<0.20	3468904	<0.20	3468934	<0.20	0.20	3468557
p+m-Xylene	ppbv	<0.37	3468904	<0.37	3468934	<0.37	0.37	3468557
o-Xylene	ppbv	<0.20	3468904	<0.20	3468934	<0.20	0.20	3468557
1,3,5-Trimethylbenzene	ppbv	<0.50	3468904	<0.50	3468934	<0.50	0.50	3468557
1,2,4-Trimethylbenzene	ppbv	<0.50	3468904	<0.50	3468934	<0.50	0.50	3468557
Hexachlorobutadiene	ppbv	<3.0	3468904	<3.0	3468934	<3.0	3.0	3468557
Naphthalene	ppbv	<2.0	3468904	<2.0	3468934	<2.0	2.0	3468557
Xylene (Total)	ppbv	<0.60	3468904	<0.60	3468934	<0.60	0.60	3468557
1,1,1,2-Tetrachloroethane	ppbv	<0.50	3468904	<0.50	3468934	<0.50	0.50	3468557
Surrogate Recovery (%)								
Bromochloromethane	%	81	3468904	83	3468934	91		3468557
D5-Chlorobenzene	%	76	3468904	76	3468934	87		3468557
Difluorobenzene	%	83	3468904	83	3468934	93		3468557
RDL = Reportable Detection Limit QC Batch = Quality Control Batch								

Maxxam Job #: B3M0381
 Report Date: 2013/12/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		UJ3056	UJ3057		UJ3058		
Sampling Date		2013/12/20 13:28	2013/12/20 13:28		2013/12/20 13:28		
	Units	1.4L SUMMA #7 1356	1.4L SUMMA #8 2490	QC Batch	1.4L SUMMA #9 2470	RDL	QC Batch
Volatile Organics							
1,3-Butadiene	ppbv	<0.50	<0.50	3468944	<0.50	0.50	3468890
Chloroform	ppbv	<0.15	<0.15	3468944	<0.15	0.15	3468890
Carbon Tetrachloride	ppbv	<0.30	<0.30	3468944	<0.30	0.30	3468890
Bromodichloromethane	ppbv	<0.20	<0.20	3468944	<0.20	0.20	3468890
Trichloroethylene	ppbv	<0.30	<0.30	3468944	<0.30	0.30	3468890
Benzene	ppbv	<0.18	<0.18	3468944	<0.18	0.18	3468890
Toluene	ppbv	<0.20	<0.20	3468944	<0.20	0.20	3468890
Ethylbenzene	ppbv	<0.20	<0.20	3468944	<0.20	0.20	3468890
p+m-Xylene	ppbv	<0.37	<0.37	3468944	<0.37	0.37	3468890
o-Xylene	ppbv	<0.20	<0.20	3468944	<0.20	0.20	3468890
1,3,5-Trimethylbenzene	ppbv	<0.50	<0.50	3468944	<0.50	0.50	3468890
1,2,4-Trimethylbenzene	ppbv	<0.50	<0.50	3468944	<0.50	0.50	3468890
Hexachlorobutadiene	ppbv	<3.0	<3.0	3468944	<3.0	3.0	3468890
Naphthalene	ppbv	<2.0	<2.0	3468944	<2.0	2.0	3468890
Xylene (Total)	ppbv	<0.60	<0.60	3468944	<0.60	0.60	3468890
1,1,1,2-Tetrachloroethane	ppbv	<0.50	<0.50	3468944	<0.50	0.50	3468890
Surrogate Recovery (%)							
Bromochloromethane	%	77	79	3468944	84		3468890
D5-Chlorobenzene	%	69	70	3468944	80		3468890
Difluorobenzene	%	77	79	3468944	85		3468890
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B3M0381
 Report Date: 2013/12/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		UJ3059		UJ3060		UJ3061	UJ3062		
Sampling Date		2013/12/20 13:28		2013/12/20 13:28		2013/12/20 13:28	2013/12/20 13:28		
	Units	1.4L SUMMA #10 2519	QC Batch	1.4L SUMMA #11 2546	QC Batch	1.4L SUMMA #12 2396	1.4L SUMMA #13 3018	RDL	QC Batch
Volatile Organics									
1,3-Butadiene	ppbv	<0.50	3468632	<0.50	3468725	<0.50	<0.50	0.50	3468968
Chloroform	ppbv	<0.15	3468632	<0.15	3468725	<0.15	<0.15	0.15	3468968
Carbon Tetrachloride	ppbv	<0.30	3468632	<0.30	3468725	<0.30	<0.30	0.30	3468968
Bromodichloromethane	ppbv	<0.20	3468632	<0.20	3468725	<0.20	<0.20	0.20	3468968
Trichloroethylene	ppbv	<0.30	3468632	<0.30	3468725	<0.30	<0.30	0.30	3468968
Benzene	ppbv	<0.18	3468632	<0.18	3468725	<0.18	<0.18	0.18	3468968
Toluene	ppbv	<0.20	3468632	<0.20	3468725	<0.20	<0.20	0.20	3468968
Ethylbenzene	ppbv	<0.20	3468632	<0.20	3468725	<0.20	<0.20	0.20	3468968
p+m-Xylene	ppbv	<0.37	3468632	<0.37	3468725	<0.37	<0.37	0.37	3468968
o-Xylene	ppbv	<0.20	3468632	<0.20	3468725	<0.20	<0.20	0.20	3468968
1,3,5-Trimethylbenzene	ppbv	<0.50	3468632	<0.50	3468725	<0.50	<0.50	0.50	3468968
1,2,4-Trimethylbenzene	ppbv	<0.50	3468632	<0.50	3468725	<0.50	<0.50	0.50	3468968
Hexachlorobutadiene	ppbv	<3.0	3468632	<3.0	3468725	<3.0	<3.0	3.0	3468968
Naphthalene	ppbv	<2.0	3468632	<2.0	3468725	<2.0	<2.0	2.0	3468968
Xylene (Total)	ppbv	<0.60	3468632	<0.60	3468725	<0.60	<0.60	0.60	3468968
1,1,1,2-Tetrachloroethane	ppbv	<0.50	3468632	<0.50	3468725	<0.50	<0.50	0.50	3468968
Surrogate Recovery (%)									
Bromochloromethane	%	88	3468632	97	3468725	75	76		3468968
D5-Chlorobenzene	%	87	3468632	102	3468725	71	71		3468968
Difluorobenzene	%	89	3468632	99	3468725	76	77		3468968
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									

Maxxam Job #: B3M0381
 Report Date: 2013/12/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		UJ3284		UJ3285		UJ3286		UJ3287			
Sampling Date		2013/12/20 13:28		2013/12/20 13:28		2013/12/20 13:28		2013/12/20 13:28			
	Units	6L SUMMA #1	QC Batch	6L SUMMA #2	QC Batch	6L SUMMA #3	QC Batch	6L SUMMA #4	RDL	QC Batch	
Volatile Organics											
1,3-Butadiene	ppbv	<0.50	3469027	<0.50	3469042	<0.50	3469074	<0.50	0.50	3469042	
Chloroform	ppbv	<0.15	3469027	<0.15	3469042	<0.15	3469074	<0.15	0.15	3469042	
Carbon Tetrachloride	ppbv	<0.30	3469027	<0.30	3469042	<0.30	3469074	<0.30	0.30	3469042	
Bromodichloromethane	ppbv	<0.20	3469027	<0.20	3469042	<0.20	3469074	<0.20	0.20	3469042	
Trichloroethylene	ppbv	<0.30	3469027	<0.30	3469042	<0.30	3469074	<0.30	0.30	3469042	
Benzene	ppbv	<0.18	3469027	<0.18	3469042	<0.18	3469074	<0.18	0.18	3469042	
Toluene	ppbv	<0.20	3469027	<0.20	3469042	<0.20	3469074	<0.20	0.20	3469042	
Ethylbenzene	ppbv	<0.20	3469027	<0.20	3469042	<0.20	3469074	<0.20	0.20	3469042	
p+m-Xylene	ppbv	<0.37	3469027	<0.37	3469042	<0.37	3469074	<0.37	0.37	3469042	
o-Xylene	ppbv	<0.20	3469027	<0.20	3469042	<0.20	3469074	<0.20	0.20	3469042	
1,3,5-Trimethylbenzene	ppbv	<0.50	3469027	<0.50	3469042	<0.50	3469074	<0.50	0.50	3469042	
1,2,4-Trimethylbenzene	ppbv	<0.50	3469027	<0.50	3469042	<0.50	3469074	<0.50	0.50	3469042	
Hexachlorobutadiene	ppbv	<3.0	3469027	<3.0	3469042	<3.0	3469074	<3.0	3.0	3469042	
Naphthalene	ppbv	<2.0	3469027	<2.0	3469042	<2.0	3469074	<2.0	2.0	3469042	
Xylene (Total)	ppbv	<0.60	3469027	<0.60	3469042	<0.60	3469074	<0.60	0.60	3469042	
1,1,1,2-Tetrachloroethane	ppbv	<0.50	3469027	<0.50	3469042	<0.50	3469074	<0.50	0.50	3469042	
Surrogate Recovery (%)											
Bromochloromethane	%	92	3469027	77	3469042	98	3469074	77		3469042	
D5-Chlorobenzene	%	95	3469027	70	3469042	99	3469074	70		3469042	
Difluorobenzene	%	94	3469027	77	3469042	102	3469074	77		3469042	
RDL = Reportable Detection Limit											
QC Batch = Quality Control Batch											

Maxxam Job #: B3M0381
 Report Date: 2013/12/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		UJ3288		UJ3289		UJ3290		UJ3291		
Sampling Date		2013/12/20 13:28		2013/12/20 13:28		2013/12/20 13:28		2013/12/20 13:28		
	Units	6L SUMMA #5	QC Batch	6L SUMMA #6	QC Batch	6L SUMMA #7	QC Batch	6L SUMMA #8	RDL	QC Batch
Volatile Organics										
1,3-Butadiene	ppbv	<0.50	3469066	<0.50	3469039	<0.50	3469055	<0.50	0.50	3469035
Chloroform	ppbv	<0.15	3469066	<0.15	3469039	<0.15	3469055	<0.15	0.15	3469035
Carbon Tetrachloride	ppbv	<0.30	3469066	<0.30	3469039	<0.30	3469055	<0.30	0.30	3469035
Bromodichloromethane	ppbv	<0.20	3469066	<0.20	3469039	<0.20	3469055	<0.20	0.20	3469035
Trichloroethylene	ppbv	<0.30	3469066	<0.30	3469039	<0.30	3469055	<0.30	0.30	3469035
Benzene	ppbv	<0.18	3469066	<0.18	3469039	<0.18	3469055	<0.18	0.18	3469035
Toluene	ppbv	<0.20	3469066	<0.20	3469039	<0.20	3469055	<0.20	0.20	3469035
Ethylbenzene	ppbv	<0.20	3469066	<0.20	3469039	<0.20	3469055	<0.20	0.20	3469035
p+m-Xylene	ppbv	<0.37	3469066	<0.37	3469039	<0.37	3469055	<0.37	0.37	3469035
o-Xylene	ppbv	<0.20	3469066	<0.20	3469039	<0.20	3469055	<0.20	0.20	3469035
1,3,5-Trimethylbenzene	ppbv	<0.50	3469066	<0.50	3469039	<0.50	3469055	<0.50	0.50	3469035
1,2,4-Trimethylbenzene	ppbv	<0.50	3469066	<0.50	3469039	<0.50	3469055	<0.50	0.50	3469035
Hexachlorobutadiene	ppbv	<3.0	3469066	<3.0	3469039	<3.0	3469055	<3.0	3.0	3469035
Naphthalene	ppbv	<2.0	3469066	<2.0	3469039	<2.0	3469055	<2.0	2.0	3469035
Xylene (Total)	ppbv	<0.60	3469066	<0.60	3469039	<0.60	3469055	<0.60	0.60	3469035
1,1,1,2-Tetrachloroethane	ppbv	<0.50	3469066	<0.50	3469039	<0.50	3469055	<0.50	0.50	3469035
Surrogate Recovery (%)										
Bromochloromethane	%	95	3469066	75	3469039	90	3469055	78		3469035
D5-Chlorobenzene	%	93	3469066	67	3469039	84	3469055	77		3469035
Difluorobenzene	%	99	3469066	75	3469039	90	3469055	80		3469035
RDL = Reportable Detection Limit										
QC Batch = Quality Control Batch										

Maxxam Job #: B3M0381
 Report Date: 2013/12/30

 Golder Associates Ltd
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VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		UJ3292		UJ3293		UJ3294		UJ3295		
Sampling Date		2013/12/20 13:28		2013/12/20 13:28		2013/12/20 13:28		2013/12/20 13:28		
	Units	6L SUMMA #9	QC Batch	6L SUMMA #10	QC Batch	6L SUMMA #11	QC Batch	6L SUMMA #12	RDL	QC Batch
Volatile Organics										
1,3-Butadiene	ppbv	<0.50	3469017	<0.50	3469041	<0.50	3469038	<0.50	0.50	3469022
Chloroform	ppbv	<0.15	3469017	<0.15	3469041	<0.15	3469038	<0.15	0.15	3469022
Carbon Tetrachloride	ppbv	<0.30	3469017	<0.30	3469041	<0.30	3469038	<0.30	0.30	3469022
Bromodichloromethane	ppbv	<0.20	3469017	<0.20	3469041	<0.20	3469038	<0.20	0.20	3469022
Trichloroethylene	ppbv	<0.30	3469017	<0.30	3469041	<0.30	3469038	<0.30	0.30	3469022
Benzene	ppbv	<0.18	3469017	<0.18	3469041	<0.18	3469038	<0.18	0.18	3469022
Toluene	ppbv	<0.20	3469017	<0.20	3469041	<0.20	3469038	<0.20	0.20	3469022
Ethylbenzene	ppbv	<0.20	3469017	<0.20	3469041	<0.20	3469038	<0.20	0.20	3469022
p+m-Xylene	ppbv	<0.37	3469017	<0.37	3469041	<0.37	3469038	<0.37	0.37	3469022
o-Xylene	ppbv	<0.20	3469017	<0.20	3469041	<0.20	3469038	<0.20	0.20	3469022
1,3,5-Trimethylbenzene	ppbv	<0.50	3469017	<0.50	3469041	<0.50	3469038	<0.50	0.50	3469022
1,2,4-Trimethylbenzene	ppbv	<0.50	3469017	<0.50	3469041	<0.50	3469038	<0.50	0.50	3469022
Hexachlorobutadiene	ppbv	<3.0	3469017	<3.0	3469041	<3.0	3469038	<3.0	3.0	3469022
Naphthalene	ppbv	<2.0	3469017	<2.0	3469041	<2.0	3469038	<2.0	2.0	3469022
Xylene (Total)	ppbv	<0.60	3469017	<0.60	3469041	<0.60	3469038	<0.60	0.60	3469022
1,1,1,2-Tetrachloroethane	ppbv	<0.50	3469017	<0.50	3469041	<0.50	3469038	<0.50	0.50	3469022
Surrogate Recovery (%)										
Bromochloromethane	%	86	3469017	78	3469041	83	3469038	83		3469022
D5-Chlorobenzene	%	87	3469017	74	3469041	80	3469038	80		3469022
Difluorobenzene	%	85	3469017	79	3469041	85	3469038	83		3469022
RDL = Reportable Detection Limit										
QC Batch = Quality Control Batch										

Maxxam Job #: B3M0381
 Report Date: 2013/12/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		UJ3296		UJ3297		UJ4393		
Sampling Date		2013/12/20 13:28		2013/12/20 13:28		2013/12/20 13:28		
	Units	6L SUMMA #13	QC Batch	6L SUMMA #14	QC Batch	1.4L TRIP BLANK 1377	RDL	QC Batch
Volatile Organics								
1,3-Butadiene	ppbv	<0.50	3469057	<0.50	3469041	<0.50	0.50	3468615
Chloroform	ppbv	<0.15	3469057	<0.15	3469041	<0.15	0.15	3468615
Carbon Tetrachloride	ppbv	<0.30	3469057	<0.30	3469041	<0.30	0.30	3468615
Bromodichloromethane	ppbv	<0.20	3469057	<0.20	3469041	<0.20	0.20	3468615
Trichloroethylene	ppbv	<0.30	3469057	<0.30	3469041	<0.30	0.30	3468615
Benzene	ppbv	<0.18	3469057	<0.18	3469041	<0.18	0.18	3468615
Toluene	ppbv	<0.20	3469057	<0.20	3469041	<0.20	0.20	3468615
Ethylbenzene	ppbv	<0.20	3469057	<0.20	3469041	<0.20	0.20	3468615
p+m-Xylene	ppbv	<0.37	3469057	<0.37	3469041	<0.37	0.37	3468615
o-Xylene	ppbv	<0.20	3469057	<0.20	3469041	<0.20	0.20	3468615
1,3,5-Trimethylbenzene	ppbv	<0.50	3469057	<0.50	3469041	<0.50	0.50	3468615
1,2,4-Trimethylbenzene	ppbv	<0.50	3469057	<0.50	3469041	<0.50	0.50	3468615
Hexachlorobutadiene	ppbv	<3.0	3469057	<3.0	3469041	<3.0	3.0	3468615
Naphthalene	ppbv	<2.0	3469057	<2.0	3469041	<2.0	2.0	3468615
Xylene (Total)	ppbv	<0.60	3469057	<0.60	3469041	<0.60	0.60	3468615
1,1,1,2-Tetrachloroethane	ppbv	<0.50	3469057	<0.50	3469041	<0.50	0.50	3468615
Surrogate Recovery (%)								
Bromochloromethane	%	90	3469057	77	3469041	91		3468615
D5-Chlorobenzene	%	88	3469057	73	3469041	88		3468615
Difluorobenzene	%	91	3469057	78	3469041	94		3468615
RDL = Reportable Detection Limit QC Batch = Quality Control Batch								

Maxxam Job #: B3M0381
 Report Date: 2013/12/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204

VOLATILE ORGANIC HYDROCARBONS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		UJ3050	UJ3051		UJ3052		
Sampling Date		2013/12/20 13:28	2013/12/20 13:28		2013/12/20 13:28		
	Units	1.4L SUMMA # 1382	1.4L SUMMA #2 2564	QC Batch	1.4L SUMMA #3 1530	RDL	QC Batch
Volatile Organics							
Aliphatic >C5-C6	ug/m3	<5.0	<5.0	3468719	<5.0	5.0	3468695
Aliphatic >C6-C8	ug/m3	<5.0	<5.0	3468719	<5.0	5.0	3468695
Aliphatic >C8-C10	ug/m3	<5.0	<5.0	3468719	<5.0	5.0	3468695
Aliphatic >C10-C12	ug/m3	<5.0	<5.0	3468719	<5.0	5.0	3468695
Aliphatic >C12-C16	ug/m3	<5.0	<5.0	3468719	<5.0	5.0	3468695
Aromatic >C7-C8 (TEX Excluded)	ug/m3	<5.0	<5.0	3468719	<5.0	5.0	3468695
Aromatic >C8-C10	ug/m3	<5.0	<5.0	3468719	<5.0	5.0	3468695
Aromatic >C10-C12	ug/m3	<5.0	<5.0	3468719	<5.0	5.0	3468695
Aromatic >C12-C16	ug/m3	<5.0	<5.0	3468719	<5.0	5.0	3468695
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							

Maxxam ID		UJ3053		UJ3054		UJ3055		
Sampling Date		2013/12/20 13:28		2013/12/20 13:28		2013/12/20 13:28		
	Units	1.4L SUMMA #4 421	QC Batch	1.4L SUMMA #5 1387	QC Batch	1.4L SUMMA #6 3017	RDL	QC Batch
Volatile Organics								
Aliphatic >C5-C6	ug/m3	<5.0	3468928	<5.0	3468936	<5.0	5.0	3468583
Aliphatic >C6-C8	ug/m3	<5.0	3468928	<5.0	3468936	<5.0	5.0	3468583
Aliphatic >C8-C10	ug/m3	<5.0	3468928	<5.0	3468936	<5.0	5.0	3468583
Aliphatic >C10-C12	ug/m3	<5.0	3468928	<5.0	3468936	<5.0	5.0	3468583
Aliphatic >C12-C16	ug/m3	<5.0	3468928	<5.0	3468936	<5.0	5.0	3468583
Aromatic >C7-C8 (TEX Excluded)	ug/m3	<5.0	3468928	<5.0	3468936	<5.0	5.0	3468583
Aromatic >C8-C10	ug/m3	<5.0	3468928	<5.0	3468936	<5.0	5.0	3468583
Aromatic >C10-C12	ug/m3	<5.0	3468928	<5.0	3468936	<5.0	5.0	3468583
Aromatic >C12-C16	ug/m3	<5.0	3468928	<5.0	3468936	<5.0	5.0	3468583
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								

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VOLATILE ORGANIC HYDROCARBONS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		UJ3056	UJ3057		UJ3058		
Sampling Date		2013/12/20 13:28	2013/12/20 13:28		2013/12/20 13:28		
	Units	1.4L SUMMA #7 1356	1.4L SUMMA #8 2490	QC Batch	1.4L SUMMA #9 2470	RDL	QC Batch

Volatile Organics							
Aliphatic >C5-C6	ug/m3	<5.0	<5.0	3468959	<5.0	5.0	3468894
Aliphatic >C6-C8	ug/m3	<5.0	<5.0	3468959	<5.0	5.0	3468894
Aliphatic >C8-C10	ug/m3	<5.0	<5.0	3468959	<5.0	5.0	3468894
Aliphatic >C10-C12	ug/m3	<5.0	<5.0	3468959	<5.0	5.0	3468894
Aliphatic >C12-C16	ug/m3	<5.0	<5.0	3468959	<5.0	5.0	3468894
Aromatic >C7-C8 (TEX Excluded)	ug/m3	<5.0	<5.0	3468959	<5.0	5.0	3468894
Aromatic >C8-C10	ug/m3	<5.0	<5.0	3468959	<5.0	5.0	3468894
Aromatic >C10-C12	ug/m3	<5.0	<5.0	3468959	<5.0	5.0	3468894
Aromatic >C12-C16	ug/m3	<5.0	<5.0	3468959	<5.0	5.0	3468894

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Maxxam ID		UJ3059		UJ3060		UJ3061	UJ3062		
Sampling Date		2013/12/20 13:28		2013/12/20 13:28		2013/12/20 13:28	2013/12/20 13:28		
	Units	1.4L SUMMA #10 2519	QC Batch	1.4L SUMMA #11 2546	QC Batch	1.4L SUMMA #12 2396	1.4L SUMMA #13 3018	RDL	QC Batch

Volatile Organics									
Aliphatic >C5-C6	ug/m3	<5.0	3468695	<5.0	3468727	<5.0	<5.0	5.0	3468978
Aliphatic >C6-C8	ug/m3	<5.0	3468695	<5.0	3468727	<5.0	<5.0	5.0	3468978
Aliphatic >C8-C10	ug/m3	<5.0	3468695	<5.0	3468727	<5.0	<5.0	5.0	3468978
Aliphatic >C10-C12	ug/m3	<5.0	3468695	<5.0	3468727	<5.0	<5.0	5.0	3468978
Aliphatic >C12-C16	ug/m3	<5.0	3468695	<5.0	3468727	<5.0	<5.0	5.0	3468978
Aromatic >C7-C8 (TEX Excluded)	ug/m3	<5.0	3468695	<5.0	3468727	<5.0	<5.0	5.0	3468978
Aromatic >C8-C10	ug/m3	<5.0	3468695	<5.0	3468727	<5.0	<5.0	5.0	3468978
Aromatic >C10-C12	ug/m3	<5.0	3468695	<5.0	3468727	<5.0	<5.0	5.0	3468978
Aromatic >C12-C16	ug/m3	<5.0	3468695	<5.0	3468727	<5.0	<5.0	5.0	3468978

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

VOLATILE ORGANIC HYDROCARBONS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		UJ4393		
Sampling Date		2013/12/20 13:28		
	Units	1.4L TRIP BLANK 1377	RDL	QC Batch
Volatile Organics				
Aliphatic >C5-C6	ug/m3	<5.0	5.0	3468626
Aliphatic >C6-C8	ug/m3	<5.0	5.0	3468626
Aliphatic >C8-C10	ug/m3	<5.0	5.0	3468626
Aliphatic >C10-C12	ug/m3	<5.0	5.0	3468626
Aliphatic >C12-C16	ug/m3	<5.0	5.0	3468626
Aromatic >C7-C8 (TEX Excluded)	ug/m3	<5.0	5.0	3468626
Aromatic >C8-C10	ug/m3	<5.0	5.0	3468626
Aromatic >C10-C12	ug/m3	<5.0	5.0	3468626
Aromatic >C12-C16	ug/m3	<5.0	5.0	3468626
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

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GENERAL COMMENTS

Results relate only to the items tested.

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 Golder Associates Ltd
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QUALITY ASSURANCE REPORT

QA/QC				Date					
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	Units	QC Limits	
3468557	DVO	Method Blank	Bromochloromethane	2013/12/03		97	%	60 - 140	
			D5-Chlorobenzene	2013/12/03		88	%	60 - 140	
			Difluorobenzene	2013/12/03		100	%	60 - 140	
			1,3-Butadiene	2013/12/03	<0.50			ppbv	
			Chloroform	2013/12/03	<0.15			ppbv	
			Carbon Tetrachloride	2013/12/03	<0.30			ppbv	
			Bromodichloromethane	2013/12/03	<0.20			ppbv	
			Trichloroethylene	2013/12/03	<0.30			ppbv	
			Benzene	2013/12/03	<0.18			ppbv	
			Toluene	2013/12/03	<0.20			ppbv	
			Ethylbenzene	2013/12/03	<0.20			ppbv	
			p+m-Xylene	2013/12/03	<0.37			ppbv	
			o-Xylene	2013/12/03	<0.20			ppbv	
			1,3,5-Trimethylbenzene	2013/12/03	<0.50			ppbv	
			1,2,4-Trimethylbenzene	2013/12/03	<0.50			ppbv	
			Hexachlorobutadiene	2013/12/03	<3.0			ppbv	
			Naphthalene	2013/12/03	<2.0			ppbv	
			Xylene (Total)	2013/12/03	<0.60			ppbv	
			1,1,1,2-Tetrachloroethane	2013/12/03	<0.50			ppbv	
			3468583	DVO	Method Blank	Aliphatic >C5-C6	2013/12/03	<5.0	
Aliphatic >C6-C8	2013/12/03	<5.0					ug/m3		
Aliphatic >C8-C10	2013/12/03	<5.0					ug/m3		
Aliphatic >C10-C12	2013/12/03	<5.0					ug/m3		
Aliphatic >C12-C16	2013/12/03	<5.0					ug/m3		
Aromatic >C7-C8 (TEX Excluded)	2013/12/03	<5.0					ug/m3		
Aromatic >C8-C10	2013/12/03	<5.0					ug/m3		
Aromatic >C10-C12	2013/12/03	<5.0					ug/m3		
Aromatic >C12-C16	2013/12/03	<5.0		ug/m3					
3468615	DVO	Method Blank	Bromochloromethane	2013/12/16		100	%	60 - 140	
			D5-Chlorobenzene	2013/12/16		94	%	60 - 140	
			Difluorobenzene	2013/12/16		104	%	60 - 140	
			1,3-Butadiene	2013/12/16	<0.50			ppbv	
			Chloroform	2013/12/16	<0.15			ppbv	
			Carbon Tetrachloride	2013/12/16	<0.30			ppbv	
			Bromodichloromethane	2013/12/16	<0.20			ppbv	
			Trichloroethylene	2013/12/16	<0.30			ppbv	
			Benzene	2013/12/16	<0.18			ppbv	
			Toluene	2013/12/16	<0.20			ppbv	
			Ethylbenzene	2013/12/16	<0.20			ppbv	
			p+m-Xylene	2013/12/16	<0.37			ppbv	
			o-Xylene	2013/12/16	<0.20			ppbv	
			1,3,5-Trimethylbenzene	2013/12/16	<0.50			ppbv	
			1,2,4-Trimethylbenzene	2013/12/16	<0.50			ppbv	
			Hexachlorobutadiene	2013/12/16	<3.0			ppbv	
			Naphthalene	2013/12/16	<2.0			ppbv	
			Xylene (Total)	2013/12/16	<0.60			ppbv	
			1,1,1,2-Tetrachloroethane	2013/12/16	<0.50			ppbv	
			3468626	DVO	Method Blank	Aliphatic >C5-C6	2013/12/16	<5.0	
Aliphatic >C6-C8	2013/12/16	<5.0					ug/m3		
Aliphatic >C8-C10	2013/12/16	<5.0					ug/m3		
Aliphatic >C10-C12	2013/12/16	<5.0					ug/m3		
Aliphatic >C12-C16	2013/12/16	<5.0					ug/m3		
Aromatic >C7-C8 (TEX Excluded)	2013/12/16	<5.0					ug/m3		
Aromatic >C8-C10	2013/12/16	<5.0					ug/m3		
Aromatic >C10-C12	2013/12/16	<5.0					ug/m3		
Aromatic >C12-C16	2013/12/16	<5.0		ug/m3					
3468632	DVO	Method Blank	Bromochloromethane	2013/12/06		94	%	60 - 140	
			D5-Chlorobenzene	2013/12/06		89	%	60 - 140	
			Difluorobenzene	2013/12/06		97	%	60 - 140	
			1,3-Butadiene	2013/12/06	<0.50			ppbv	
			Chloroform	2013/12/06	<0.15			ppbv	
			Carbon Tetrachloride	2013/12/06	<0.30			ppbv	
			Bromodichloromethane	2013/12/06	<0.20			ppbv	
			Trichloroethylene	2013/12/06	<0.30			ppbv	
			Benzene	2013/12/06	<0.18			ppbv	

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
3468695	DVO	Method Blank	Toluene	2013/12/06	<0.20		ppbv	
			Ethylbenzene	2013/12/06	<0.20		ppbv	
			p+m-Xylene	2013/12/06	<0.37		ppbv	
			o-Xylene	2013/12/06	<0.20		ppbv	
			1,3,5-Trimethylbenzene	2013/12/06	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2013/12/06	<0.50		ppbv	
			Hexachlorobutadiene	2013/12/06	<3.0		ppbv	
			Naphthalene	2013/12/06	<2.0		ppbv	
			Xylene (Total)	2013/12/06	<0.60		ppbv	
			1,1,1,2-Tetrachloroethane	2013/12/06	<0.50		ppbv	
			Aliphatic >C5-C6	2013/12/06	<5.0		ug/m3	
			Aliphatic >C6-C8	2013/12/06	<5.0		ug/m3	
			Aliphatic >C8-C10	2013/12/06	<5.0		ug/m3	
			Aliphatic >C10-C12	2013/12/06	<5.0		ug/m3	
			Aliphatic >C12-C16	2013/12/06	<5.0		ug/m3	
			Aromatic >C7-C8 (TEX Excluded)	2013/12/06	<5.0		ug/m3	
			Aromatic >C8-C10	2013/12/06	<5.0		ug/m3	
Aromatic >C10-C12	2013/12/06	<5.0		ug/m3				
Aromatic >C12-C16	2013/12/06	<5.0		ug/m3				
3468709	DVO	Method Blank	Bromochloromethane	2013/12/11		98	%	60 - 140
			D5-Chlorobenzene	2013/12/11		89	%	60 - 140
			Difluorobenzene	2013/12/11		101	%	60 - 140
			1,3-Butadiene	2013/12/11	<0.50		ppbv	
			Chloroform	2013/12/11	<0.15		ppbv	
			Carbon Tetrachloride	2013/12/11	<0.30		ppbv	
			Bromodichloromethane	2013/12/11	<0.20		ppbv	
			Trichloroethylene	2013/12/11	<0.30		ppbv	
			Benzene	2013/12/11	<0.18		ppbv	
			Toluene	2013/12/11	<0.20		ppbv	
			Ethylbenzene	2013/12/11	<0.20		ppbv	
			p+m-Xylene	2013/12/11	<0.37		ppbv	
			o-Xylene	2013/12/11	<0.20		ppbv	
			1,3,5-Trimethylbenzene	2013/12/11	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2013/12/11	<0.50		ppbv	
			Hexachlorobutadiene	2013/12/11	<3.0		ppbv	
			Naphthalene	2013/12/11	<2.0		ppbv	
			Xylene (Total)	2013/12/11	<0.60		ppbv	
			1,1,1,2-Tetrachloroethane	2013/12/11	<0.50		ppbv	
			Aliphatic >C5-C6	2013/12/11	<5.0		ug/m3	
			Aliphatic >C6-C8	2013/12/11	<5.0		ug/m3	
			Aliphatic >C8-C10	2013/12/11	<5.0		ug/m3	
			Aliphatic >C10-C12	2013/12/11	<5.0		ug/m3	
Aliphatic >C12-C16	2013/12/11	<5.0		ug/m3				
Aromatic >C7-C8 (TEX Excluded)	2013/12/11	<5.0		ug/m3				
Aromatic >C8-C10	2013/12/11	<5.0		ug/m3				
Aromatic >C10-C12	2013/12/11	<5.0		ug/m3				
Aromatic >C12-C16	2013/12/11	<5.0		ug/m3				
3468725	AGU	Method Blank	Bromochloromethane	2013/12/05		99	%	60 - 140
			D5-Chlorobenzene	2013/12/05		104	%	60 - 140
			Difluorobenzene	2013/12/05		102	%	60 - 140
			1,3-Butadiene	2013/12/05	<0.50		ppbv	
			Chloroform	2013/12/05	<0.15		ppbv	
			Carbon Tetrachloride	2013/12/05	<0.30		ppbv	
			Bromodichloromethane	2013/12/05	<0.20		ppbv	
			Trichloroethylene	2013/12/05	<0.30		ppbv	
			Benzene	2013/12/05	<0.18		ppbv	
			Toluene	2013/12/05	<0.20		ppbv	
			Ethylbenzene	2013/12/05	<0.20		ppbv	
			p+m-Xylene	2013/12/05	<0.37		ppbv	
			o-Xylene	2013/12/05	<0.20		ppbv	
			1,3,5-Trimethylbenzene	2013/12/05	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2013/12/05	<0.50		ppbv	
			Hexachlorobutadiene	2013/12/05	<3.0		ppbv	
			Naphthalene	2013/12/05	<2.0		ppbv	
			Xylene (Total)	2013/12/05	<0.60		ppbv	

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits			
3468727	AGU	Method Blank	1,1,1,2-Tetrachloroethane	2013/12/05	<0.50		ppbv				
			Aliphatic >C5-C6	2013/12/05	<5.0		ug/m3				
			Aliphatic >C6-C8	2013/12/05	<5.0		ug/m3				
			Aliphatic >C8-C10	2013/12/05	<5.0		ug/m3				
			Aliphatic >C10-C12	2013/12/05	<5.0		ug/m3				
			Aliphatic >C12-C16	2013/12/05	<5.0		ug/m3				
			Aromatic >C7-C8 (TEX Excluded)	2013/12/05	<5.0		ug/m3				
			Aromatic >C8-C10	2013/12/05	<5.0		ug/m3				
			Aromatic >C10-C12	2013/12/05	<5.0		ug/m3				
3468890	TRN	Method Blank	Aromatic >C12-C16	2013/12/05	<5.0		ug/m3				
			Bromochloromethane	2013/12/04		85	%	60 - 140			
			D5-Chlorobenzene	2013/12/04		82	%	60 - 140			
			Difluorobenzene	2013/12/04		88	%	60 - 140			
			1,3-Butadiene	2013/12/04	<0.50		ppbv				
			Chloroform	2013/12/04	<0.15		ppbv				
			Carbon Tetrachloride	2013/12/04	<0.30		ppbv				
			Bromodichloromethane	2013/12/04	<0.20		ppbv				
			Trichloroethylene	2013/12/04	<0.30		ppbv				
			Benzene	2013/12/04	<0.18		ppbv				
			Toluene	2013/12/04	<0.20		ppbv				
			Ethylbenzene	2013/12/04	<0.20		ppbv				
			p+m-Xylene	2013/12/04	<0.37		ppbv				
			o-Xylene	2013/12/04	<0.20		ppbv				
			1,3,5-Trimethylbenzene	2013/12/04	<0.50		ppbv				
			1,2,4-Trimethylbenzene	2013/12/04	<0.50		ppbv				
			Hexachlorobutadiene	2013/12/04	<3.0		ppbv				
			Naphthalene	2013/12/04	<2.0		ppbv				
			Xylene (Total)	2013/12/04	<0.60		ppbv				
			3468894	TRN	Method Blank	1,1,1,2-Tetrachloroethane	2013/12/04	<0.50		ppbv	
						Aliphatic >C5-C6	2013/12/04	<5.0		ug/m3	
Aliphatic >C6-C8	2013/12/04	<5.0					ug/m3				
Aliphatic >C8-C10	2013/12/04	<5.0					ug/m3				
Aliphatic >C10-C12	2013/12/04	<5.0					ug/m3				
Aliphatic >C12-C16	2013/12/04	<5.0					ug/m3				
Aromatic >C7-C8 (TEX Excluded)	2013/12/04	<5.0					ug/m3				
Aromatic >C8-C10	2013/12/04	<5.0					ug/m3				
Aromatic >C10-C12	2013/12/04	<5.0					ug/m3				
Aromatic >C12-C16	2013/12/04	<5.0					ug/m3				
3468904	JET	Method Blank				Bromochloromethane	2013/12/09		98	%	60 - 140
						D5-Chlorobenzene	2013/12/09		90	%	60 - 140
			Difluorobenzene	2013/12/09		102	%	60 - 140			
			1,3-Butadiene	2013/12/09	<0.50		ppbv				
			Chloroform	2013/12/09	<0.15		ppbv				
			Carbon Tetrachloride	2013/12/09	<0.30		ppbv				
			Bromodichloromethane	2013/12/09	<0.20		ppbv				
			Trichloroethylene	2013/12/09	<0.30		ppbv				
			Benzene	2013/12/09	<0.18		ppbv				
			Toluene	2013/12/09	<0.20		ppbv				
			Ethylbenzene	2013/12/09	<0.20		ppbv				
			p+m-Xylene	2013/12/09	<0.37		ppbv				
			o-Xylene	2013/12/09	<0.20		ppbv				
			1,3,5-Trimethylbenzene	2013/12/09	<0.50		ppbv				
			1,2,4-Trimethylbenzene	2013/12/09	<0.50		ppbv				
			Hexachlorobutadiene	2013/12/09	<3.0		ppbv				
			Naphthalene	2013/12/09	<2.0		ppbv				
			Xylene (Total)	2013/12/09	<0.60		ppbv				
3468928	JET	Method Blank	1,1,1,2-Tetrachloroethane	2013/12/09	<0.50		ppbv				
			Aliphatic >C5-C6	2013/12/09	<5.0		ug/m3				
			Aliphatic >C6-C8	2013/12/09	<5.0		ug/m3				
			Aliphatic >C8-C10	2013/12/09	<5.0		ug/m3				
			Aliphatic >C10-C12	2013/12/09	<5.0		ug/m3				
			Aliphatic >C12-C16	2013/12/09	<5.0		ug/m3				
			Aromatic >C7-C8 (TEX Excluded)	2013/12/09	<5.0		ug/m3				
			Aromatic >C8-C10	2013/12/09	<5.0		ug/m3				
			Aromatic >C10-C12	2013/12/09	<5.0		ug/m3				

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits			
3468934	JET	Method Blank	Aromatic >C12-C16	2013/12/09	<5.0		ug/m3				
			Bromochloromethane	2013/12/11		100	%	60 - 140			
			D5-Chlorobenzene	2013/12/11		88	%	60 - 140			
			Difluorobenzene	2013/12/11		100	%	60 - 140			
			1,3-Butadiene	2013/12/11	<0.50		ppbv				
			Chloroform	2013/12/11	<0.15		ppbv				
			Carbon Tetrachloride	2013/12/11	<0.30		ppbv				
			Bromodichloromethane	2013/12/11	<0.20		ppbv				
			Trichloroethylene	2013/12/11	<0.30		ppbv				
			Benzene	2013/12/11	<0.18		ppbv				
			Toluene	2013/12/11	<0.20		ppbv				
			Ethylbenzene	2013/12/11	<0.20		ppbv				
			p+m-Xylene	2013/12/11	<0.37		ppbv				
			o-Xylene	2013/12/11	<0.20		ppbv				
			1,3,5-Trimethylbenzene	2013/12/11	<0.50		ppbv				
			1,2,4-Trimethylbenzene	2013/12/11	<0.50		ppbv				
			Hexachlorobutadiene	2013/12/11	<3.0		ppbv				
			Naphthalene	2013/12/11	<2.0		ppbv				
			Xylene (Total)	2013/12/11	<0.60		ppbv				
			3468936	JET	Method Blank	1,1,1,2-Tetrachloroethane	2013/12/11	<0.50		ppbv	
Aliphatic >C5-C6	2013/12/11	<5.0					ug/m3				
Aliphatic >C6-C8	2013/12/11	<5.0					ug/m3				
Aliphatic >C8-C10	2013/12/11	<5.0					ug/m3				
Aliphatic >C10-C12	2013/12/11	<5.0					ug/m3				
Aliphatic >C12-C16	2013/12/11	<5.0					ug/m3				
Aromatic >C7-C8 (TEX Excluded)	2013/12/11	<5.0					ug/m3				
Aromatic >C8-C10	2013/12/11	<5.0					ug/m3				
Aromatic >C10-C12	2013/12/11	<5.0					ug/m3				
Aromatic >C12-C16	2013/12/11	<5.0					ug/m3				
3468944	JET	Method Blank				Bromochloromethane	2013/12/13		99	%	60 - 140
			D5-Chlorobenzene	2013/12/13		85	%	60 - 140			
			Difluorobenzene	2013/12/13		102	%	60 - 140			
			1,3-Butadiene	2013/12/13	<0.50		ppbv				
			Chloroform	2013/12/13	<0.15		ppbv				
			Carbon Tetrachloride	2013/12/13	<0.30		ppbv				
			Bromodichloromethane	2013/12/13	<0.20		ppbv				
			Trichloroethylene	2013/12/13	<0.30		ppbv				
			Benzene	2013/12/13	<0.18		ppbv				
			Toluene	2013/12/13	<0.20		ppbv				
			Ethylbenzene	2013/12/13	<0.20		ppbv				
			p+m-Xylene	2013/12/13	<0.37		ppbv				
			o-Xylene	2013/12/13	<0.20		ppbv				
			1,3,5-Trimethylbenzene	2013/12/13	<0.50		ppbv				
			1,2,4-Trimethylbenzene	2013/12/13	<0.50		ppbv				
			Hexachlorobutadiene	2013/12/13	<3.0		ppbv				
			Naphthalene	2013/12/13	<2.0		ppbv				
			Xylene (Total)	2013/12/13	<0.60		ppbv				
			1,1,1,2-Tetrachloroethane	2013/12/13	<0.50		ppbv				
			3468959	JET	Method Blank	Aliphatic >C5-C6	2013/12/13	<5.0		ug/m3	
Aliphatic >C6-C8	2013/12/13	<5.0					ug/m3				
Aliphatic >C8-C10	2013/12/13	<5.0					ug/m3				
Aliphatic >C10-C12	2013/12/13	<5.0					ug/m3				
Aliphatic >C12-C16	2013/12/13	<5.0					ug/m3				
Aromatic >C7-C8 (TEX Excluded)	2013/12/13	<5.0					ug/m3				
Aromatic >C8-C10	2013/12/13	<5.0					ug/m3				
Aromatic >C10-C12	2013/12/13	<5.0					ug/m3				
Aromatic >C12-C16	2013/12/13	<5.0					ug/m3				
3468968	JET	Method Blank				Bromochloromethane	2013/12/04		97	%	60 - 140
						D5-Chlorobenzene	2013/12/04		89	%	60 - 140
			Difluorobenzene	2013/12/04		99	%	60 - 140			
			1,3-Butadiene	2013/12/04	<0.50		ppbv				
			Chloroform	2013/12/04	<0.15		ppbv				
			Carbon Tetrachloride	2013/12/04	<0.30		ppbv				
			Bromodichloromethane	2013/12/04	<0.20		ppbv				
			Trichloroethylene	2013/12/04	<0.30		ppbv				

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			Benzene	2013/12/04	<0.18		ppbv	
			Toluene	2013/12/04	<0.20		ppbv	
			Ethylbenzene	2013/12/04	<0.20		ppbv	
			p+m-Xylene	2013/12/04	<0.37		ppbv	
			o-Xylene	2013/12/04	<0.20		ppbv	
			1,3,5-Trimethylbenzene	2013/12/04	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2013/12/04	<0.50		ppbv	
			Hexachlorobutadiene	2013/12/04	<3.0		ppbv	
			Naphthalene	2013/12/04	<2.0		ppbv	
			Xylene (Total)	2013/12/04	<0.60		ppbv	
3468978	JET	Method Blank	1,1,1,2-Tetrachloroethane	2013/12/04	<0.50		ppbv	
			Aliphatic >C5-C6	2013/12/04	<5.0		ug/m3	
			Aliphatic >C6-C8	2013/12/04	<5.0		ug/m3	
			Aliphatic >C8-C10	2013/12/04	<5.0		ug/m3	
			Aliphatic >C10-C12	2013/12/04	<5.0		ug/m3	
			Aliphatic >C12-C16	2013/12/04	<5.0		ug/m3	
			Aromatic >C7-C8 (TEX Excluded)	2013/12/04	<5.0		ug/m3	
			Aromatic >C8-C10	2013/12/04	<5.0		ug/m3	
			Aromatic >C10-C12	2013/12/04	<5.0		ug/m3	
			Aromatic >C12-C16	2013/12/04	<5.0		ug/m3	
3469017	AGU	Method Blank	Bromochloromethane	2013/11/28		92	%	60 - 140
			D5-Chlorobenzene	2013/11/28		95	%	60 - 140
			Difluorobenzene	2013/11/28		94	%	60 - 140
			1,3-Butadiene	2013/11/28	<0.50		ppbv	
			Chloroform	2013/11/28	<0.15		ppbv	
			Carbon Tetrachloride	2013/11/28	<0.30		ppbv	
			Bromodichloromethane	2013/11/28	<0.20		ppbv	
			Trichloroethylene	2013/11/28	<0.30		ppbv	
			Benzene	2013/11/28	<0.18		ppbv	
			Toluene	2013/11/28	<0.20		ppbv	
			Ethylbenzene	2013/11/28	<0.20		ppbv	
			p+m-Xylene	2013/11/28	<0.37		ppbv	
			o-Xylene	2013/11/28	<0.20		ppbv	
			1,3,5-Trimethylbenzene	2013/11/28	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2013/11/28	<0.50		ppbv	
			Hexachlorobutadiene	2013/11/28	<3.0		ppbv	
			Naphthalene	2013/11/28	<2.0		ppbv	
			Xylene (Total)	2013/11/28	<0.60		ppbv	
			1,1,1,2-Tetrachloroethane	2013/11/28	<0.50		ppbv	
3469022	AGU	Method Blank	Bromochloromethane	2013/12/17		93	%	60 - 140
			D5-Chlorobenzene	2013/12/17		93	%	60 - 140
			Difluorobenzene	2013/12/17		93	%	60 - 140
			1,3-Butadiene	2013/12/17	<0.50		ppbv	
			Chloroform	2013/12/17	<0.15		ppbv	
			Carbon Tetrachloride	2013/12/17	<0.30		ppbv	
			Bromodichloromethane	2013/12/17	<0.20		ppbv	
			Trichloroethylene	2013/12/17	<0.30		ppbv	
			Benzene	2013/12/17	<0.18		ppbv	
			Toluene	2013/12/17	<0.20		ppbv	
			Ethylbenzene	2013/12/17	<0.20		ppbv	
			p+m-Xylene	2013/12/17	<0.37		ppbv	
			o-Xylene	2013/12/17	<0.20		ppbv	
			1,3,5-Trimethylbenzene	2013/12/17	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2013/12/17	<0.50		ppbv	
			Hexachlorobutadiene	2013/12/17	<3.0		ppbv	
			Naphthalene	2013/12/17	<2.0		ppbv	
			Xylene (Total)	2013/12/17	<0.60		ppbv	
			1,1,1,2-Tetrachloroethane	2013/12/17	<0.50		ppbv	
3469027	AGU	Method Blank	Bromochloromethane	2013/12/05		99	%	60 - 140
			D5-Chlorobenzene	2013/12/05		104	%	60 - 140
			Difluorobenzene	2013/12/05		102	%	60 - 140
			1,3-Butadiene	2013/12/05	<0.50		ppbv	
			Chloroform	2013/12/05	<0.15		ppbv	
			Carbon Tetrachloride	2013/12/05	<0.30		ppbv	
			Bromodichloromethane	2013/12/05	<0.20		ppbv	

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			Trichloroethylene	2013/12/05	<0.30		ppbv	
			Benzene	2013/12/05	<0.18		ppbv	
			Toluene	2013/12/05	<0.20		ppbv	
			Ethylbenzene	2013/12/05	<0.20		ppbv	
			p+m-Xylene	2013/12/05	<0.37		ppbv	
			o-Xylene	2013/12/05	<0.20		ppbv	
			1,3,5-Trimethylbenzene	2013/12/05	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2013/12/05	<0.50		ppbv	
			Hexachlorobutadiene	2013/12/05	<3.0		ppbv	
			Naphthalene	2013/12/05	<2.0		ppbv	
			Xylene (Total)	2013/12/05	<0.60		ppbv	
3469035	JET	Method Blank	1,1,1,2-Tetrachloroethane	2013/12/05	<0.50		ppbv	
			Bromochloromethane	2013/12/02		91	%	60 - 140
			D5-Chlorobenzene	2013/12/02		82	%	60 - 140
			Difluorobenzene	2013/12/02		92	%	60 - 140
			1,3-Butadiene	2013/12/02	<0.50		ppbv	
			Chloroform	2013/12/02	<0.15		ppbv	
			Carbon Tetrachloride	2013/12/02	<0.30		ppbv	
			Bromodichloromethane	2013/12/02	<0.20		ppbv	
			Trichloroethylene	2013/12/02	<0.30		ppbv	
			Benzene	2013/12/02	<0.18		ppbv	
			Toluene	2013/12/02	<0.20		ppbv	
			Ethylbenzene	2013/12/02	<0.20		ppbv	
			p+m-Xylene	2013/12/02	<0.37		ppbv	
			o-Xylene	2013/12/02	<0.20		ppbv	
			1,3,5-Trimethylbenzene	2013/12/02	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2013/12/02	<0.50		ppbv	
			Hexachlorobutadiene	2013/12/02	<3.0		ppbv	
			Naphthalene	2013/12/02	<2.0		ppbv	
			Xylene (Total)	2013/12/02	<0.60		ppbv	
3469038	JET	Method Blank	1,1,1,2-Tetrachloroethane	2013/12/02	<0.50		ppbv	
			Bromochloromethane	2013/12/10		97	%	60 - 140
			D5-Chlorobenzene	2013/12/10		90	%	60 - 140
			Difluorobenzene	2013/12/10		101	%	60 - 140
			1,3-Butadiene	2013/12/10	<0.50		ppbv	
			Chloroform	2013/12/10	<0.15		ppbv	
			Carbon Tetrachloride	2013/12/10	<0.30		ppbv	
			Bromodichloromethane	2013/12/10	<0.20		ppbv	
			Trichloroethylene	2013/12/10	<0.30		ppbv	
			Benzene	2013/12/10	<0.18		ppbv	
			Toluene	2013/12/10	<0.20		ppbv	
			Ethylbenzene	2013/12/10	<0.20		ppbv	
			p+m-Xylene	2013/12/10	<0.37		ppbv	
			o-Xylene	2013/12/10	<0.20		ppbv	
			1,3,5-Trimethylbenzene	2013/12/10	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2013/12/10	<0.50		ppbv	
			Hexachlorobutadiene	2013/12/10	<3.0		ppbv	
			Naphthalene	2013/12/10	<2.0		ppbv	
			Xylene (Total)	2013/12/10	<0.60		ppbv	
3469039	JET	Method Blank	1,1,1,2-Tetrachloroethane	2013/12/10	<0.50		ppbv	
			Bromochloromethane	2013/12/13		99	%	60 - 140
			D5-Chlorobenzene	2013/12/13		85	%	60 - 140
			Difluorobenzene	2013/12/13		102	%	60 - 140
			1,3-Butadiene	2013/12/13	<0.50		ppbv	
			Chloroform	2013/12/13	<0.15		ppbv	
			Carbon Tetrachloride	2013/12/13	<0.30		ppbv	
			Bromodichloromethane	2013/12/13	<0.20		ppbv	
			Trichloroethylene	2013/12/13	<0.30		ppbv	
			Benzene	2013/12/13	<0.18		ppbv	
			Toluene	2013/12/13	<0.20		ppbv	
			Ethylbenzene	2013/12/13	<0.20		ppbv	
			p+m-Xylene	2013/12/13	<0.37		ppbv	
			o-Xylene	2013/12/13	<0.20		ppbv	
			1,3,5-Trimethylbenzene	2013/12/13	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2013/12/13	<0.50		ppbv	

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
3469041	JET	Method Blank	Hexachlorobutadiene	2013/12/13	<3.0		ppbv	
			Naphthalene	2013/12/13	<2.0		ppbv	
			Xylene (Total)	2013/12/13	<0.60		ppbv	
			1,1,1,2-Tetrachloroethane	2013/12/13	<0.50		ppbv	
			Bromochloromethane	2013/12/04		97	%	60 - 140
			D5-Chlorobenzene	2013/12/04		89	%	60 - 140
			Difluorobenzene	2013/12/04		99	%	60 - 140
			1,3-Butadiene	2013/12/04	<0.50		ppbv	
			Chloroform	2013/12/04	<0.15		ppbv	
			Carbon Tetrachloride	2013/12/04	<0.30		ppbv	
			Bromodichloromethane	2013/12/04	<0.20		ppbv	
			Trichloroethylene	2013/12/04	<0.30		ppbv	
			Benzene	2013/12/04	<0.18		ppbv	
			Toluene	2013/12/04	<0.20		ppbv	
			Ethylbenzene	2013/12/04	<0.20		ppbv	
			p+m-Xylene	2013/12/04	<0.37		ppbv	
			o-Xylene	2013/12/04	<0.20		ppbv	
			1,3,5-Trimethylbenzene	2013/12/04	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2013/12/04	<0.50		ppbv	
			3469042	JET	Method Blank	Hexachlorobutadiene	2013/12/04	<3.0
Naphthalene	2013/12/04	<2.0					ppbv	
Xylene (Total)	2013/12/04	<0.60					ppbv	
1,1,1,2-Tetrachloroethane	2013/12/04	<0.50					ppbv	
Bromochloromethane	2013/12/12					96	%	60 - 140
D5-Chlorobenzene	2013/12/12					84	%	60 - 140
Difluorobenzene	2013/12/12					98	%	60 - 140
1,3-Butadiene	2013/12/12	<0.50					ppbv	
Chloroform	2013/12/12	<0.15					ppbv	
Carbon Tetrachloride	2013/12/12	<0.30					ppbv	
Bromodichloromethane	2013/12/12	<0.20					ppbv	
Trichloroethylene	2013/12/12	<0.30					ppbv	
Benzene	2013/12/12	<0.18					ppbv	
Toluene	2013/12/12	<0.20					ppbv	
Ethylbenzene	2013/12/12	<0.20					ppbv	
p+m-Xylene	2013/12/12	<0.37					ppbv	
o-Xylene	2013/12/12	<0.20					ppbv	
1,3,5-Trimethylbenzene	2013/12/12	<0.50					ppbv	
1,2,4-Trimethylbenzene	2013/12/12	<0.50					ppbv	
3469055	DVO	Method Blank				Hexachlorobutadiene	2013/12/12	<3.0
			Naphthalene	2013/12/12	<2.0		ppbv	
			Xylene (Total)	2013/12/12	<0.60		ppbv	
			1,1,1,2-Tetrachloroethane	2013/12/12	<0.50		ppbv	
			Bromochloromethane	2013/12/11		98	%	60 - 140
			D5-Chlorobenzene	2013/12/11		89	%	60 - 140
			Difluorobenzene	2013/12/11		101	%	60 - 140
			1,3-Butadiene	2013/12/11	<0.50		ppbv	
			Chloroform	2013/12/11	<0.15		ppbv	
			Carbon Tetrachloride	2013/12/11	<0.30		ppbv	
			Bromodichloromethane	2013/12/11	<0.20		ppbv	
			Trichloroethylene	2013/12/11	<0.30		ppbv	
			Benzene	2013/12/11	<0.18		ppbv	
			Toluene	2013/12/11	<0.20		ppbv	
			Ethylbenzene	2013/12/11	<0.20		ppbv	
			p+m-Xylene	2013/12/11	<0.37		ppbv	
			o-Xylene	2013/12/11	<0.20		ppbv	
			1,3,5-Trimethylbenzene	2013/12/11	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2013/12/11	<0.50		ppbv	
			3469057	DVO	Method Blank	Hexachlorobutadiene	2013/12/11	<3.0
Naphthalene	2013/12/11	<2.0					ppbv	
Xylene (Total)	2013/12/11	<0.60					ppbv	
1,1,1,2-Tetrachloroethane	2013/12/11	<0.50					ppbv	
Bromochloromethane	2013/12/16					100	%	60 - 140
D5-Chlorobenzene	2013/12/16					94	%	60 - 140
Difluorobenzene	2013/12/16					104	%	60 - 140
1,3-Butadiene	2013/12/16	<0.50		ppbv				

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			Chloroform	2013/12/16	<0.15		ppbv	
			Carbon Tetrachloride	2013/12/16	<0.30		ppbv	
			Bromodichloromethane	2013/12/16	<0.20		ppbv	
			Trichloroethylene	2013/12/16	<0.30		ppbv	
			Benzene	2013/12/16	<0.18		ppbv	
			Toluene	2013/12/16	<0.20		ppbv	
			Ethylbenzene	2013/12/16	<0.20		ppbv	
			p+m-Xylene	2013/12/16	<0.37		ppbv	
			o-Xylene	2013/12/16	<0.20		ppbv	
			1,3,5-Trimethylbenzene	2013/12/16	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2013/12/16	<0.50		ppbv	
			Hexachlorobutadiene	2013/12/16	<3.0		ppbv	
			Naphthalene	2013/12/16	<2.0		ppbv	
			Xylene (Total)	2013/12/16	<0.60		ppbv	
3469066	TRN	Method Blank	1,1,1,2-Tetrachloroethane	2013/12/16	<0.50		ppbv	
			Bromochloromethane	2013/12/18		98	%	60 - 140
			D5-Chlorobenzene	2013/12/18		93	%	60 - 140
			Difluorobenzene	2013/12/18		103	%	60 - 140
			1,3-Butadiene	2013/12/18	<0.50		ppbv	
			Chloroform	2013/12/18	<0.15		ppbv	
			Carbon Tetrachloride	2013/12/18	<0.30		ppbv	
			Bromodichloromethane	2013/12/18	<0.20		ppbv	
			Trichloroethylene	2013/12/18	<0.30		ppbv	
			Benzene	2013/12/18	<0.18		ppbv	
			Toluene	2013/12/18	<0.20		ppbv	
			Ethylbenzene	2013/12/18	<0.20		ppbv	
			p+m-Xylene	2013/12/18	<0.37		ppbv	
			o-Xylene	2013/12/18	<0.20		ppbv	
			1,3,5-Trimethylbenzene	2013/12/18	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2013/12/18	<0.50		ppbv	
			Hexachlorobutadiene	2013/12/18	<3.0		ppbv	
			Naphthalene	2013/12/18	<2.0		ppbv	
			Xylene (Total)	2013/12/18	<0.60		ppbv	
3469074	TRN	Method Blank	1,1,1,2-Tetrachloroethane	2013/12/18	<0.50		ppbv	
			Bromochloromethane	2013/12/23		98	%	60 - 140
			D5-Chlorobenzene	2013/12/23		98	%	60 - 140
			Difluorobenzene	2013/12/23		101	%	60 - 140
			1,3-Butadiene	2013/12/23	<0.50		ppbv	
			Chloroform	2013/12/23	<0.15		ppbv	
			Carbon Tetrachloride	2013/12/23	<0.30		ppbv	
			Bromodichloromethane	2013/12/23	<0.20		ppbv	
			Trichloroethylene	2013/12/23	<0.30		ppbv	
			Benzene	2013/12/23	<0.18		ppbv	
			Toluene	2013/12/23	<0.20		ppbv	
			Ethylbenzene	2013/12/23	<0.20		ppbv	
			p+m-Xylene	2013/12/23	<0.37		ppbv	
			o-Xylene	2013/12/23	<0.20		ppbv	
			1,3,5-Trimethylbenzene	2013/12/23	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2013/12/23	<0.50		ppbv	
			Hexachlorobutadiene	2013/12/23	<3.0		ppbv	
			Naphthalene	2013/12/23	<2.0		ppbv	
			Xylene (Total)	2013/12/23	<0.60		ppbv	
			1,1,1,2-Tetrachloroethane	2013/12/23	<0.50		ppbv	

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.

Maxxam Job #: B3M0381
Report Date: 2013/12/30

Golder Associates Ltd
Client Project #: 13-1324-0204

VALIDATION SIGNATURE PAGE

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

A handwritten signature in black ink that reads "Maureen Smith". The signature is written in a cursive style with a horizontal line underneath it.

Maureen Smith, Supervisor, Volatiles

Maxxam 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.



Your Project #: 13-1324-0204
 Site#: MEDIA PREP
 Site Location: QUARTER 2

Attention: Julie Burghardt

Golder Associates Ltd
 102, 2535-3rd Ave SE
 Calgary, AB
 CANADA T2A 7W5

Report Date: 2014/05/30
Report #: R3043841
Version: 2R

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B487237

Received: 2014/05/27, 07:52

Sample Matrix: Air Sampling Media
 # Samples Received: 18

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Volatile Organics in Air (TO-15) (1)	1	N/A	2014/05/13	BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	1	N/A	2014/05/14	BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	2	N/A	2014/05/20	BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	4	N/A	2014/05/21	BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	10	N/A	2014/05/27	BRL SOP-00304	EPA TO-15

(1) Air sampling canisters have been cleaned in accordance with U.S. EPA Method TO14A. At the end of the cleaning, evacuation, and pressurization cycles, one canister was selected and was pressurized with Zero Air. This canister was then analyzed via TO14A on a GC/MS. The canister must have been found to contain <0.2 ppbv concentration of all target analytes in order for the batch to have been considered clean. Each canister also underwent a leak check prior to shipment.

Please Note: SUMMA® canister samples will be retained by Maxxam for a period of 5 calendar days or as contractually agreed from the date of this report, after which time they will be cleaned for reuse. If you require a longer sample storage period, please contact your service representative.

Encryption Key

Cristina Bacchus Cristina Bacchus
 30 May 2014 12:23:58 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Theresa Stephenson, Project Manager
 Email: TStephenson@maxxam.ca
 Phone# (905) 817-5763

Maxxam 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.



Your Project #: 13-1324-0204
Site#: MEDIA PREP
Site Location: QUARTER 2

Attention: Julie Burghardt

Golder Associates Ltd
102, 2535-3rd Ave SE
Calgary, AB
CANADA T2A 7W5

Report Date: 2014/05/30
Report #: R3043841
Version: 2R

CERTIFICATE OF ANALYSIS – REVISED REPORT

-2-

Maxxam Analytics Inc. is a NELAC accredited laboratory. Certificate # CANA001. Use of the NELAC logo however does not insure that Maxxam is accredited for all of the methods indicated. This certificate shall not be reproduced except in full, without the written approval of Maxxam Analytics Inc. Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section.

Total cover pages: 2

Page 2 of 74

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8137					
Sampling Date		2014/05/27 08:06					
	Units	1.4L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #1 222					

Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3620862	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3620862	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3620862	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3620862	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3620862	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3620862	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3620862	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3620862	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3620862	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3620862	0.60
2-Propanone	ppbv	<1.0	1.0	<2.38	2.38	3620862	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3620862	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3620862	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3620862	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3620862	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3620862	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3620862	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3620862	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3620862	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3620862	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3620862	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3620862	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3620862	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3620862	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3620862	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3620862	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3620862	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3620862	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3620862	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3620862	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3620862	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3620862	0.10
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8137					
Sampling Date		2014/05/27 08:06					
	Units	1.4L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #1 222					
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3620862	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3620862	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3620862	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3620862	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3620862	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3620862	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3620862	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3620862	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3620862	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3620862	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3620862	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3620862	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3620862	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3620862	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3620862	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3620862	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620862	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620862	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620862	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3620862	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3620862	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3620862	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3620862	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3620862	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3620862	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3620862	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3620862	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3620862	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3620862	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3620862	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3620862	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3620862	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	103		N/A	N/A	3620862	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B487237
 Report Date: 2014/05/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8137					
Sampling Date		2014/05/27 08:06					
	Units	1.4L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #1 222					

D5-Chlorobenzene	%	99		N/A	N/A	3620862	
Difluorobenzene	%	102		N/A	N/A	3620862	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8138					
Sampling Date		2014/05/27 08:06					
	Units	1.4L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #2 3008					

Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3614651	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3614651	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3614651	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3614651	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3614651	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3614651	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3614651	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3614651	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3614651	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3614651	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3614651	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3614651	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3614651	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3614651	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3614651	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3614651	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3614651	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3614651	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3614651	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3614651	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3614651	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3614651	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3614651	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3614651	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3614651	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3614651	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3614651	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3614651	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3614651	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3614651	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3614651	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3614651	0.10
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8138					
Sampling Date		2014/05/27 08:06					
	Units	1.4L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #2 3008					
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3614651	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3614651	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3614651	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3614651	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3614651	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3614651	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3614651	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3614651	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3614651	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3614651	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3614651	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3614651	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3614651	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3614651	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3614651	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3614651	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3614651	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3614651	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3614651	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3614651	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3614651	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3614651	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3614651	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3614651	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3614651	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3614651	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3614651	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3614651	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3614651	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3614651	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3614651	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3614651	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	77		N/A	N/A	3614651	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B487237
 Report Date: 2014/05/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8138					
Sampling Date		2014/05/27 08:06					
	Units	1.4L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #2 3008					

D5-Chlorobenzene	%	72		N/A	N/A	3614651	
Difluorobenzene	%	77		N/A	N/A	3614651	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8139					
Sampling Date		2014/05/27 08:06					
	Units	1.4L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #3 2536					

Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3620634	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3620634	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3620634	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3620634	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3620634	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3620634	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3620634	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3620634	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3620634	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3620634	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3620634	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3620634	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3620634	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3620634	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3620634	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3620634	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3620634	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3620634	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3620634	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3620634	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3620634	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3620634	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3620634	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3620634	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3620634	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3620634	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3620634	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3620634	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3620634	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3620634	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3620634	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3620634	0.10

RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8139					
Sampling Date		2014/05/27 08:06					
	Units	1.4L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #3 2536					
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3620634	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3620634	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3620634	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3620634	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3620634	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3620634	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3620634	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3620634	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3620634	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3620634	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3620634	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3620634	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3620634	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3620634	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3620634	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3620634	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620634	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620634	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620634	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3620634	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3620634	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3620634	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3620634	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3620634	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3620634	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3620634	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3620634	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3620634	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3620634	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3620634	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3620634	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3620634	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	88		N/A	N/A	3620634	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B487237
 Report Date: 2014/05/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8139					
Sampling Date		2014/05/27 08:06					
	Units	1.4L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #3 2536					

D5-Chlorobenzene	%	86		N/A	N/A	3620634	
Difluorobenzene	%	90		N/A	N/A	3620634	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8140					
Sampling Date		2014/05/27 08:06					
	Units	1.4L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #4 1377					

Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3614651	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3614651	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3614651	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3614651	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3614651	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3614651	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3614651	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3614651	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3614651	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3614651	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3614651	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3614651	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3614651	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3614651	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3614651	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3614651	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3614651	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3614651	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3614651	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3614651	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3614651	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3614651	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3614651	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3614651	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3614651	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3614651	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3614651	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3614651	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3614651	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3614651	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3614651	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3614651	0.10

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8140					
Sampling Date		2014/05/27 08:06					
	Units	1.4L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #4 1377					
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3614651	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3614651	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3614651	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3614651	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3614651	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3614651	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3614651	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3614651	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3614651	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3614651	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3614651	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3614651	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3614651	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3614651	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3614651	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3614651	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3614651	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3614651	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3614651	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3614651	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3614651	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3614651	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3614651	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3614651	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3614651	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3614651	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3614651	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3614651	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3614651	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3614651	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3614651	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3614651	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	83		N/A	N/A	3614651	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B487237
 Report Date: 2014/05/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8140					
Sampling Date		2014/05/27 08:06					
	Units	1.4L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #4 1377					

D5-Chlorobenzene	%	76		N/A	N/A	3614651	
Difluorobenzene	%	82		N/A	N/A	3614651	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8141					
Sampling Date		2014/05/27 08:06					
	Units	1.4L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #5 2526					

Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3620634	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3620634	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3620634	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3620634	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3620634	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3620634	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3620634	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3620634	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3620634	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3620634	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3620634	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3620634	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3620634	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3620634	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3620634	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3620634	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3620634	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3620634	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3620634	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3620634	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3620634	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3620634	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3620634	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3620634	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3620634	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3620634	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3620634	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3620634	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3620634	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3620634	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3620634	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3620634	0.10
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8141					
Sampling Date		2014/05/27 08:06					
	Units	1.4L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #5 2526					
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3620634	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3620634	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3620634	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3620634	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3620634	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3620634	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3620634	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3620634	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3620634	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3620634	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3620634	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3620634	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3620634	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3620634	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3620634	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3620634	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620634	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620634	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620634	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3620634	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3620634	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3620634	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3620634	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3620634	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3620634	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3620634	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3620634	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3620634	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3620634	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3620634	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3620634	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3620634	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	84		N/A	N/A	3620634	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B487237
 Report Date: 2014/05/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8141					
Sampling Date		2014/05/27 08:06					
	Units	1.4L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #5 2526					

D5-Chlorobenzene	%	84		N/A	N/A	3620634	
Difluorobenzene	%	87		N/A	N/A	3620634	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8142					
Sampling Date		2014/05/27 08:06					
	Units	1.4L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #6 3016					

Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3621076	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3621076	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3621076	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3621076	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3621076	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3621076	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3621076	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3621076	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3621076	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3621076	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3621076	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3621076	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3621076	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3621076	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3621076	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3621076	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3621076	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3621076	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3621076	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3621076	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3621076	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3621076	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3621076	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3621076	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3621076	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3621076	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3621076	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3621076	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3621076	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3621076	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3621076	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3621076	0.10

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8142					
Sampling Date		2014/05/27 08:06					
	Units	1.4L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #6 3016					
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3621076	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3621076	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3621076	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3621076	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3621076	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3621076	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3621076	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3621076	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3621076	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3621076	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3621076	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3621076	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3621076	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3621076	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3621076	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3621076	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3621076	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3621076	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3621076	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3621076	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3621076	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3621076	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3621076	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3621076	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3621076	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3621076	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3621076	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3621076	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3621076	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3621076	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3621076	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3621076	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	92		N/A	N/A	3621076	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B487237
 Report Date: 2014/05/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8142					
Sampling Date		2014/05/27 08:06					
	Units	1.4L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #6 3016					

D5-Chlorobenzene	%	91		N/A	N/A	3621076	
Difluorobenzene	%	95		N/A	N/A	3621076	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8187					
Sampling Date		2014/05/27 08:06					
	Units	6L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #1 2785					

Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3620709	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3620709	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3620709	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3620709	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3620709	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3620709	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3620709	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3620709	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3620709	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3620709	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3620709	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3620709	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3620709	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3620709	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3620709	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3620709	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3620709	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3620709	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3620709	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3620709	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3620709	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3620709	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3620709	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3620709	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3620709	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3620709	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3620709	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3620709	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3620709	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3620709	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3620709	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3620709	0.10

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8187					
Sampling Date		2014/05/27 08:06					
	Units	6L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #1 2785					
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3620709	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3620709	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3620709	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3620709	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3620709	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3620709	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3620709	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3620709	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3620709	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3620709	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3620709	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3620709	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3620709	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3620709	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3620709	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3620709	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620709	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620709	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620709	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3620709	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3620709	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3620709	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3620709	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3620709	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3620709	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3620709	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3620709	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3620709	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3620709	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3620709	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3620709	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3620709	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	91		N/A	N/A	3620709	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B487237
 Report Date: 2014/05/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8187					
Sampling Date		2014/05/27 08:06					
	Units	6L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #1 2785					

D5-Chlorobenzene	%	86		N/A	N/A	3620709	
Difluorobenzene	%	92		N/A	N/A	3620709	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8188					
Sampling Date		2014/05/27 08:06					
	Units	6L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #2 2615					

Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3620774	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3620774	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3620774	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3620774	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3620774	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3620774	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3620774	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3620774	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3620774	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3620774	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3620774	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3620774	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3620774	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3620774	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3620774	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3620774	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3620774	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3620774	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3620774	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3620774	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3620774	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3620774	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3620774	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3620774	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3620774	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3620774	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3620774	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3620774	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3620774	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3620774	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3620774	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3620774	0.10

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8188					
Sampling Date		2014/05/27 08:06					
	Units	6L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #2 2615					
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3620774	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3620774	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3620774	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3620774	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3620774	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3620774	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3620774	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3620774	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3620774	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3620774	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3620774	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3620774	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3620774	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3620774	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3620774	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3620774	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620774	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620774	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620774	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3620774	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3620774	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3620774	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3620774	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3620774	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3620774	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3620774	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3620774	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3620774	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3620774	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3620774	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3620774	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3620774	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	95		N/A	N/A	3620774	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B487237
 Report Date: 2014/05/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8188					
Sampling Date		2014/05/27 08:06					
	Units	6L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #2 2615					

D5-Chlorobenzene	%	87		N/A	N/A	3620774	
Difluorobenzene	%	96		N/A	N/A	3620774	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8189					
Sampling Date		2014/05/27 08:06					
	Units	6L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #3 7794					

Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3620774	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3620774	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3620774	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3620774	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3620774	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3620774	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3620774	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3620774	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3620774	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3620774	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3620774	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3620774	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3620774	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3620774	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3620774	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3620774	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3620774	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3620774	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3620774	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3620774	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3620774	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3620774	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3620774	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3620774	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3620774	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3620774	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3620774	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3620774	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3620774	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3620774	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3620774	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3620774	0.10
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8189					
Sampling Date		2014/05/27 08:06					
	Units	6L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #3 7794					
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3620774	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3620774	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3620774	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3620774	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3620774	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3620774	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3620774	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3620774	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3620774	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3620774	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3620774	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3620774	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3620774	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3620774	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3620774	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3620774	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620774	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620774	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620774	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3620774	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3620774	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3620774	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3620774	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3620774	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3620774	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3620774	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3620774	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3620774	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3620774	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3620774	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3620774	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3620774	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	90		N/A	N/A	3620774	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B487237
 Report Date: 2014/05/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8189					
Sampling Date		2014/05/27 08:06					
	Units	6L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #3 7794					

D5-Chlorobenzene	%	82		N/A	N/A	3620774	
Difluorobenzene	%	89		N/A	N/A	3620774	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8190					
Sampling Date		2014/05/27 08:06					
	Units	6L SUMMA #4 14517	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3621007	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3621007	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3621007	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3621007	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3621007	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3621007	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3621007	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3621007	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3621007	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3621007	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3621007	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3621007	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3621007	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3621007	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3621007	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3621007	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3621007	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3621007	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3621007	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3621007	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3621007	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3621007	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3621007	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3621007	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3621007	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3621007	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3621007	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3621007	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3621007	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3621007	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3621007	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3621007	0.10
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8190					
Sampling Date		2014/05/27 08:06					
	Units	6L SUMMA #4 14517	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3621007	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3621007	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3621007	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3621007	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3621007	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3621007	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3621007	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3621007	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3621007	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3621007	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3621007	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3621007	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3621007	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3621007	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3621007	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3621007	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3621007	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3621007	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3621007	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3621007	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3621007	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3621007	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3621007	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3621007	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3621007	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3621007	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3621007	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3621007	0.10
Propene	ppbv	<1.2	1.2	<2.07	2.07	3621007	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3621007	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3621007	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3621007	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	76		N/A	N/A	3621007	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B487237
 Report Date: 2014/05/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8190					
Sampling Date		2014/05/27 08:06					
	Units	6L SUMMA #4 14517	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

D5-Chlorobenzene	%	74		N/A	N/A	3621007	
Difluorobenzene	%	78		N/A	N/A	3621007	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8191					
Sampling Date		2014/05/27 08:06					
	Units	6L SUMMA #5 14891	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3620709	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3620709	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3620709	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3620709	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3620709	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3620709	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3620709	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3620709	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3620709	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3620709	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3620709	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3620709	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3620709	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3620709	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3620709	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3620709	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3620709	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3620709	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3620709	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3620709	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3620709	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3620709	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3620709	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3620709	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3620709	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3620709	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3620709	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3620709	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3620709	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3620709	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3620709	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3620709	0.10
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8191					
Sampling Date		2014/05/27 08:06					
	Units	6L SUMMA #5 14891	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3620709	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3620709	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3620709	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3620709	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3620709	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3620709	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3620709	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3620709	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3620709	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3620709	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3620709	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3620709	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3620709	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3620709	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3620709	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3620709	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620709	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620709	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620709	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3620709	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3620709	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3620709	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3620709	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3620709	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3620709	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3620709	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3620709	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3620709	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3620709	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3620709	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3620709	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3620709	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	85		N/A	N/A	3620709	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B487237
 Report Date: 2014/05/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8191					
Sampling Date		2014/05/27 08:06					
	Units	6L SUMMA #5 14891	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

D5-Chlorobenzene	%	82		N/A	N/A	3620709	
Difluorobenzene	%	89		N/A	N/A	3620709	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8192					
Sampling Date		2014/05/27 08:06					
	Units	6L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #6 2794					

Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3620709	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3620709	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3620709	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3620709	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3620709	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3620709	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3620709	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3620709	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3620709	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3620709	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3620709	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3620709	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3620709	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3620709	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3620709	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3620709	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3620709	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3620709	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3620709	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3620709	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3620709	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3620709	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3620709	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3620709	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3620709	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3620709	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3620709	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3620709	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3620709	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3620709	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3620709	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3620709	0.10

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8192					
Sampling Date		2014/05/27 08:06					
	Units	6L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #6 2794					
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3620709	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3620709	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3620709	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3620709	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3620709	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3620709	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3620709	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3620709	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3620709	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3620709	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3620709	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3620709	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3620709	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3620709	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3620709	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3620709	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620709	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620709	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620709	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3620709	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3620709	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3620709	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3620709	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3620709	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3620709	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3620709	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3620709	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3620709	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3620709	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3620709	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3620709	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3620709	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	87		N/A	N/A	3620709	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B487237
 Report Date: 2014/05/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8192					
Sampling Date		2014/05/27 08:06					
	Units	6L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #6 2794					

D5-Chlorobenzene	%	82		N/A	N/A	3620709	
Difluorobenzene	%	89		N/A	N/A	3620709	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8193					
Sampling Date		2014/05/27 08:06					
	Units	6L SUMMA #7 320	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3620840	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3620840	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3620840	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3620840	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3620840	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3620840	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3620840	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3620840	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3620840	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3620840	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3620840	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3620840	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3620840	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3620840	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3620840	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3620840	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3620840	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3620840	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3620840	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3620840	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3620840	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3620840	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3620840	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3620840	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3620840	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3620840	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3620840	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3620840	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3620840	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3620840	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3620840	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3620840	0.10

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8193					
Sampling Date		2014/05/27 08:06					
	Units	6L SUMMA #7 320	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3620840	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3620840	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3620840	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3620840	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3620840	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3620840	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3620840	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3620840	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3620840	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3620840	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3620840	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3620840	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3620840	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3620840	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3620840	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3620840	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620840	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620840	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620840	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3620840	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3620840	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3620840	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3620840	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3620840	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3620840	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3620840	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3620840	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3620840	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3620840	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3620840	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3620840	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3620840	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	84		N/A	N/A	3620840	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B487237
 Report Date: 2014/05/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8193					
Sampling Date		2014/05/27 08:06					
	Units	6L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #7 320					

D5-Chlorobenzene	%	83		N/A	N/A	3620840	
Difluorobenzene	%	85		N/A	N/A	3620840	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8194					
Sampling Date		2014/05/27 08:06					
	Units	6L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #8 7842					

Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3620840	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3620840	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3620840	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3620840	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3620840	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3620840	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3620840	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3620840	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3620840	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3620840	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3620840	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3620840	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3620840	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3620840	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3620840	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3620840	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3620840	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3620840	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3620840	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3620840	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3620840	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3620840	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3620840	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3620840	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3620840	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3620840	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3620840	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3620840	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3620840	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3620840	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3620840	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3620840	0.10

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8194					
Sampling Date		2014/05/27 08:06					
	Units	6L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #8 7842					

Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3620840	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3620840	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3620840	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3620840	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3620840	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3620840	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3620840	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3620840	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3620840	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3620840	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3620840	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3620840	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3620840	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3620840	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3620840	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3620840	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620840	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620840	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3620840	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3620840	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3620840	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3620840	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3620840	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3620840	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3620840	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3620840	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3620840	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3620840	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3620840	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3620840	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3620840	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3620840	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	88		N/A	N/A	3620840	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8194					
Sampling Date		2014/05/27 08:06					
	Units	6L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #8 7842					

D5-Chlorobenzene	%	86		N/A	N/A	3620840	
Difluorobenzene	%	88		N/A	N/A	3620840	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8195					
Sampling Date		2014/05/27 08:06					
	Units	6L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #9 7825					

Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3621007	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3621007	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3621007	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3621007	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3621007	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3621007	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3621007	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3621007	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3621007	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3621007	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3621007	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3621007	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3621007	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3621007	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3621007	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3621007	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3621007	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3621007	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3621007	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3621007	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3621007	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3621007	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3621007	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3621007	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3621007	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3621007	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3621007	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3621007	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3621007	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3621007	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3621007	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3621007	0.10

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8195					
Sampling Date		2014/05/27 08:06					
	Units	6L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #9 7825					
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3621007	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3621007	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3621007	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3621007	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3621007	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3621007	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3621007	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3621007	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3621007	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3621007	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3621007	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3621007	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3621007	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3621007	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3621007	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3621007	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3621007	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3621007	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3621007	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3621007	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3621007	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3621007	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3621007	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3621007	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3621007	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3621007	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3621007	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3621007	0.10
Propene	ppbv	<1.2	1.2	<2.07	2.07	3621007	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3621007	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3621007	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3621007	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	83		N/A	N/A	3621007	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B487237
 Report Date: 2014/05/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8195					
Sampling Date		2014/05/27 08:06					
	Units	6L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #9 7825					

D5-Chlorobenzene	%	80		N/A	N/A	3621007	
Difluorobenzene	%	85		N/A	N/A	3621007	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8196					
Sampling Date		2014/05/27 08:06					
	Units	6L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #10 111					

Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3621007	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3621007	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3621007	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3621007	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3621007	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3621007	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3621007	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3621007	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3621007	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3621007	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3621007	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3621007	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3621007	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3621007	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3621007	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3621007	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3621007	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3621007	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3621007	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3621007	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3621007	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3621007	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3621007	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3621007	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3621007	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3621007	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3621007	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3621007	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3621007	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3621007	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3621007	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3621007	0.10

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8196					
Sampling Date		2014/05/27 08:06					
	Units	6L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #10 111					
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3621007	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3621007	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3621007	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3621007	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3621007	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3621007	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3621007	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3621007	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3621007	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3621007	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3621007	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3621007	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3621007	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3621007	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3621007	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3621007	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3621007	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3621007	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3621007	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3621007	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3621007	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3621007	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3621007	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3621007	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3621007	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3621007	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3621007	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3621007	0.10
Propene	ppbv	<1.2	1.2	<2.07	2.07	3621007	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3621007	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3621007	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3621007	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	89		N/A	N/A	3621007	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B487237
 Report Date: 2014/05/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8196					
Sampling Date		2014/05/27 08:06					
	Units	6L	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
		SUMMA #10 111					

D5-Chlorobenzene	%	85		N/A	N/A	3621007	
Difluorobenzene	%	91		N/A	N/A	3621007	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8197					
Sampling Date		2014/05/27 08:06					
	Units	6L SUMMA #11 14273	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3614651	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3614651	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3614651	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3614651	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3614651	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3614651	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3614651	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3614651	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3614651	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3614651	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3614651	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3614651	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3614651	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3614651	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3614651	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3614651	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3614651	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3614651	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3614651	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3614651	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3614651	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3614651	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3614651	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3614651	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3614651	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3614651	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3614651	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3614651	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3614651	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3614651	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3614651	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3614651	0.10
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8197					
Sampling Date		2014/05/27 08:06					
	Units	6L SUMMA #11 14273	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3614651	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3614651	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3614651	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3614651	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3614651	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3614651	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3614651	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3614651	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3614651	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3614651	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3614651	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3614651	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3614651	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3614651	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3614651	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3614651	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3614651	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3614651	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3614651	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3614651	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3614651	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3614651	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3614651	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3614651	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3614651	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3614651	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3614651	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3614651	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3614651	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3614651	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3614651	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3614651	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	82		N/A	N/A	3614651	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B487237
 Report Date: 2014/05/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8197					
Sampling Date		2014/05/27 08:06					
	Units	6L SUMMA #11 14273	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

D5-Chlorobenzene	%	76		N/A	N/A	3614651	
Difluorobenzene	%	80		N/A	N/A	3614651	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8198					
Sampling Date		2014/05/27 08:06					
	Units	6L SUMMA #12 14269	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3614651	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3614651	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3614651	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3614651	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3614651	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3614651	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3614651	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3614651	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3614651	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3614651	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3614651	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3614651	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3614651	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3614651	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3614651	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3614651	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3614651	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3614651	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3614651	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3614651	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3614651	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3614651	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3614651	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3614651	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3614651	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3614651	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3614651	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3614651	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3614651	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3614651	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3614651	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3614651	0.10
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B487237
 Report Date: 2014/05/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8198					
Sampling Date		2014/05/27 08:06					
	Units	6L SUMMA #12 14269	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3614651	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3614651	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3614651	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3614651	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3614651	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3614651	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3614651	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3614651	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3614651	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3614651	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3614651	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3614651	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3614651	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3614651	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3614651	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3614651	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3614651	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3614651	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3614651	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3614651	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3614651	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3614651	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3614651	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3614651	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3614651	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3614651	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3614651	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3614651	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3614651	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3614651	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3614651	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3614651	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	93		N/A	N/A	3614651	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B487237
 Report Date: 2014/05/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WA8198					
Sampling Date		2014/05/27 08:06					
	Units	6L SUMMA #12 14269	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

D5-Chlorobenzene	%	86		N/A	N/A	3614651	
Difluorobenzene	%	91		N/A	N/A	3614651	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B487237
Report Date: 2014/05/30

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 2

Test Summary

Maxxam ID WA8137
Sample ID 1.4L SUMMA #1 222
Matrix Air Sampling Media
Collected 2014/05/27
Shipped
Received 2014/05/27

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3620862	N/A	2014/05/14	Jie Wu

Maxxam ID WA8138
Sample ID 1.4L SUMMA #2 3008
Matrix Air Sampling Media
Collected 2014/05/27
Shipped
Received 2014/05/27

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3614651	N/A	2014/05/21	Yao Liang Sun

Maxxam ID WA8139
Sample ID 1.4L SUMMA #3 2536
Matrix Air Sampling Media
Collected 2014/05/27
Shipped
Received 2014/05/27

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3620634	N/A	2014/05/20	Tarifur Rahman

Maxxam ID WA8140
Sample ID 1.4L SUMMA #4 1377
Matrix Air Sampling Media
Collected 2014/05/27
Shipped
Received 2014/05/27

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3614651	N/A	2014/05/21	Yao Liang Sun

Maxxam ID WA8141
Sample ID 1.4L SUMMA #5 2526
Matrix Air Sampling Media
Collected 2014/05/27
Shipped
Received 2014/05/27

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3620634	N/A	2014/05/20	Tarifur Rahman

Maxxam ID WA8142
Sample ID 1.4L SUMMA #6 3016
Matrix Air Sampling Media
Collected 2014/05/27
Shipped
Received 2014/05/27

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3621076	N/A	2014/05/13	Angel Guerrero

Maxxam ID WA8187
Sample ID 6L SUMMA #1 2785
Matrix Air Sampling Media
Collected 2014/05/27
Shipped
Received 2014/05/27

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3620709	N/A	2014/05/27	Tarifur Rahman

Maxxam Job #: B487237
Report Date: 2014/05/30

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 2

Test Summary

Maxxam ID WA8188
Sample ID 6L SUMMA #2 2615
Matrix Air Sampling Media
Collected 2014/05/27
Shipped
Received 2014/05/27

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3620774	N/A	2014/05/27	Yao Liang Sun

Maxxam ID WA8189
Sample ID 6L SUMMA #3 7794
Matrix Air Sampling Media
Collected 2014/05/27
Shipped
Received 2014/05/27

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3620774	N/A	2014/05/27	Yao Liang Sun

Maxxam ID WA8190
Sample ID 6L SUMMA #4 14517
Matrix Air Sampling Media
Collected 2014/05/27
Shipped
Received 2014/05/27

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3621007	N/A	2014/05/27	Spomenka Smiljanic

Maxxam ID WA8191
Sample ID 6L SUMMA #5 14891
Matrix Air Sampling Media
Collected 2014/05/27
Shipped
Received 2014/05/27

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3620709	N/A	2014/05/27	Tarifur Rahman

Maxxam ID WA8192
Sample ID 6L SUMMA #6 2794
Matrix Air Sampling Media
Collected 2014/05/27
Shipped
Received 2014/05/27

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3620709	N/A	2014/05/27	Tarifur Rahman

Maxxam ID WA8193
Sample ID 6L SUMMA #7 320
Matrix Air Sampling Media
Collected 2014/05/27
Shipped
Received 2014/05/27

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3620840	N/A	2014/05/27	Jie Wu

Maxxam ID WA8194
Sample ID 6L SUMMA #8 7842
Matrix Air Sampling Media
Collected 2014/05/27
Shipped
Received 2014/05/27

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3620840	N/A	2014/05/27	Jie Wu

Maxxam Job #: B487237
 Report Date: 2014/05/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 2

Test Summary

Maxxam ID WA8195
Sample ID 6L SUMMA #9 7825
Matrix Air Sampling Media

Collected 2014/05/27
Shipped
Received 2014/05/27

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3621007	N/A	2014/05/27	Spomenka Smiljanic

Maxxam ID WA8196
Sample ID 6L SUMMA #10 111
Matrix Air Sampling Media

Collected 2014/05/27
Shipped
Received 2014/05/27

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3621007	N/A	2014/05/27	Spomenka Smiljanic

Maxxam ID WA8197
Sample ID 6L SUMMA #11 14273
Matrix Air Sampling Media

Collected 2014/05/27
Shipped
Received 2014/05/27

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3614651	N/A	2014/05/21	Yao Liang Sun

Maxxam ID WA8198
Sample ID 6L SUMMA #12 14269
Matrix Air Sampling Media

Collected 2014/05/27
Shipped
Received 2014/05/27

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3614651	N/A	2014/05/21	Yao Liang Sun

Maxxam Job #: B487237
Report Date: 2014/05/30

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 2

GENERAL COMMENTS

Results relate only to the items tested.

Golder Associates Ltd
 Attention: Julie Burghardt
 Client Project #: 13-1324-0204
 P.O. #:
 Site Location: QUARTER 2

Quality Assurance Report
 Maxxam Job Number: GB487237

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3614651 LSY	Spiked Blank	Bromochloromethane	2014/05/21		110	%	60 - 140
		D5-Chlorobenzene	2014/05/21		108	%	60 - 140
		Difluorobenzene	2014/05/21		109	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2014/05/21		98	%	70 - 130
		1,2-Dichlorotetrafluoroethane	2014/05/21		101	%	70 - 130
		Chloromethane	2014/05/21		104	%	70 - 130
		Vinyl Chloride	2014/05/21		104	%	70 - 130
		Chloroethane	2014/05/21		109	%	70 - 130
		1,3-Butadiene	2014/05/21		110	%	70 - 130
		Trichlorofluoromethane (FREON 11)	2014/05/21		94	%	70 - 130
		Ethanol (ethyl alcohol)	2014/05/21		77	%	70 - 130
		Trichlorotrifluoroethane	2014/05/21		98	%	70 - 130
		2-propanol	2014/05/21		101	%	70 - 130
		2-Propanone	2014/05/21		104	%	70 - 130
		Methyl Ethyl Ketone (2-Butanone)	2014/05/21		102	%	70 - 130
		Methyl Isobutyl Ketone	2014/05/21		103	%	70 - 130
		Methyl Butyl Ketone (2-Hexanone)	2014/05/21		104	%	70 - 130
		Methyl t-butyl ether (MTBE)	2014/05/21		100	%	70 - 130
		Ethyl Acetate	2014/05/21		111	%	70 - 130
		1,1-Dichloroethylene	2014/05/21		100	%	70 - 130
		cis-1,2-Dichloroethylene	2014/05/21		100	%	70 - 130
		trans-1,2-Dichloroethylene	2014/05/21		99	%	70 - 130
		Methylene Chloride(Dichloromethane)	2014/05/21		93	%	70 - 130
		Chloroform	2014/05/21		96	%	70 - 130
		Carbon Tetrachloride	2014/05/21		92	%	70 - 130
		1,1-Dichloroethane	2014/05/21		99	%	70 - 130
		1,2-Dichloroethane	2014/05/21		94	%	70 - 130
		Ethylene Dibromide	2014/05/21		97	%	70 - 130
		1,1,1-Trichloroethane	2014/05/21		93	%	70 - 130
		1,1,2-Trichloroethane	2014/05/21		99	%	70 - 130
		1,1,2,2-Tetrachloroethane	2014/05/21		99	%	70 - 130
		cis-1,3-Dichloropropene	2014/05/21		95	%	70 - 130
		trans-1,3-Dichloropropene	2014/05/21		98	%	70 - 130
		1,2-Dichloropropane	2014/05/21		97	%	70 - 130
		Bromomethane	2014/05/21		100	%	70 - 130
		Bromoform	2014/05/21		110	%	70 - 130
		Bromodichloromethane	2014/05/21		98	%	70 - 130
		Dibromochloromethane	2014/05/21		102	%	70 - 130
		Trichloroethylene	2014/05/21		95	%	70 - 130
		Tetrachloroethylene	2014/05/21		95	%	70 - 130
		Benzene	2014/05/21		99	%	70 - 130
		Toluene	2014/05/21		103	%	70 - 130
		Ethylbenzene	2014/05/21		98	%	70 - 130
		p+m-Xylene	2014/05/21		97	%	70 - 130
		o-Xylene	2014/05/21		96	%	70 - 130
		Styrene	2014/05/21		90	%	70 - 130
		4-ethyltoluene	2014/05/21		99	%	70 - 130
		1,3,5-Trimethylbenzene	2014/05/21		96	%	70 - 130
		1,2,4-Trimethylbenzene	2014/05/21		97	%	70 - 130
		Chlorobenzene	2014/05/21		97	%	70 - 130
		Benzyl chloride	2014/05/21		100	%	70 - 130
		1,3-Dichlorobenzene	2014/05/21		100	%	70 - 130
		1,4-Dichlorobenzene	2014/05/21		98	%	70 - 130
		1,2-Dichlorobenzene	2014/05/21		98	%	70 - 130
		1,2,4-Trichlorobenzene	2014/05/21		109	%	70 - 130

Golder Associates Ltd
 Attention: Julie Burghardt
 Client Project #: 13-1324-0204
 P.O. #:
 Site Location: QUARTER 2

Quality Assurance Report (Continued)

Maxxam Job Number: GB487237

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3614651 LSY	Spiked Blank	Hexachlorobutadiene	2014/05/21		96	%	70 - 130
		Hexane	2014/05/21		101	%	70 - 130
		Heptane	2014/05/21		101	%	70 - 130
		Cyclohexane	2014/05/21		102	%	70 - 130
		Tetrahydrofuran	2014/05/21		105	%	70 - 130
		1,4-Dioxane	2014/05/21		101	%	70 - 130
		Xylene (Total)	2014/05/21		97	%	70 - 130
		Vinyl Bromide	2014/05/21		103	%	70 - 130
		Propene	2014/05/21		107	%	70 - 130
		2,2,4-Trimethylpentane	2014/05/21		109	%	70 - 130
		Carbon Disulfide	2014/05/21		99	%	70 - 130
		Vinyl Acetate	2014/05/21		94	%	70 - 130
	Method Blank	Bromochloromethane	2014/05/21		97	%	60 - 140
		D5-Chlorobenzene	2014/05/21		88	%	60 - 140
		Difluorobenzene	2014/05/21		96	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2014/05/21	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2014/05/21	<0.17		ppbv	
		Chloromethane	2014/05/21	<0.30		ppbv	
		Vinyl Chloride	2014/05/21	<0.18		ppbv	
		Chloroethane	2014/05/21	<0.30		ppbv	
		1,3-Butadiene	2014/05/21	<0.50		ppbv	
		Trichlorofluoromethane (FREON 11)	2014/05/21	<0.20		ppbv	
		Ethanol (ethyl alcohol)	2014/05/21	<2.3		ppbv	
		Trichlorotrifluoroethane	2014/05/21	<0.15		ppbv	
		2-propanol	2014/05/21	<3.0		ppbv	
		2-Propanone	2014/05/21	<0.80		ppbv	
		Methyl Ethyl Ketone (2-Butanone)	2014/05/21	<3.0		ppbv	
		Methyl Isobutyl Ketone	2014/05/21	<3.2		ppbv	
		Methyl Butyl Ketone (2-Hexanone)	2014/05/21	<2.0		ppbv	
		Methyl t-butyl ether (MTBE)	2014/05/21	<0.20		ppbv	
		Ethyl Acetate	2014/05/21	<2.2		ppbv	
		1,1-Dichloroethylene	2014/05/21	<0.25		ppbv	
		cis-1,2-Dichloroethylene	2014/05/21	<0.19		ppbv	
		trans-1,2-Dichloroethylene	2014/05/21	<0.20		ppbv	
		Methylene Chloride(Dichloromethane)	2014/05/21	<0.80		ppbv	
		Chloroform	2014/05/21	<0.15		ppbv	
		Carbon Tetrachloride	2014/05/21	<0.30		ppbv	
		1,1-Dichloroethane	2014/05/21	<0.20		ppbv	
		1,2-Dichloroethane	2014/05/21	<0.20		ppbv	
		Ethylene Dibromide	2014/05/21	<0.17		ppbv	
		1,1,1-Trichloroethane	2014/05/21	<0.30		ppbv	
		1,1,2-Trichloroethane	2014/05/21	<0.15		ppbv	
		1,1,2,2-Tetrachloroethane	2014/05/21	<0.20		ppbv	
		cis-1,3-Dichloropropene	2014/05/21	<0.18		ppbv	
		trans-1,3-Dichloropropene	2014/05/21	<0.17		ppbv	
		1,2-Dichloropropane	2014/05/21	<0.40		ppbv	
		Bromomethane	2014/05/21	<0.18		ppbv	
		Bromoform	2014/05/21	<0.20		ppbv	
		Bromodichloromethane	2014/05/21	<0.20		ppbv	
		Dibromochloromethane	2014/05/21	<0.20		ppbv	
		Trichloroethylene	2014/05/21	<0.30		ppbv	
		Tetrachloroethylene	2014/05/21	<0.20		ppbv	
		Benzene	2014/05/21	<0.18		ppbv	
		Toluene	2014/05/21	<0.20		ppbv	
		Ethylbenzene	2014/05/21	<0.20		ppbv	

Golder Associates Ltd
 Attention: Julie Burghardt
 Client Project #: 13-1324-0204
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Quality Assurance Report (Continued)
 Maxxam Job Number: GB487237

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits		
3614651 LSY	Method Blank	p+m-Xylene	2014/05/21	<0.37		ppbv			
		o-Xylene	2014/05/21	<0.20		ppbv			
		Styrene	2014/05/21	<0.20		ppbv			
		4-ethyltoluene	2014/05/21	<2.2		ppbv			
		1,3,5-Trimethylbenzene	2014/05/21	<0.50		ppbv			
		1,2,4-Trimethylbenzene	2014/05/21	<0.50		ppbv			
		Chlorobenzene	2014/05/21	<0.20		ppbv			
		Benzyl chloride	2014/05/21	<1.0		ppbv			
		1,3-Dichlorobenzene	2014/05/21	<0.40		ppbv			
		1,4-Dichlorobenzene	2014/05/21	<0.40		ppbv			
		1,2-Dichlorobenzene	2014/05/21	<0.40		ppbv			
		1,2,4-Trichlorobenzene	2014/05/21	<2.0		ppbv			
		Hexachlorobutadiene	2014/05/21	<3.0		ppbv			
		Hexane	2014/05/21	<0.30		ppbv			
		Heptane	2014/05/21	<0.30		ppbv			
		Cyclohexane	2014/05/21	<0.20		ppbv			
		Tetrahydrofuran	2014/05/21	<0.40		ppbv			
		1,4-Dioxane	2014/05/21	<2.0		ppbv			
		Xylene (Total)	2014/05/21	<0.60		ppbv			
		Vinyl Bromide	2014/05/21	<0.20		ppbv			
		Propene	2014/05/21	<0.30		ppbv			
		2,2,4-Trimethylpentane	2014/05/21	<0.20		ppbv			
		Carbon Disulfide	2014/05/21	<0.50		ppbv			
		Vinyl Acetate	2014/05/21	<0.20		ppbv			
		RPD - Sample/Sample Dup		Benzene	2014/05/21	NC		%	25
				Toluene	2014/05/21	NC		%	25
Ethylbenzene	2014/05/21			NC		%	25		
p+m-Xylene	2014/05/21			2.0		%	25		
o-Xylene	2014/05/21			NC		%	25		
Xylene (Total)	2014/05/21			NC		%	25		
3620634 TRN	Method Blank	Bromochloromethane	2014/05/20		93	%	60 - 140		
		D5-Chlorobenzene	2014/05/20		91	%	60 - 140		
		Difluorobenzene	2014/05/20		95	%	60 - 140		
		Dichlorodifluoromethane (FREON 12)	2014/05/20	<0.20		ppbv			
		1,2-Dichlorotetrafluoroethane	2014/05/20	<0.17		ppbv			
		Chloromethane	2014/05/20	<0.30		ppbv			
		Vinyl Chloride	2014/05/20	<0.18		ppbv			
		Chloroethane	2014/05/20	<0.30		ppbv			
		1,3-Butadiene	2014/05/20	<0.50		ppbv			
		Trichlorofluoromethane (FREON 11)	2014/05/20	<0.20		ppbv			
		Ethanol (ethyl alcohol)	2014/05/20	<2.3		ppbv			
		Trichlorotrifluoroethane	2014/05/20	<0.15		ppbv			
		2-propanol	2014/05/20	<3.0		ppbv			
		2-Propanone	2014/05/20	<0.80		ppbv			
		Methyl Ethyl Ketone (2-Butanone)	2014/05/20	<3.0		ppbv			
		Methyl Isobutyl Ketone	2014/05/20	<3.2		ppbv			
		Methyl Butyl Ketone (2-Hexanone)	2014/05/20	<2.0		ppbv			
		Methyl t-butyl ether (MTBE)	2014/05/20	<0.20		ppbv			
		Ethyl Acetate	2014/05/20	<2.2		ppbv			
		1,1-Dichloroethylene	2014/05/20	<0.25		ppbv			
		cis-1,2-Dichloroethylene	2014/05/20	<0.19		ppbv			
		trans-1,2-Dichloroethylene	2014/05/20	<0.20		ppbv			
		Methylene Chloride(Dichloromethane)	2014/05/20	<0.80		ppbv			

Golder Associates Ltd
 Attention: Julie Burghardt
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Quality Assurance Report (Continued)

Maxxam Job Number: GB487237

QA/QC Batch			Date Analyzed					
Num Init	QC Type	Parameter	yyyy/mm/dd	Value	%Recovery	Units	QC Limits	
3620634	TRN	Method Blank	2014/05/20	<0.15		ppbv		
		Chloroform	2014/05/20	<0.30		ppbv		
		Carbon Tetrachloride	2014/05/20	<0.20		ppbv		
		1,1-Dichloroethane	2014/05/20	<0.20		ppbv		
		1,2-Dichloroethane	2014/05/20	<0.17		ppbv		
		Ethylene Dibromide	2014/05/20	<0.30		ppbv		
		1,1,1-Trichloroethane	2014/05/20	<0.15		ppbv		
		1,1,2-Trichloroethane	2014/05/20	<0.20		ppbv		
		1,1,2,2-Tetrachloroethane	2014/05/20	<0.18		ppbv		
		cis-1,3-Dichloropropene	2014/05/20	<0.17		ppbv		
		trans-1,3-Dichloropropene	2014/05/20	<0.40		ppbv		
		1,2-Dichloropropane	2014/05/20	<0.18		ppbv		
		Bromomethane	2014/05/20	<0.20		ppbv		
		Bromoform	2014/05/20	<0.20		ppbv		
		Bromodichloromethane	2014/05/20	<0.20		ppbv		
		Dibromochloromethane	2014/05/20	<0.30		ppbv		
		Trichloroethylene	2014/05/20	<0.20		ppbv		
		Tetrachloroethylene	2014/05/20	<0.18		ppbv		
		Benzene	2014/05/20	<0.20		ppbv		
		Toluene	2014/05/20	<0.20		ppbv		
		Ethylbenzene	2014/05/20	<0.37		ppbv		
		p+m-Xylene	2014/05/20	<0.20		ppbv		
		o-Xylene	2014/05/20	<0.20		ppbv		
		Styrene	2014/05/20	<2.2		ppbv		
		4-ethyltoluene	2014/05/20	<0.50		ppbv		
		1,3,5-Trimethylbenzene	2014/05/20	<0.50		ppbv		
		1,2,4-Trimethylbenzene	2014/05/20	<0.20		ppbv		
		Chlorobenzene	2014/05/20	<1.0		ppbv		
		Benzyl chloride	2014/05/20	<0.40		ppbv		
		1,3-Dichlorobenzene	2014/05/20	<0.40		ppbv		
		1,4-Dichlorobenzene	2014/05/20	<0.40		ppbv		
		1,2-Dichlorobenzene	2014/05/20	<2.0		ppbv		
		1,2,4-Trichlorobenzene	2014/05/20	<3.0		ppbv		
		Hexachlorobutadiene	2014/05/20	<0.30		ppbv		
		Hexane	2014/05/20	<0.30		ppbv		
		Heptane	2014/05/20	<0.20		ppbv		
		Cyclohexane	2014/05/20	<0.40		ppbv		
		Tetrahydrofuran	2014/05/20	<2.0		ppbv		
		1,4-Dioxane	2014/05/20	<0.60		ppbv		
		Xylene (Total)	2014/05/20	<0.20		ppbv		
		Vinyl Bromide	2014/05/20	<0.30		ppbv		
		Propene	2014/05/20	<0.20		ppbv		
		2,2,4-Trimethylpentane	2014/05/20	<0.50		ppbv		
		Carbon Disulfide	2014/05/20	<0.20		ppbv		
		Vinyl Acetate	2014/05/20			ppbv		
3620709	TRN	Method Blank	2014/05/27		104	%	60 - 140	
		Bromochloromethane	2014/05/27		98	%	60 - 140	
		D5-Chlorobenzene	2014/05/27		107	%	60 - 140	
		Difluorobenzene	2014/05/27	<0.20		ppbv		
		Dichlorodifluoromethane (FREON 12)	2014/05/27	<0.17		ppbv		
		1,2-Dichlorotetrafluoroethane	2014/05/27	<0.30		ppbv		
		Chloromethane	2014/05/27	<0.18		ppbv		
		Vinyl Chloride	2014/05/27	<0.30		ppbv		
		Chloroethane	2014/05/27	<0.50		ppbv		
		1,3-Butadiene	2014/05/27	<0.20		ppbv		
		Trichlorofluoromethane (FREON 11)	2014/05/27	<2.3		ppbv		
		Ethanol (ethyl alcohol)	2014/05/27			ppbv		

Golder Associates Ltd
 Attention: Julie Burghardt
 Client Project #: 13-1324-0204
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Quality Assurance Report (Continued)

Maxxam Job Number: GB487237

QA/QC Batch			Date Analyzed					
Num Init	QC Type	Parameter	yyyy/mm/dd	Value	%Recovery	Units	QC Limits	
3620709	TRN	Method Blank	Trichlorotrifluoroethane	2014/05/27	<0.15	ppbv		
			2-propanol	2014/05/27	<3.0	ppbv		
			2-Propanone	2014/05/27	<0.80	ppbv		
			Methyl Ethyl Ketone (2-Butanone)	2014/05/27	<3.0	ppbv		
			Methyl Isobutyl Ketone	2014/05/27	<3.2	ppbv		
			Methyl Butyl Ketone (2-Hexanone)	2014/05/27	<2.0	ppbv		
			Methyl t-butyl ether (MTBE)	2014/05/27	<0.20	ppbv		
			Ethyl Acetate	2014/05/27	<2.2	ppbv		
			1,1-Dichloroethylene	2014/05/27	<0.25	ppbv		
			cis-1,2-Dichloroethylene	2014/05/27	<0.19	ppbv		
			trans-1,2-Dichloroethylene	2014/05/27	<0.20	ppbv		
			Methylene Chloride(Dichloromethane)	2014/05/27	<0.80	ppbv		
			Chloroform	2014/05/27	<0.15	ppbv		
			Carbon Tetrachloride	2014/05/27	<0.30	ppbv		
			1,1-Dichloroethane	2014/05/27	<0.20	ppbv		
			1,2-Dichloroethane	2014/05/27	<0.20	ppbv		
			Ethylene Dibromide	2014/05/27	<0.17	ppbv		
			1,1,1-Trichloroethane	2014/05/27	<0.30	ppbv		
			1,1,2-Trichloroethane	2014/05/27	<0.15	ppbv		
			1,1,2,2-Tetrachloroethane	2014/05/27	<0.20	ppbv		
			cis-1,3-Dichloropropene	2014/05/27	<0.18	ppbv		
			trans-1,3-Dichloropropene	2014/05/27	<0.17	ppbv		
			1,2-Dichloropropane	2014/05/27	<0.40	ppbv		
			Bromomethane	2014/05/27	<0.18	ppbv		
			Bromoform	2014/05/27	<0.20	ppbv		
			Bromodichloromethane	2014/05/27	<0.20	ppbv		
			Dibromochloromethane	2014/05/27	<0.20	ppbv		
			Trichloroethylene	2014/05/27	<0.30	ppbv		
			Tetrachloroethylene	2014/05/27	<0.20	ppbv		
			Benzene	2014/05/27	<0.18	ppbv		
			Toluene	2014/05/27	<0.20	ppbv		
			Ethylbenzene	2014/05/27	<0.20	ppbv		
			p+m-Xylene	2014/05/27	<0.37	ppbv		
			o-Xylene	2014/05/27	<0.20	ppbv		
			Styrene	2014/05/27	<0.20	ppbv		
			4-ethyltoluene	2014/05/27	<2.2	ppbv		
			1,3,5-Trimethylbenzene	2014/05/27	<0.50	ppbv		
			1,2,4-Trimethylbenzene	2014/05/27	<0.50	ppbv		
			Chlorobenzene	2014/05/27	<0.20	ppbv		
			Benzyl chloride	2014/05/27	<1.0	ppbv		
			1,3-Dichlorobenzene	2014/05/27	<0.40	ppbv		
			1,4-Dichlorobenzene	2014/05/27	<0.40	ppbv		
			1,2-Dichlorobenzene	2014/05/27	<0.40	ppbv		
			1,2,4-Trichlorobenzene	2014/05/27	<2.0	ppbv		
			Hexachlorobutadiene	2014/05/27	<3.0	ppbv		
			Hexane	2014/05/27	<0.30	ppbv		
			Heptane	2014/05/27	<0.30	ppbv		
			Cyclohexane	2014/05/27	<0.20	ppbv		
			Tetrahydrofuran	2014/05/27	<0.40	ppbv		
			1,4-Dioxane	2014/05/27	<2.0	ppbv		
			Xylene (Total)	2014/05/27	<0.60	ppbv		
			Vinyl Bromide	2014/05/27	<0.20	ppbv		
			Propene	2014/05/27	<0.30	ppbv		
			2,2,4-Trimethylpentane	2014/05/27	<0.20	ppbv		
			Carbon Disulfide	2014/05/27	<0.50	ppbv		

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QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3620709 TRN	Method Blank	Vinyl Acetate	2014/05/27	<0.20		ppbv	
3620774 LSY	Spiked Blank	Bromochloromethane	2014/05/27		104	%	60 - 140
		D5-Chlorobenzene	2014/05/27		101	%	60 - 140
		Difluorobenzene	2014/05/27		103	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2014/05/27		106	%	70 - 130
		1,2-Dichlorotetrafluoroethane	2014/05/27		105	%	70 - 130
		Chloromethane	2014/05/27		99	%	70 - 130
		Vinyl Chloride	2014/05/27		99	%	70 - 130
		Chloroethane	2014/05/27		101	%	70 - 130
		1,3-Butadiene	2014/05/27		103	%	70 - 130
		Trichlorofluoromethane (FREON 11)	2014/05/27		104	%	70 - 130
		Ethanol (ethyl alcohol)	2014/05/27		70	%	70 - 130
		Trichlorotrifluoroethane	2014/05/27		102	%	70 - 130
		2-propanol	2014/05/27		93	%	70 - 130
		2-Propanone	2014/05/27		103	%	70 - 130
		Methyl Ethyl Ketone (2-Butanone)	2014/05/27		94	%	70 - 130
		Methyl Isobutyl Ketone	2014/05/27		100	%	70 - 130
		Methyl Butyl Ketone (2-Hexanone)	2014/05/27		101	%	70 - 130
		Methyl t-butyl ether (MTBE)	2014/05/27		102	%	70 - 130
		Ethyl Acetate	2014/05/27		104	%	70 - 130
		1,1-Dichloroethylene	2014/05/27		100	%	70 - 130
		cis-1,2-Dichloroethylene	2014/05/27		98	%	70 - 130
		trans-1,2-Dichloroethylene	2014/05/27		97	%	70 - 130
		Methylene Chloride(Dichloromethane)	2014/05/27		89	%	70 - 130
		Chloroform	2014/05/27		101	%	70 - 130
		Carbon Tetrachloride	2014/05/27		106	%	70 - 130
		1,1-Dichloroethane	2014/05/27		98	%	70 - 130
		1,2-Dichloroethane	2014/05/27		100	%	70 - 130
		Ethylene Dibromide	2014/05/27		105	%	70 - 130
		1,1,1-Trichloroethane	2014/05/27		105	%	70 - 130
		1,1,2-Trichloroethane	2014/05/27		104	%	70 - 130
		1,1,2,2-Tetrachloroethane	2014/05/27		102	%	70 - 130
		cis-1,3-Dichloropropene	2014/05/27		98	%	70 - 130
		trans-1,3-Dichloropropene	2014/05/27		103	%	70 - 130
		1,2-Dichloropropane	2014/05/27		96	%	70 - 130
		Bromomethane	2014/05/27		102	%	70 - 130
		Bromoform	2014/05/27		117	%	70 - 130
		Bromodichloromethane	2014/05/27		108	%	70 - 130
		Dibromochloromethane	2014/05/27		115	%	70 - 130
		Trichloroethylene	2014/05/27		105	%	70 - 130
		Tetrachloroethylene	2014/05/27		109	%	70 - 130
		Benzene	2014/05/27		99	%	70 - 130
		Toluene	2014/05/27		109	%	70 - 130
		Ethylbenzene	2014/05/27		101	%	70 - 130
		p+m-Xylene	2014/05/27		102	%	70 - 130
		o-Xylene	2014/05/27		102	%	70 - 130
		Styrene	2014/05/27		91	%	70 - 130
		4-ethyltoluene	2014/05/27		107	%	70 - 130
		1,3,5-Trimethylbenzene	2014/05/27		104	%	70 - 130
		1,2,4-Trimethylbenzene	2014/05/27		106	%	70 - 130
		Chlorobenzene	2014/05/27		101	%	70 - 130
		Benzyl chloride	2014/05/27		108	%	70 - 130
		1,3-Dichlorobenzene	2014/05/27		114	%	70 - 130
		1,4-Dichlorobenzene	2014/05/27		114	%	70 - 130
		1,2-Dichlorobenzene	2014/05/27		113	%	70 - 130

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QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3620774 LSY	Spiked Blank	1,2,4-Trichlorobenzene	2014/05/27		126	%	70 - 130
		Hexachlorobutadiene	2014/05/27		122	%	70 - 130
		Hexane	2014/05/27		96	%	70 - 130
		Heptane	2014/05/27		95	%	70 - 130
		Cyclohexane	2014/05/27		98	%	70 - 130
		Tetrahydrofuran	2014/05/27		95	%	70 - 130
		1,4-Dioxane	2014/05/27		104	%	70 - 130
		Xylene (Total)	2014/05/27		102	%	70 - 130
		Vinyl Bromide	2014/05/27		107	%	70 - 130
		Propene	2014/05/27		97	%	70 - 130
		2,2,4-Trimethylpentane	2014/05/27		98	%	70 - 130
		Carbon Disulfide	2014/05/27		97	%	70 - 130
	Method Blank	Vinyl Acetate	2014/05/27		88	%	70 - 130
		Bromochloromethane	2014/05/27		94	%	60 - 140
		D5-Chlorobenzene	2014/05/27		88	%	60 - 140
		Difluorobenzene	2014/05/27		94	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2014/05/27	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2014/05/27	<0.17		ppbv	
		Chloromethane	2014/05/27	<0.30		ppbv	
		Vinyl Chloride	2014/05/27	<0.18		ppbv	
		Chloroethane	2014/05/27	<0.30		ppbv	
		1,3-Butadiene	2014/05/27	<0.50		ppbv	
		Trichlorofluoromethane (FREON 11)	2014/05/27	<0.20		ppbv	
		Ethanol (ethyl alcohol)	2014/05/27	<2.3		ppbv	
		Trichlorotrifluoroethane	2014/05/27	<0.15		ppbv	
		2-propanol	2014/05/27	<3.0		ppbv	
		2-Propanone	2014/05/27	<0.80		ppbv	
		Methyl Ethyl Ketone (2-Butanone)	2014/05/27	<3.0		ppbv	
		Methyl Isobutyl Ketone	2014/05/27	<3.2		ppbv	
		Methyl Butyl Ketone (2-Hexanone)	2014/05/27	<2.0		ppbv	
		Methyl t-butyl ether (MTBE)	2014/05/27	<0.20		ppbv	
		Ethyl Acetate	2014/05/27	<2.2		ppbv	
		1,1-Dichloroethylene	2014/05/27	<0.25		ppbv	
		cis-1,2-Dichloroethylene	2014/05/27	<0.19		ppbv	
		trans-1,2-Dichloroethylene	2014/05/27	<0.20		ppbv	
		Methylene Chloride(Dichloromethane)	2014/05/27	<0.80		ppbv	
		Chloroform	2014/05/27	<0.15		ppbv	
		Carbon Tetrachloride	2014/05/27	<0.30		ppbv	
		1,1-Dichloroethane	2014/05/27	<0.20		ppbv	
		1,2-Dichloroethane	2014/05/27	<0.20		ppbv	
		Ethylene Dibromide	2014/05/27	<0.17		ppbv	
		1,1,1-Trichloroethane	2014/05/27	<0.30		ppbv	
		1,1,2-Trichloroethane	2014/05/27	<0.15		ppbv	
		1,1,2,2-Tetrachloroethane	2014/05/27	<0.20		ppbv	
		cis-1,3-Dichloropropene	2014/05/27	<0.18		ppbv	
		trans-1,3-Dichloropropene	2014/05/27	<0.17		ppbv	
		1,2-Dichloropropane	2014/05/27	<0.40		ppbv	
		Bromomethane	2014/05/27	<0.18		ppbv	
		Bromoform	2014/05/27	<0.20		ppbv	
		Bromodichloromethane	2014/05/27	<0.20		ppbv	
		Dibromochloromethane	2014/05/27	<0.20		ppbv	
		Trichloroethylene	2014/05/27	<0.30		ppbv	
		Tetrachloroethylene	2014/05/27	<0.20		ppbv	
		Benzene	2014/05/27	<0.18		ppbv	
		Toluene	2014/05/27	<0.20		ppbv	

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QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3620774 LSY	Method Blank	Ethylbenzene	2014/05/27	<0.20		ppbv	
		p+m-Xylene	2014/05/27	<0.37		ppbv	
		o-Xylene	2014/05/27	<0.20		ppbv	
		Styrene	2014/05/27	<0.20		ppbv	
		4-ethyltoluene	2014/05/27	<2.2		ppbv	
		1,3,5-Trimethylbenzene	2014/05/27	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2014/05/27	<0.50		ppbv	
		Chlorobenzene	2014/05/27	<0.20		ppbv	
		Benzyl chloride	2014/05/27	<1.0		ppbv	
		1,3-Dichlorobenzene	2014/05/27	<0.40		ppbv	
		1,4-Dichlorobenzene	2014/05/27	<0.40		ppbv	
		1,2-Dichlorobenzene	2014/05/27	<0.40		ppbv	
		1,2,4-Trichlorobenzene	2014/05/27	<2.0		ppbv	
		Hexachlorobutadiene	2014/05/27	<3.0		ppbv	
		Hexane	2014/05/27	<0.30		ppbv	
		Heptane	2014/05/27	<0.30		ppbv	
		Cyclohexane	2014/05/27	<0.20		ppbv	
		Tetrahydrofuran	2014/05/27	<0.40		ppbv	
		1,4-Dioxane	2014/05/27	<2.0		ppbv	
		Xylene (Total)	2014/05/27	<0.60		ppbv	
		Vinyl Bromide	2014/05/27	<0.20		ppbv	
		Propene	2014/05/27	<0.30		ppbv	
		2,2,4-Trimethylpentane	2014/05/27	<0.20		ppbv	
		Carbon Disulfide	2014/05/27	<0.50		ppbv	
		Vinyl Acetate	2014/05/27	<0.20		ppbv	
		3620840 JIW	Method Blank	Bromochloromethane	2014/05/27		86
D5-Chlorobenzene	2014/05/27				83	%	60 - 140
Difluorobenzene	2014/05/27				87	%	60 - 140
Dichlorodifluoromethane (FREON 12)	2014/05/27			<0.20		ppbv	
1,2-Dichlorotetrafluoroethane	2014/05/27			<0.17		ppbv	
Chloromethane	2014/05/27			<0.30		ppbv	
Vinyl Chloride	2014/05/27			<0.18		ppbv	
Chloroethane	2014/05/27			<0.30		ppbv	
1,3-Butadiene	2014/05/27			<0.50		ppbv	
Trichlorofluoromethane (FREON 11)	2014/05/27			<0.20		ppbv	
Ethanol (ethyl alcohol)	2014/05/27			<2.3		ppbv	
Trichlorotrifluoroethane	2014/05/27			<0.15		ppbv	
2-propanol	2014/05/27			<3.0		ppbv	
2-Propanone	2014/05/27			<0.80		ppbv	
Methyl Ethyl Ketone (2-Butanone)	2014/05/27			<3.0		ppbv	
Methyl Isobutyl Ketone	2014/05/27			<3.2		ppbv	
Methyl Butyl Ketone (2-Hexanone)	2014/05/27			<2.0		ppbv	
Methyl t-butyl ether (MTBE)	2014/05/27			<0.20		ppbv	
Ethyl Acetate	2014/05/27			<2.2		ppbv	
1,1-Dichloroethylene	2014/05/27			<0.25		ppbv	
cis-1,2-Dichloroethylene	2014/05/27			<0.19		ppbv	
trans-1,2-Dichloroethylene	2014/05/27			<0.20		ppbv	
Methylene Chloride(Dichloromethane)	2014/05/27			<0.80		ppbv	
Chloroform	2014/05/27			<0.15		ppbv	
Carbon Tetrachloride	2014/05/27			<0.30		ppbv	
1,1-Dichloroethane	2014/05/27			<0.20		ppbv	
1,2-Dichloroethane	2014/05/27	<0.20		ppbv			
Ethylene Dibromide	2014/05/27	<0.17		ppbv			
1,1,1-Trichloroethane	2014/05/27	<0.30		ppbv			
1,1,2-Trichloroethane	2014/05/27	<0.15		ppbv			

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QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3620840 JIW	Method Blank	1,1,2,2-Tetrachloroethane	2014/05/27	<0.20		ppbv	
		cis-1,3-Dichloropropene	2014/05/27	<0.18		ppbv	
		trans-1,3-Dichloropropene	2014/05/27	<0.17		ppbv	
		1,2-Dichloropropane	2014/05/27	<0.40		ppbv	
		Bromomethane	2014/05/27	<0.18		ppbv	
		Bromoform	2014/05/27	<0.20		ppbv	
		Bromodichloromethane	2014/05/27	<0.20		ppbv	
		Dibromochloromethane	2014/05/27	<0.20		ppbv	
		Trichloroethylene	2014/05/27	<0.30		ppbv	
		Tetrachloroethylene	2014/05/27	<0.20		ppbv	
		Benzene	2014/05/27	<0.18		ppbv	
		Toluene	2014/05/27	<0.20		ppbv	
		Ethylbenzene	2014/05/27	<0.20		ppbv	
		p+m-Xylene	2014/05/27	<0.37		ppbv	
		o-Xylene	2014/05/27	<0.20		ppbv	
		Styrene	2014/05/27	<0.20		ppbv	
		4-ethyltoluene	2014/05/27	<2.2		ppbv	
		1,3,5-Trimethylbenzene	2014/05/27	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2014/05/27	<0.50		ppbv	
		Chlorobenzene	2014/05/27	<0.20		ppbv	
		Benzyl chloride	2014/05/27	<1.0		ppbv	
		1,3-Dichlorobenzene	2014/05/27	<0.40		ppbv	
		1,4-Dichlorobenzene	2014/05/27	<0.40		ppbv	
		1,2-Dichlorobenzene	2014/05/27	<0.40		ppbv	
		1,2,4-Trichlorobenzene	2014/05/27	<2.0		ppbv	
		Hexachlorobutadiene	2014/05/27	<3.0		ppbv	
		Hexane	2014/05/27	<0.30		ppbv	
		Heptane	2014/05/27	<0.30		ppbv	
		Cyclohexane	2014/05/27	<0.20		ppbv	
		Tetrahydrofuran	2014/05/27	<0.40		ppbv	
		1,4-Dioxane	2014/05/27	<2.0		ppbv	
		Xylene (Total)	2014/05/27	<0.60		ppbv	
		Vinyl Bromide	2014/05/27	<0.20		ppbv	
		Propene	2014/05/27	<0.30		ppbv	
2,2,4-Trimethylpentane	2014/05/27	<0.20		ppbv			
Carbon Disulfide	2014/05/27	<0.50		ppbv			
Vinyl Acetate	2014/05/27	<0.20		ppbv			
3620862 JIW	Method Blank	Bromochloromethane	2014/05/14		98	%	60 - 140
		D5-Chlorobenzene	2014/05/14		95	%	60 - 140
		Difluorobenzene	2014/05/14		97	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2014/05/14	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2014/05/14	<0.17		ppbv	
		Chloromethane	2014/05/14	<0.30		ppbv	
		Vinyl Chloride	2014/05/14	<0.18		ppbv	
		Chloroethane	2014/05/14	<0.30		ppbv	
		1,3-Butadiene	2014/05/14	<0.50		ppbv	
		Trichlorofluoromethane (FREON 11)	2014/05/14	<0.20		ppbv	
		Ethanol (ethyl alcohol)	2014/05/14	<2.3		ppbv	
		Trichlorotrifluoroethane	2014/05/14	<0.15		ppbv	
		2-propanol	2014/05/14	<3.0		ppbv	
		2-Propanone	2014/05/14	<0.80		ppbv	
		Methyl Ethyl Ketone (2-Butanone)	2014/05/14	<3.0		ppbv	
		Methyl Isobutyl Ketone	2014/05/14	<3.2		ppbv	
		Methyl Butyl Ketone (2-Hexanone)	2014/05/14	<2.0		ppbv	
		Methyl t-butyl ether (MTBE)	2014/05/14	<0.20		ppbv	

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QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3620862 JIW	Method Blank	Ethyl Acetate	2014/05/14	<2.2		ppbv	
		1,1-Dichloroethylene	2014/05/14	<0.25		ppbv	
		cis-1,2-Dichloroethylene	2014/05/14	<0.19		ppbv	
		trans-1,2-Dichloroethylene	2014/05/14	<0.20		ppbv	
		Methylene Chloride(Dichloromethane)	2014/05/14	<0.80		ppbv	
		Chloroform	2014/05/14	<0.15		ppbv	
		Carbon Tetrachloride	2014/05/14	<0.30		ppbv	
		1,1-Dichloroethane	2014/05/14	<0.20		ppbv	
		1,2-Dichloroethane	2014/05/14	<0.20		ppbv	
		Ethylene Dibromide	2014/05/14	<0.17		ppbv	
		1,1,1-Trichloroethane	2014/05/14	<0.30		ppbv	
		1,1,2-Trichloroethane	2014/05/14	<0.15		ppbv	
		1,1,1,2-Tetrachloroethane	2014/05/14	<0.20		ppbv	
		cis-1,3-Dichloropropene	2014/05/14	<0.18		ppbv	
		trans-1,3-Dichloropropene	2014/05/14	<0.17		ppbv	
		1,2-Dichloropropane	2014/05/14	<0.40		ppbv	
		Bromomethane	2014/05/14	<0.18		ppbv	
		Bromoform	2014/05/14	<0.20		ppbv	
		Bromodichloromethane	2014/05/14	<0.20		ppbv	
		Dibromochloromethane	2014/05/14	<0.20		ppbv	
		Trichloroethylene	2014/05/14	<0.30		ppbv	
		Tetrachloroethylene	2014/05/14	<0.20		ppbv	
		Benzene	2014/05/14	<0.18		ppbv	
		Toluene	2014/05/14	<0.20		ppbv	
		Ethylbenzene	2014/05/14	<0.20		ppbv	
		p+m-Xylene	2014/05/14	<0.37		ppbv	
		o-Xylene	2014/05/14	<0.20		ppbv	
		Styrene	2014/05/14	<0.20		ppbv	
		4-ethyltoluene	2014/05/14	<2.2		ppbv	
		1,3,5-Trimethylbenzene	2014/05/14	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2014/05/14	<0.50		ppbv	
		Chlorobenzene	2014/05/14	<0.20		ppbv	
		Benzyl chloride	2014/05/14	<1.0		ppbv	
		1,3-Dichlorobenzene	2014/05/14	<0.40		ppbv	
		1,4-Dichlorobenzene	2014/05/14	<0.40		ppbv	
		1,2-Dichlorobenzene	2014/05/14	<0.40		ppbv	
		1,2,4-Trichlorobenzene	2014/05/14	<2.0		ppbv	
		Hexachlorobutadiene	2014/05/14	<3.0		ppbv	
		Hexane	2014/05/14	<0.30		ppbv	
		Heptane	2014/05/14	<0.30		ppbv	
		Cyclohexane	2014/05/14	<0.20		ppbv	
		Tetrahydrofuran	2014/05/14	<0.40		ppbv	
		1,4-Dioxane	2014/05/14	<2.0		ppbv	
		Xylene (Total)	2014/05/14	<0.60		ppbv	
		Vinyl Bromide	2014/05/14	<0.20		ppbv	
		Propene	2014/05/14	<0.30		ppbv	
		2,2,4-Trimethylpentane	2014/05/14	<0.20		ppbv	
		Carbon Disulfide	2014/05/14	<0.50		ppbv	
		Vinyl Acetate	2014/05/14	<0.20		ppbv	
3621007 S_S	Spiked Blank	Bromochloromethane	2014/05/27		112	%	60 - 140
		D5-Chlorobenzene	2014/05/27		110	%	60 - 140
		Difluorobenzene	2014/05/27		113	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2014/05/27		115	%	70 - 130
		1,2-Dichlorotetrafluoroethane	2014/05/27		108	%	70 - 130
		Chloromethane	2014/05/27		99	%	70 - 130

Golder Associates Ltd
 Attention: Julie Burghardt
 Client Project #: 13-1324-0204
 P.O. #:
 Site Location: QUARTER 2

Quality Assurance Report (Continued)

Maxxam Job Number: GB487237

QA/QC Batch	Date Analyzed	Parameter	Value	%Recovery	Units	QC Limits
Num Init	yyyy/mm/dd					
3621007 S_S		Spiked Blank				
	2014/05/27	Vinyl Chloride		97	%	70 - 130
	2014/05/27	Chloroethane		91	%	70 - 130
	2014/05/27	1,3-Butadiene		96	%	70 - 130
	2014/05/27	Trichlorofluoromethane (FREON 11)		108	%	70 - 130
	2014/05/27	Ethanol (ethyl alcohol)		61 (1)	%	70 - 130
	2014/05/27	Trichlorotrifluoroethane		99	%	70 - 130
	2014/05/27	2-propanol		85	%	70 - 130
	2014/05/27	2-Propanone		90	%	70 - 130
	2014/05/27	Methyl Ethyl Ketone (2-Butanone)		93	%	70 - 130
	2014/05/27	Methyl Isobutyl Ketone		85	%	70 - 130
	2014/05/27	Methyl Butyl Ketone (2-Hexanone)		88	%	70 - 130
	2014/05/27	Methyl t-butyl ether (MTBE)		99	%	70 - 130
	2014/05/27	Ethyl Acetate		94	%	70 - 130
	2014/05/27	1,1-Dichloroethylene		97	%	70 - 130
	2014/05/27	cis-1,2-Dichloroethylene		93	%	70 - 130
	2014/05/27	trans-1,2-Dichloroethylene		93	%	70 - 130
	2014/05/27	Methylene Chloride(Dichloromethane)		84	%	70 - 130
	2014/05/27	Chloroform		97	%	70 - 130
	2014/05/27	Carbon Tetrachloride		101	%	70 - 130
	2014/05/27	1,1-Dichloroethane		90	%	70 - 130
	2014/05/27	1,2-Dichloroethane		105	%	70 - 130
	2014/05/27	Ethylene Dibromide		96	%	70 - 130
	2014/05/27	1,1,1-Trichloroethane		105	%	70 - 130
	2014/05/27	1,1,2-Trichloroethane		94	%	70 - 130
	2014/05/27	1,1,2,2-Tetrachloroethane		86	%	70 - 130
	2014/05/27	cis-1,3-Dichloropropene		90	%	70 - 130
	2014/05/27	trans-1,3-Dichloropropene		100	%	70 - 130
	2014/05/27	1,2-Dichloropropane		83	%	70 - 130
	2014/05/27	Bromomethane		97	%	70 - 130
	2014/05/27	Bromoform		113	%	70 - 130
	2014/05/27	Bromodichloromethane		104	%	70 - 130
	2014/05/27	Dibromochloromethane		113	%	70 - 130
	2014/05/27	Trichloroethylene		98	%	70 - 130
	2014/05/27	Tetrachloroethylene		104	%	70 - 130
	2014/05/27	Benzene		87	%	70 - 130
	2014/05/27	Toluene		92	%	70 - 130
	2014/05/27	Ethylbenzene		92	%	70 - 130
	2014/05/27	p+m-Xylene		93	%	70 - 130
	2014/05/27	o-Xylene		92	%	70 - 130
	2014/05/27	Styrene		95	%	70 - 130
	2014/05/27	4-ethyltoluene		99	%	70 - 130
	2014/05/27	1,3,5-Trimethylbenzene		93	%	70 - 130
	2014/05/27	1,2,4-Trimethylbenzene		95	%	70 - 130
	2014/05/27	Chlorobenzene		95	%	70 - 130
	2014/05/27	Benzyl chloride		108	%	70 - 130
	2014/05/27	1,3-Dichlorobenzene		102	%	70 - 130
	2014/05/27	1,4-Dichlorobenzene		103	%	70 - 130
	2014/05/27	1,2-Dichlorobenzene		98	%	70 - 130
	2014/05/27	1,2,4-Trichlorobenzene		126	%	70 - 130
	2014/05/27	Hexachlorobutadiene		117	%	70 - 130
	2014/05/27	Hexane		78	%	70 - 130
	2014/05/27	Heptane		78	%	70 - 130
	2014/05/27	Cyclohexane		82	%	70 - 130
	2014/05/27	Tetrahydrofuran		80	%	70 - 130
	2014/05/27	1,4-Dioxane		91	%	70 - 130

Golder Associates Ltd
 Attention: Julie Burghardt
 Client Project #: 13-1324-0204
 P.O. #:
 Site Location: QUARTER 2

Quality Assurance Report (Continued)

Maxxam Job Number: GB487237

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3621007 S_S	Spiked Blank	Xylene (Total)	2014/05/27		93	%	70 - 130
		Vinyl Bromide	2014/05/27		103	%	70 - 130
		Propene	2014/05/27		77	%	70 - 130
		2,2,4-Trimethylpentane	2014/05/27		85	%	70 - 130
		Carbon Disulfide	2014/05/27		93	%	70 - 130
		Vinyl Acetate	2014/05/27		78	%	70 - 130
	Method Blank	Bromochloromethane	2014/05/27		94	%	60 - 140
		D5-Chlorobenzene	2014/05/27		91	%	60 - 140
		Difluorobenzene	2014/05/27		96	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2014/05/27	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2014/05/27	<0.17		ppbv	
		Chloromethane	2014/05/27	<0.30		ppbv	
		Vinyl Chloride	2014/05/27	<0.18		ppbv	
		Chloroethane	2014/05/27	<0.30		ppbv	
		1,3-Butadiene	2014/05/27	<0.50		ppbv	
		Trichlorofluoromethane (FREON 11)	2014/05/27	<0.20		ppbv	
		Ethanol (ethyl alcohol)	2014/05/27	<2.3		ppbv	
		Trichlorotrifluoroethane	2014/05/27	<0.15		ppbv	
		2-propanol	2014/05/27	<3.0		ppbv	
		2-Propanone	2014/05/27	<0.80		ppbv	
		Methyl Ethyl Ketone (2-Butanone)	2014/05/27	<3.0		ppbv	
		Methyl Isobutyl Ketone	2014/05/27	<3.2		ppbv	
		Methyl Butyl Ketone (2-Hexanone)	2014/05/27	<2.0		ppbv	
		Methyl t-butyl ether (MTBE)	2014/05/27	<0.20		ppbv	
		Ethyl Acetate	2014/05/27	<2.2		ppbv	
		1,1-Dichloroethylene	2014/05/27	<0.25		ppbv	
		cis-1,2-Dichloroethylene	2014/05/27	<0.19		ppbv	
		trans-1,2-Dichloroethylene	2014/05/27	<0.20		ppbv	
		Methylene Chloride(Dichloromethane)	2014/05/27	<0.80		ppbv	
		Chloroform	2014/05/27	<0.15		ppbv	
		Carbon Tetrachloride	2014/05/27	<0.30		ppbv	
		1,1-Dichloroethane	2014/05/27	<0.20		ppbv	
		1,2-Dichloroethane	2014/05/27	<0.20		ppbv	
		Ethylene Dibromide	2014/05/27	<0.17		ppbv	
		1,1,1-Trichloroethane	2014/05/27	<0.30		ppbv	
		1,1,2-Trichloroethane	2014/05/27	<0.15		ppbv	
		1,1,2,2-Tetrachloroethane	2014/05/27	<0.20		ppbv	
		cis-1,3-Dichloropropene	2014/05/27	<0.18		ppbv	
		trans-1,3-Dichloropropene	2014/05/27	<0.17		ppbv	
		1,2-Dichloropropane	2014/05/27	<0.40		ppbv	
		Bromomethane	2014/05/27	<0.18		ppbv	
		Bromoform	2014/05/27	<0.20		ppbv	
		Bromodichloromethane	2014/05/27	<0.20		ppbv	
		Dibromochloromethane	2014/05/27	<0.20		ppbv	
		Trichloroethylene	2014/05/27	<0.30		ppbv	
		Tetrachloroethylene	2014/05/27	<0.20		ppbv	
		Benzene	2014/05/27	<0.18		ppbv	
		Toluene	2014/05/27	<0.20		ppbv	
		Ethylbenzene	2014/05/27	<0.20		ppbv	
		p+m-Xylene	2014/05/27	<0.37		ppbv	
		o-Xylene	2014/05/27	<0.20		ppbv	
		Styrene	2014/05/27	<0.20		ppbv	
		4-ethyltoluene	2014/05/27	<2.2		ppbv	
		1,3,5-Trimethylbenzene	2014/05/27	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2014/05/27	<0.50		ppbv	

Golder Associates Ltd
 Attention: Julie Burghardt
 Client Project #: 13-1324-0204
 P.O. #:
 Site Location: QUARTER 2

Quality Assurance Report (Continued)

Maxxam Job Number: GB487237

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits		
3621007 S_S	Method Blank	Chlorobenzene	2014/05/27	<0.20		ppbv			
		Benzyl chloride	2014/05/27	<1.0		ppbv			
		1,3-Dichlorobenzene	2014/05/27	<0.40		ppbv			
		1,4-Dichlorobenzene	2014/05/27	<0.40		ppbv			
		1,2-Dichlorobenzene	2014/05/27	<0.40		ppbv			
		1,2,4-Trichlorobenzene	2014/05/27	<2.0		ppbv			
		Hexachlorobutadiene	2014/05/27	<3.0		ppbv			
		Hexane	2014/05/27	<0.30		ppbv			
		Heptane	2014/05/27	<0.30		ppbv			
		Cyclohexane	2014/05/27	<0.20		ppbv			
		Tetrahydrofuran	2014/05/27	<0.40		ppbv			
		1,4-Dioxane	2014/05/27	<2.0		ppbv			
		Xylene (Total)	2014/05/27	<0.60		ppbv			
		Vinyl Bromide	2014/05/27	<0.20		ppbv			
		Propene	2014/05/27	<1.2		ppbv			
		2,2,4-Trimethylpentane	2014/05/27	<0.20		ppbv			
		Carbon Disulfide	2014/05/27	<0.50		ppbv			
		Vinyl Acetate	2014/05/27	<0.20		ppbv			
		3621076 AGU	Method Blank	Bromochloromethane	2014/05/13		117	%	60 - 140
				D5-Chlorobenzene	2014/05/13		116	%	60 - 140
Difluorobenzene	2014/05/13				121	%	60 - 140		
Dichlorodifluoromethane (FREON 12)	2014/05/13			<0.20		ppbv			
1,2-Dichlorotetrafluoroethane	2014/05/13			<0.17		ppbv			
Chloromethane	2014/05/13			<0.30		ppbv			
Vinyl Chloride	2014/05/13			<0.18		ppbv			
Chloroethane	2014/05/13			<0.30		ppbv			
1,3-Butadiene	2014/05/13			<0.50		ppbv			
Trichlorofluoromethane (FREON 11)	2014/05/13			<0.20		ppbv			
Ethanol (ethyl alcohol)	2014/05/13			<2.3		ppbv			
Trichlorotrifluoroethane	2014/05/13			<0.15		ppbv			
2-propanol	2014/05/13			<3.0		ppbv			
2-Propanone	2014/05/13			<0.80		ppbv			
Methyl Ethyl Ketone (2-Butanone)	2014/05/13			<3.0		ppbv			
Methyl Isobutyl Ketone	2014/05/13			<3.2		ppbv			
Methyl Butyl Ketone (2-Hexanone)	2014/05/13			<2.0		ppbv			
Methyl t-butyl ether (MTBE)	2014/05/13			<0.20		ppbv			
Ethyl Acetate	2014/05/13			<2.2		ppbv			
1,1-Dichloroethylene	2014/05/13			<0.25		ppbv			
cis-1,2-Dichloroethylene	2014/05/13			<0.19		ppbv			
trans-1,2-Dichloroethylene	2014/05/13			<0.20		ppbv			
Methylene Chloride(Dichloromethane)	2014/05/13			<0.80		ppbv			
Chloroform	2014/05/13			<0.15		ppbv			
Carbon Tetrachloride	2014/05/13			<0.30		ppbv			
1,1-Dichloroethane	2014/05/13			<0.20		ppbv			
1,2-Dichloroethane	2014/05/13			<0.20		ppbv			
Ethylene Dibromide	2014/05/13			<0.17		ppbv			
1,1,1-Trichloroethane	2014/05/13			<0.30		ppbv			
1,1,2-Trichloroethane	2014/05/13			<0.15		ppbv			
1,1,2,2-Tetrachloroethane	2014/05/13			<0.20		ppbv			
cis-1,3-Dichloropropene	2014/05/13			<0.18		ppbv			
trans-1,3-Dichloropropene	2014/05/13			<0.17		ppbv			
1,2-Dichloropropane	2014/05/13			<0.40		ppbv			
Bromomethane	2014/05/13			<0.18		ppbv			
Bromoform	2014/05/13			<0.20		ppbv			
Bromodichloromethane	2014/05/13			<0.20		ppbv			

Golder Associates Ltd
 Attention: Julie Burghardt
 Client Project #: 13-1324-0204
 P.O. #:
 Site Location: QUARTER 2

Quality Assurance Report (Continued)

Maxxam Job Number: GB487237

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3621076	AGU Method Blank	Dibromochloromethane	2014/05/13	<0.20		ppbv	
		Trichloroethylene	2014/05/13	<0.30		ppbv	
		Tetrachloroethylene	2014/05/13	<0.20		ppbv	
		Benzene	2014/05/13	<0.18		ppbv	
		Toluene	2014/05/13	<0.20		ppbv	
		Ethylbenzene	2014/05/13	<0.20		ppbv	
		p+m-Xylene	2014/05/13	<0.37		ppbv	
		o-Xylene	2014/05/13	<0.20		ppbv	
		Styrene	2014/05/13	<0.20		ppbv	
		4-ethyltoluene	2014/05/13	<2.2		ppbv	
		1,3,5-Trimethylbenzene	2014/05/13	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2014/05/13	<0.50		ppbv	
		Chlorobenzene	2014/05/13	<0.20		ppbv	
		Benzyl chloride	2014/05/13	<1.0		ppbv	
		1,3-Dichlorobenzene	2014/05/13	<0.40		ppbv	
		1,4-Dichlorobenzene	2014/05/13	<0.40		ppbv	
		1,2-Dichlorobenzene	2014/05/13	<0.40		ppbv	
		1,2,4-Trichlorobenzene	2014/05/13	<2.0		ppbv	
		Hexachlorobutadiene	2014/05/13	<3.0		ppbv	
		Hexane	2014/05/13	<0.30		ppbv	
		Heptane	2014/05/13	<0.30		ppbv	
		Cyclohexane	2014/05/13	<0.20		ppbv	
		Tetrahydrofuran	2014/05/13	<0.40		ppbv	
		1,4-Dioxane	2014/05/13	<2.0		ppbv	
		Xylene (Total)	2014/05/13	<0.60		ppbv	
		Vinyl Bromide	2014/05/13	<0.20		ppbv	
		Propene	2014/05/13	<1.3		ppbv	
		2,2,4-Trimethylpentane	2014/05/13	<0.20		ppbv	
		Carbon Disulfide	2014/05/13	<0.50		ppbv	
		Vinyl Acetate	2014/05/13	<0.20		ppbv	

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 (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

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

Your Project #: 13-1324-0204
 Site#: MEDIA PREP
 Site Location: QUARTER 3

Attention: Jonathan Lewis

Golder Associates Ltd
 102, 2535-3rd Ave SE
 Calgary, AB
 CANADA T2A 7W5

Report Date: 2014/07/30
Report #: R3106756
Version: 1

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B4D3328

Received: 2014/07/28, 14:53


Sample Matrix: Air Sampling Media
 # Samples Received: 18

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Volatile Organics in Air (TO-15) (1)	1	N/A	2014/07/14	BRL SOP-00304	EPA TO-15 m
Volatile Organics in Air (TO-15) (1)	1	N/A	2014/07/15	BRL SOP-00304	EPA TO-15 m
Volatile Organics in Air (TO-15) (1)	1	N/A	2014/07/16	BRL SOP-00304	EPA TO-15 m
Volatile Organics in Air (TO-15) (1)	1	N/A	2014/07/17	BRL SOP-00304	EPA TO-15 m
Volatile Organics in Air (TO-15) (1)	1	N/A	2014/07/18	BRL SOP-00304	EPA TO-15 m
Volatile Organics in Air (TO-15) (1)	1	N/A	2014/07/22	BRL SOP-00304	EPA TO-15 m
Volatile Organics in Air (TO-15) (1)	5	N/A	2014/07/28	BRL SOP-00304	EPA TO-15 m
Volatile Organics in Air (TO-15) (1)	7	N/A	2014/07/29	BRL SOP-00304	EPA TO-15 m

(1) Air sampling canisters have been cleaned in accordance with U.S. EPA Method TO14A. At the end of the cleaning, evacuation, and pressurization cycles, one canister was selected and was pressurized with Zero Air. This canister was then analyzed via TO14A on a GC/MS. The canister must have been found to contain <0.2 ppbv concentration of all target analytes in order for the batch to have been considered clean. Each canister also underwent a leak check prior to shipment.

Please Note: SUMMA® canister samples will be retained by Maxxam for a period of 5 calendar days or as contractually agreed from the date of this report, after which time they will be cleaned for reuse. If you require a longer sample storage period, please contact your service representative.

Encryption Key

 Marinela Sim
 30 Jul 2014 17:23:12 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Theresa Stephenson, Project Manager
 Email: TStephenson@maxxam.ca
 Phone# (905) 817-5763

=====



Your Project #: 13-1324-0204
Site#: MEDIA PREP
Site Location: QUARTER 3

Attention: Jonathan Lewis

Golder Associates Ltd
102, 2535-3rd Ave SE
Calgary, AB
CANADA T2A 7W5

Report Date: 2014/07/30
Report #: R3106756
Version: 1

CERTIFICATE OF ANALYSIS

-2-

Maxxam 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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Total cover pages: 2

Page 2 of 74

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3333					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 1.4L SUMMA #1 1393	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3694251	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3694251	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3694251	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3694251	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3694251	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3694251	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3694251	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3694251	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3694251	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3694251	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3694251	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3694251	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3694251	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3694251	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3694251	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3694251	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3694251	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3694251	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3694251	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3694251	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3694251	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3694251	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694251	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694251	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3694251	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3694251	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3694251	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3694251	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3694251	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3694251	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3694251	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3694251	0.10

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3333					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 1.4L SUMMA #1 1393	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3694251	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3694251	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3694251	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3694251	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3694251	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3694251	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3694251	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3694251	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3694251	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3694251	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3694251	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3694251	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694251	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694251	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3694251	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3694251	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694251	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694251	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694251	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3694251	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3694251	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3694251	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3694251	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3694251	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3694251	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3694251	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3694251	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3694251	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3694251	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3694251	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3694251	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3694251	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	104		N/A	N/A	3694251	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3333					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 1.4L SUMMA #1 1393	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

D5-Chlorobenzene	%	96		N/A	N/A	3694251	
Difluorobenzene	%	101		N/A	N/A	3694251	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3334					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 1.4L SUMMA #2 1540	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3694239	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3694239	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3694239	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3694239	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3694239	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3694239	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3694239	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3694239	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3694239	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3694239	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3694239	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3694239	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3694239	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3694239	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3694239	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3694239	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3694239	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3694239	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3694239	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3694239	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3694239	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3694239	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694239	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694239	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3694239	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3694239	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3694239	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3694239	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3694239	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3694239	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3694239	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3694239	0.10
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3334					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 1.4L SUMMA #2 1540	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3694239	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3694239	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3694239	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3694239	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3694239	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3694239	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3694239	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3694239	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3694239	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3694239	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3694239	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3694239	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694239	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694239	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3694239	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3694239	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694239	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694239	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694239	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3694239	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3694239	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3694239	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3694239	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3694239	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3694239	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3694239	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3694239	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3694239	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3694239	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3694239	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3694239	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3694239	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	85		N/A	N/A	3694239	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3334					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 1.4L SUMMA #2 1540	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

D5-Chlorobenzene	%	83		N/A	N/A	3694239	
Difluorobenzene	%	85		N/A	N/A	3694239	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3335					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 1.4L SUMMA #3 3006	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3694167	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3694167	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3694167	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3694167	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3694167	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3694167	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3694167	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3694167	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3694167	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3694167	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3694167	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3694167	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3694167	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3694167	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3694167	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3694167	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3694167	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3694167	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3694167	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3694167	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3694167	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3694167	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694167	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694167	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3694167	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3694167	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3694167	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3694167	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3694167	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3694167	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3694167	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3694167	0.10

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3335					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 1.4L SUMMA #3 3006	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3694167	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3694167	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3694167	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3694167	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3694167	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3694167	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3694167	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3694167	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3694167	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3694167	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3694167	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3694167	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694167	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694167	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3694167	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3694167	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694167	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694167	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694167	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3694167	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3694167	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3694167	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3694167	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3694167	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3694167	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3694167	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3694167	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3694167	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3694167	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3694167	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3694167	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3694167	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	82		N/A	N/A	3694167	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3335					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 1.4L SUMMA #3 3006	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

D5-Chlorobenzene	%	78		N/A	N/A	3694167	
Difluorobenzene	%	84		N/A	N/A	3694167	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3336					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 1.4L SUMMA #4 2404	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3694223	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3694223	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3694223	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3694223	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3694223	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3694223	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3694223	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3694223	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3694223	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3694223	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3694223	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3694223	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3694223	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3694223	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3694223	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3694223	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3694223	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3694223	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3694223	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3694223	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3694223	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3694223	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694223	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694223	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3694223	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3694223	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3694223	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3694223	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3694223	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3694223	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3694223	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3694223	0.10

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3336					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 1.4L SUMMA #4 2404	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3694223	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3694223	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3694223	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3694223	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3694223	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3694223	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3694223	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3694223	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3694223	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3694223	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3694223	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3694223	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694223	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694223	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3694223	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3694223	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694223	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694223	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694223	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3694223	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3694223	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3694223	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3694223	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3694223	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3694223	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3694223	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3694223	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3694223	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3694223	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3694223	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3694223	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3694223	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	87		N/A	N/A	3694223	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3336					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 1.4L SUMMA #4 2404	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

D5-Chlorobenzene	%	84		N/A	N/A	3694223	
Difluorobenzene	%	87		N/A	N/A	3694223	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3337					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 1.4L SUMMA #5 1395	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3694191	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3694191	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3694191	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3694191	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3694191	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3694191	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3694191	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3694191	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3694191	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3694191	0.60
2-Propanone	ppbv	<2.0	2.0	<4.75	4.75	3694191	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3694191	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3694191	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3694191	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3694191	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3694191	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3694191	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3694191	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3694191	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3694191	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3694191	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3694191	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694191	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694191	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3694191	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3694191	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3694191	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3694191	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3694191	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3694191	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3694191	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3694191	0.10
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3337					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 1.4L SUMMA #5 1395	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3694191	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3694191	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3694191	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3694191	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3694191	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3694191	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3694191	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3694191	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3694191	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3694191	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3694191	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3694191	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694191	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694191	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3694191	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3694191	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694191	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694191	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694191	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3694191	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3694191	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3694191	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3694191	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3694191	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3694191	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3694191	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3694191	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3694191	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3694191	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3694191	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3694191	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3694191	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	85		N/A	N/A	3694191	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3337					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 1.4L SUMMA #5 1395	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

D5-Chlorobenzene	%	78		N/A	N/A	3694191	
Difluorobenzene	%	82		N/A	N/A	3694191	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3338					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 1.4L SUMMA #6 1380	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3683210	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3683210	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3683210	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3683210	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3683210	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3683210	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3683210	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3683210	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3683210	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3683210	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3683210	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3683210	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3683210	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3683210	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3683210	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3683210	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3683210	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3683210	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3683210	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3683210	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3683210	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3683210	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3683210	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3683210	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3683210	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3683210	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3683210	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3683210	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3683210	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3683210	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3683210	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3683210	0.10
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3338					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 1.4L SUMMA #6 1380	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3683210	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3683210	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3683210	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3683210	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3683210	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3683210	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3683210	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3683210	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3683210	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3683210	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3683210	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3683210	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3683210	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3683210	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3683210	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3683210	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3683210	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3683210	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3683210	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3683210	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3683210	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3683210	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3683210	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3683210	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3683210	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3683210	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3683210	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3683210	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3683210	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3683210	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3683210	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3683210	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	82		N/A	N/A	3683210	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3338					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 1.4L SUMMA #6 1380	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

D5-Chlorobenzene	%	75		N/A	N/A	3683210	
Difluorobenzene	%	84		N/A	N/A	3683210	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3381					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #1 14265	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3694176	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3694176	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3694176	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3694176	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3694176	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3694176	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3694176	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3694176	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3694176	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3694176	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3694176	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3694176	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3694176	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3694176	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3694176	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3694176	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3694176	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3694176	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3694176	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3694176	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3694176	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3694176	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694176	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694176	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3694176	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3694176	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3694176	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3694176	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3694176	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3694176	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3694176	0.10
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3381					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #1 14265	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3694176	0.10
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3694176	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3694176	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3694176	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3694176	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3694176	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3694176	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3694176	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3694176	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3694176	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3694176	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3694176	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3694176	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694176	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694176	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3694176	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3694176	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694176	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694176	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694176	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3694176	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3694176	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3694176	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3694176	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3694176	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3694176	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3694176	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3694176	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3694176	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3694176	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3694176	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3694176	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3694176	0.10
QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3381					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #1 14265	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

Surrogate Recovery (%)							
Bromochloromethane	%	89		N/A	N/A	3694176	
D5-Chlorobenzene	%	78		N/A	N/A	3694176	
Difluorobenzene	%	89		N/A	N/A	3694176	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3382					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #2 248	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3694176	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3694176	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3694176	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3694176	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3694176	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3694176	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3694176	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3694176	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3694176	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3694176	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3694176	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3694176	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3694176	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3694176	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3694176	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3694176	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3694176	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3694176	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3694176	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3694176	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3694176	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3694176	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694176	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694176	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3694176	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3694176	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3694176	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3694176	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3694176	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3694176	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3694176	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3694176	0.10
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3382					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #2 248	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3694176	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3694176	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3694176	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3694176	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3694176	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3694176	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3694176	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3694176	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3694176	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3694176	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3694176	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3694176	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694176	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694176	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3694176	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3694176	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694176	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694176	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694176	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3694176	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3694176	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3694176	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3694176	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3694176	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3694176	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3694176	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3694176	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3694176	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3694176	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3694176	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3694176	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3694176	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	73		N/A	N/A	3694176	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3382					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #2 248	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

D5-Chlorobenzene	%	64		N/A	N/A	3694176	
Difluorobenzene	%	73		N/A	N/A	3694176	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3383					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #3 14917	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3694176	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3694176	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3694176	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3694176	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3694176	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3694176	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3694176	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3694176	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3694176	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3694176	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3694176	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3694176	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3694176	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3694176	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3694176	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3694176	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3694176	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3694176	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3694176	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3694176	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3694176	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3694176	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694176	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694176	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3694176	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3694176	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3694176	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3694176	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3694176	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3694176	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3694176	0.10

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3383					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #3 14917	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3694176	0.10
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3694176	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3694176	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3694176	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3694176	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3694176	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3694176	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3694176	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3694176	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3694176	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3694176	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3694176	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3694176	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694176	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694176	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3694176	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3694176	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694176	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694176	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694176	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3694176	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3694176	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3694176	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3694176	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3694176	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3694176	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3694176	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3694176	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3694176	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3694176	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3694176	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3694176	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3694176	0.10
QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3383					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #3 14917	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

Surrogate Recovery (%)							
Bromochloromethane	%	83		N/A	N/A	3694176	
D5-Chlorobenzene	%	73		N/A	N/A	3694176	
Difluorobenzene	%	83		N/A	N/A	3694176	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3384					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #4 7910	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3694176	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3694176	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3694176	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3694176	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3694176	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3694176	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3694176	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3694176	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3694176	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3694176	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3694176	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3694176	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3694176	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3694176	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3694176	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3694176	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3694176	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3694176	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3694176	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3694176	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3694176	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3694176	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694176	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694176	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3694176	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3694176	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3694176	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3694176	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3694176	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3694176	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3694176	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3694176	0.10

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3384					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #4 7910	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3694176	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3694176	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3694176	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3694176	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3694176	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3694176	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3694176	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3694176	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3694176	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3694176	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3694176	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3694176	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694176	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694176	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3694176	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3694176	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694176	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694176	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694176	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3694176	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3694176	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3694176	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3694176	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3694176	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3694176	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3694176	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3694176	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3694176	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3694176	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3694176	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3694176	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3694176	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	76		N/A	N/A	3694176	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3384					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #4 7910	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

D5-Chlorobenzene	%	66		N/A	N/A	3694176	
Difluorobenzene	%	76		N/A	N/A	3694176	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3386					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #5 14524	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3694176	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3694176	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3694176	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3694176	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3694176	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3694176	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3694176	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3694176	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3694176	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3694176	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3694176	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3694176	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3694176	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3694176	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3694176	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3694176	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3694176	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3694176	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3694176	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3694176	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3694176	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3694176	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694176	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694176	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3694176	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3694176	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3694176	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3694176	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3694176	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3694176	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3694176	0.10
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3386					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #5 14524	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3694176	0.10
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3694176	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3694176	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3694176	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3694176	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3694176	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3694176	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3694176	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3694176	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3694176	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3694176	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3694176	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3694176	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694176	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694176	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3694176	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3694176	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694176	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694176	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694176	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3694176	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3694176	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3694176	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3694176	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3694176	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3694176	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3694176	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3694176	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3694176	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3694176	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3694176	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3694176	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3694176	0.10
QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3386					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #5 14524	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

Surrogate Recovery (%)							
Bromochloromethane	%	109		N/A	N/A	3694176	
D5-Chlorobenzene	%	91		N/A	N/A	3694176	
Difluorobenzene	%	107		N/A	N/A	3694176	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3387					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #6 14255	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3694330	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3694330	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3694330	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3694330	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3694330	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3694330	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3694330	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3694330	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3694330	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3694330	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3694330	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3694330	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3694330	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3694330	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3694330	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3694330	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3694330	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3694330	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3694330	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3694330	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3694330	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3694330	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694330	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694330	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3694330	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3694330	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3694330	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3694330	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3694330	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3694330	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3694330	0.10
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3387					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #6 14255	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3694330	0.10
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3694330	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3694330	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3694330	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3694330	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3694330	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3694330	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3694330	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3694330	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3694330	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3694330	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3694330	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3694330	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694330	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694330	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3694330	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3694330	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694330	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694330	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694330	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3694330	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3694330	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3694330	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3694330	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3694330	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3694330	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3694330	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3694330	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3694330	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3694330	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3694330	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3694330	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3694330	0.10
QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3387					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #6 14255	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

Surrogate Recovery (%)							
Bromochloromethane	%	89		N/A	N/A	3694330	
D5-Chlorobenzene	%	82		N/A	N/A	3694330	
Difluorobenzene	%	88		N/A	N/A	3694330	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3388					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #7 271	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3694330	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3694330	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3694330	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3694330	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3694330	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3694330	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3694330	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3694330	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3694330	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3694330	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3694330	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3694330	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3694330	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3694330	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3694330	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3694330	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3694330	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3694330	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3694330	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3694330	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3694330	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3694330	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694330	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694330	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3694330	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3694330	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3694330	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3694330	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3694330	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3694330	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3694330	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3694330	0.10
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3388					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #7 271	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3694330	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3694330	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3694330	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3694330	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3694330	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3694330	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3694330	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3694330	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3694330	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3694330	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3694330	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3694330	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694330	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694330	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3694330	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3694330	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694330	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694330	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694330	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3694330	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3694330	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3694330	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3694330	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3694330	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3694330	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3694330	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3694330	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3694330	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3694330	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3694330	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3694330	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3694330	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	85		N/A	N/A	3694330	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3388					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #7 271	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

D5-Chlorobenzene	%	78		N/A	N/A	3694330	
Difluorobenzene	%	83		N/A	N/A	3694330	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3389					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #8 14264	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3694172	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3694172	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3694172	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3694172	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3694172	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3694172	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3694172	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3694172	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3694172	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3694172	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3694172	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3694172	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3694172	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3694172	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3694172	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3694172	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3694172	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3694172	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3694172	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3694172	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3694172	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3694172	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694172	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694172	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3694172	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3694172	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3694172	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3694172	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3694172	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3694172	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3694172	0.10
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3389					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #8 14264	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3694172	0.10
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3694172	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3694172	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3694172	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3694172	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3694172	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3694172	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3694172	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3694172	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3694172	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3694172	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3694172	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3694172	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694172	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694172	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3694172	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3694172	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694172	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694172	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694172	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3694172	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3694172	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3694172	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3694172	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3694172	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3694172	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3694172	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3694172	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3694172	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3694172	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3694172	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3694172	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3694172	0.10
QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3389					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #8 14264	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

Surrogate Recovery (%)							
Bromochloromethane	%	93		N/A	N/A	3694172	
D5-Chlorobenzene	%	82		N/A	N/A	3694172	
Difluorobenzene	%	90		N/A	N/A	3694172	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3390					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #9 14103	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3694330	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3694330	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3694330	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3694330	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3694330	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3694330	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3694330	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3694330	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3694330	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3694330	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3694330	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3694330	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3694330	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3694330	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3694330	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3694330	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3694330	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3694330	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3694330	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3694330	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3694330	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3694330	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694330	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694330	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3694330	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3694330	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3694330	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3694330	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3694330	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3694330	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3694330	0.10
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3390					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #9 14103	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3694330	0.10
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3694330	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3694330	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3694330	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3694330	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3694330	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3694330	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3694330	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3694330	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3694330	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3694330	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3694330	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3694330	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694330	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694330	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3694330	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3694330	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694330	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694330	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694330	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3694330	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3694330	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3694330	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3694330	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3694330	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3694330	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3694330	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3694330	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3694330	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3694330	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3694330	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3694330	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3694330	0.10
QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3390					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #9 14103	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

Surrogate Recovery (%)							
Bromochloromethane	%	87		N/A	N/A	3694330	
D5-Chlorobenzene	%	80		N/A	N/A	3694330	
Difluorobenzene	%	86		N/A	N/A	3694330	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3391					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #10 280	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3694330	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3694330	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3694330	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3694330	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3694330	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3694330	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3694330	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3694330	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3694330	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3694330	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3694330	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3694330	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3694330	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3694330	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3694330	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3694330	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3694330	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3694330	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3694330	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3694330	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3694330	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3694330	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694330	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694330	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3694330	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3694330	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3694330	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3694330	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3694330	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3694330	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3694330	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3694330	0.10
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3391					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #10 280	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3694330	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3694330	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3694330	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3694330	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3694330	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3694330	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3694330	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3694330	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3694330	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3694330	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3694330	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3694330	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694330	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694330	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3694330	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3694330	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694330	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694330	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694330	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3694330	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3694330	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3694330	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3694330	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3694330	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3694330	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3694330	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3694330	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3694330	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3694330	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3694330	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3694330	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3694330	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	81		N/A	N/A	3694330	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3391					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #10 280	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

D5-Chlorobenzene	%	74		N/A	N/A	3694330	
Difluorobenzene	%	80		N/A	N/A	3694330	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3392					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #11 294	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3694330	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3694330	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3694330	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3694330	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3694330	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3694330	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3694330	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3694330	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3694330	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3694330	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3694330	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3694330	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3694330	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3694330	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3694330	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3694330	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3694330	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3694330	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3694330	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3694330	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3694330	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3694330	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694330	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694330	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3694330	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3694330	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3694330	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3694330	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3694330	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3694330	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3694330	0.10
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3694330	0.10
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3392					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #11 294	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3694330	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3694330	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3694330	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3694330	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3694330	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3694330	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3694330	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3694330	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3694330	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3694330	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3694330	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3694330	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694330	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694330	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3694330	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3694330	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694330	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694330	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694330	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3694330	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3694330	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3694330	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3694330	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3694330	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3694330	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3694330	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3694330	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3694330	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3694330	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3694330	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3694330	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3694330	0.10
Surrogate Recovery (%)							
Bromochloromethane	%	90		N/A	N/A	3694330	
N/A = Not Applicable QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3392					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #11 294	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

D5-Chlorobenzene	%	83		N/A	N/A	3694330	
Difluorobenzene	%	90		N/A	N/A	3694330	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3393					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #12 7835	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	0.20	<0.989	0.989	3694330	0.10
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3694330	0.10
Chloromethane	ppbv	<0.30	0.30	<0.620	0.620	3694330	0.10
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3694330	0.10
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3694330	0.10
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3694330	0.10
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<1.12	1.12	3694330	0.10
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3694330	0.50
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3694330	0.10
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3694330	0.60
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3694330	0.20
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3694330	0.60
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3694330	0.70
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3694330	0.40
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3694330	0.10
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3694330	0.50
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3694330	0.10
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3694330	0.10
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3694330	0.10
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3694330	0.10
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3694330	0.10
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3694330	0.10
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694330	0.10
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3694330	0.10
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3694330	0.10
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3694330	0.10
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3694330	0.10
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3694330	0.10
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3694330	0.10
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3694330	0.10
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3694330	0.10
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

 Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3393					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #12 7835	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3694330	0.10
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3694330	0.10
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3694330	0.10
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3694330	0.10
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3694330	0.10
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3694330	0.10
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3694330	0.10
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3694330	0.10
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3694330	0.10
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3694330	0.10
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3694330	0.10
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3694330	0.10
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3694330	0.50
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694330	0.10
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3694330	0.10
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3694330	0.10
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3694330	0.20
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694330	0.10
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694330	0.10
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3694330	0.10
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3694330	0.40
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3694330	0.60
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3694330	0.10
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3694330	0.10
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3694330	0.10
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3694330	0.10
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3694330	0.40
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3694330	0.10
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3694330	0.10
Propene	ppbv	<0.30	0.30	<0.516	0.516	3694330	0.10
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3694330	0.10
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3694330	0.10
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3694330	0.10
QC Batch = Quality Control Batch							

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		WW3393					
Sampling Date		2014/07/28 15:06					
	Units	PROOFED 6L SUMMA #12 7835	RDL	ug/m3	DL (ug/m3)	QC Batch	MDL

Surrogate Recovery (%)							
Bromochloromethane	%	92		N/A	N/A	3694330	
D5-Chlorobenzene	%	84		N/A	N/A	3694330	
Difluorobenzene	%	91		N/A	N/A	3694330	

N/A = Not Applicable
 QC Batch = Quality Control Batch

Maxxam Job #: B4D3328
Report Date: 2014/07/30

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 3

Test Summary

Maxxam ID WW3333
Sample ID PROOFED 1.4L SUMMA #1 1393
Matrix Air Sampling Media
Collected 2014/07/28
Shipped
Received 2014/07/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3694251	N/A	2014/07/14	Jie Wu

Maxxam ID WW3334
Sample ID PROOFED 1.4L SUMMA #2 1540
Matrix Air Sampling Media
Collected 2014/07/28
Shipped
Received 2014/07/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3694239	N/A	2014/07/15	Jie Wu

Maxxam ID WW3335
Sample ID PROOFED 1.4L SUMMA #3 3006
Matrix Air Sampling Media
Collected 2014/07/28
Shipped
Received 2014/07/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3694167	N/A	2014/07/17	Nicholas Smith

Maxxam ID WW3336
Sample ID PROOFED 1.4L SUMMA #4 2404
Matrix Air Sampling Media
Collected 2014/07/28
Shipped
Received 2014/07/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3694223	N/A	2014/07/16	Jie Wu

Maxxam ID WW3337
Sample ID PROOFED 1.4L SUMMA #5 1395
Matrix Air Sampling Media
Collected 2014/07/28
Shipped
Received 2014/07/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3694191	N/A	2014/07/22	Jie Wu

Maxxam ID WW3338
Sample ID PROOFED 1.4L SUMMA #6 1380
Matrix Air Sampling Media
Collected 2014/07/28
Shipped
Received 2014/07/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3683210	N/A	2014/07/18	Yao Liang Sun

Maxxam ID WW3381
Sample ID PROOFED 6L SUMMA #1 14265
Matrix Air Sampling Media
Collected 2014/07/28
Shipped
Received 2014/07/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3694176	N/A	2014/07/28	Spomenka Smiljanic

Maxxam Job #: B4D3328
Report Date: 2014/07/30

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 3

Test Summary

Maxxam ID WW3382
Sample ID PROOFED 6L SUMMA #2 248
Matrix Air Sampling Media
Collected 2014/07/28
Shipped
Received 2014/07/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3694176	N/A	2014/07/28	Spomenka Smiljanic

Maxxam ID WW3383
Sample ID PROOFED 6L SUMMA #3 14917
Matrix Air Sampling Media
Collected 2014/07/28
Shipped
Received 2014/07/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3694176	N/A	2014/07/28	Spomenka Smiljanic

Maxxam ID WW3384
Sample ID PROOFED 6L SUMMA #4 7910
Matrix Air Sampling Media
Collected 2014/07/28
Shipped
Received 2014/07/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3694176	N/A	2014/07/28	Spomenka Smiljanic

Maxxam ID WW3386
Sample ID PROOFED 6L SUMMA #5 14524
Matrix Air Sampling Media
Collected 2014/07/28
Shipped
Received 2014/07/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3694176	N/A	2014/07/28	Spomenka Smiljanic

Maxxam ID WW3387
Sample ID PROOFED 6L SUMMA #6 14255
Matrix Air Sampling Media
Collected 2014/07/28
Shipped
Received 2014/07/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3694330	N/A	2014/07/29	Yao Liang Sun

Maxxam ID WW3388
Sample ID PROOFED 6L SUMMA #7 271
Matrix Air Sampling Media
Collected 2014/07/28
Shipped
Received 2014/07/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3694330	N/A	2014/07/29	Yao Liang Sun

Maxxam ID WW3389
Sample ID PROOFED 6L SUMMA #8 14264
Matrix Air Sampling Media
Collected 2014/07/28
Shipped
Received 2014/07/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3694172	N/A	2014/07/29	Jie Wu

Maxxam Job #: B4D3328
 Report Date: 2014/07/30

Golder Associates Ltd
 Client Project #: 13-1324-0204
 Site Location: QUARTER 3

Test Summary

Maxxam ID WW3390
Sample ID PROOFED 6L SUMMA #9 14103
Matrix Air Sampling Media

Collected 2014/07/28
Shipped
Received 2014/07/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3694330	N/A	2014/07/29	Yao Liang Sun

Maxxam ID WW3391
Sample ID PROOFED 6L SUMMA #10 280
Matrix Air Sampling Media

Collected 2014/07/28
Shipped
Received 2014/07/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3694330	N/A	2014/07/29	Yao Liang Sun

Maxxam ID WW3392
Sample ID PROOFED 6L SUMMA #11 294
Matrix Air Sampling Media

Collected 2014/07/28
Shipped
Received 2014/07/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3694330	N/A	2014/07/29	Yao Liang Sun

Maxxam ID WW3393
Sample ID PROOFED 6L SUMMA #12 7835
Matrix Air Sampling Media

Collected 2014/07/28
Shipped
Received 2014/07/28

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	3694330	N/A	2014/07/29	Yao Liang Sun

Maxxam Job #: B4D3328
Report Date: 2014/07/30

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 3

GENERAL COMMENTS

Results relate only to the items tested.

Golder Associates Ltd
 Attention: Jonathan Lewis
 Client Project #: 13-1324-0204
 P.O. #:
 Site Location: QUARTER 3

Quality Assurance Report
 Maxxam Job Number: GB4D3328

QA/QC Batch	Date Analyzed	Parameter	Value	%Recovery	Units	QC Limits
Num Init	yy/mm/dd					
3683210 LSY		Spiked Blank				
	2014/07/18	Bromochloromethane		107	%	60 - 140
	2014/07/18	D5-Chlorobenzene		106	%	60 - 140
	2014/07/18	Difluorobenzene		108	%	60 - 140
	2014/07/18	Dichlorodifluoromethane (FREON 12)		99	%	70 - 130
	2014/07/18	1,2-Dichlorotetrafluoroethane		99	%	70 - 130
	2014/07/18	Chloromethane		105	%	70 - 130
	2014/07/18	Vinyl Chloride		102	%	70 - 130
	2014/07/18	Chloroethane		102	%	70 - 130
	2014/07/18	1,3-Butadiene		109	%	70 - 130
	2014/07/18	Trichlorofluoromethane (FREON 11)		90	%	70 - 130
	2014/07/18	Ethanol (ethyl alcohol)		81	%	70 - 130
	2014/07/18	Trichlorotrifluoroethane		93	%	70 - 130
	2014/07/18	2-propanol		103	%	70 - 130
	2014/07/18	2-Propanone		100	%	70 - 130
	2014/07/18	Methyl Ethyl Ketone (2-Butanone)		97	%	70 - 130
	2014/07/18	Methyl Isobutyl Ketone		112	%	70 - 130
	2014/07/18	Methyl Butyl Ketone (2-Hexanone)		113	%	70 - 130
	2014/07/18	Methyl t-butyl ether (MTBE)		98	%	70 - 130
	2014/07/18	Ethyl Acetate		120	%	70 - 130
	2014/07/18	1,1-Dichloroethylene		96	%	70 - 130
	2014/07/18	cis-1,2-Dichloroethylene		99	%	70 - 130
	2014/07/18	trans-1,2-Dichloroethylene		102	%	70 - 130
	2014/07/18	Methylene Chloride(Dichloromethane)		96	%	70 - 130
	2014/07/18	Chloroform		95	%	70 - 130
	2014/07/18	Carbon Tetrachloride		93	%	70 - 130
	2014/07/18	1,1-Dichloroethane		100	%	70 - 130
	2014/07/18	1,2-Dichloroethane		94	%	70 - 130
	2014/07/18	Ethylene Dibromide		99	%	70 - 130
	2014/07/18	1,1,1-Trichloroethane		92	%	70 - 130
	2014/07/18	1,1,2-Trichloroethane		97	%	70 - 130
	2014/07/18	1,1,2,2-Tetrachloroethane		101	%	70 - 130
	2014/07/18	cis-1,3-Dichloropropene		96	%	70 - 130
	2014/07/18	trans-1,3-Dichloropropene		99	%	70 - 130
	2014/07/18	1,2-Dichloropropane		98	%	70 - 130
	2014/07/18	Bromomethane		98	%	70 - 130
	2014/07/18	Bromoform		111	%	70 - 130
	2014/07/18	Bromodichloromethane		107	%	70 - 130
	2014/07/18	Dibromochloromethane		110	%	70 - 130
	2014/07/18	Trichloroethylene		92	%	70 - 130
	2014/07/18	Tetrachloroethylene		94	%	70 - 130
	2014/07/18	Benzene		96	%	70 - 130
	2014/07/18	Toluene		97	%	70 - 130
	2014/07/18	Ethylbenzene		93	%	70 - 130
	2014/07/18	p+m-Xylene		93	%	70 - 130
	2014/07/18	o-Xylene		94	%	70 - 130
	2014/07/18	Styrene		97	%	70 - 130
	2014/07/18	4-ethyltoluene		109	%	70 - 130
	2014/07/18	1,3,5-Trimethylbenzene		95	%	70 - 130
	2014/07/18	1,2,4-Trimethylbenzene		97	%	70 - 130
	2014/07/18	Chlorobenzene		93	%	70 - 130
	2014/07/18	Benzyl chloride		116	%	70 - 130
	2014/07/18	1,3-Dichlorobenzene		104	%	70 - 130
	2014/07/18	1,4-Dichlorobenzene		110	%	70 - 130
	2014/07/18	1,2-Dichlorobenzene		103	%	70 - 130
	2014/07/18	1,2,4-Trichlorobenzene		124	%	70 - 130

Golder Associates Ltd
 Attention: Jonathan Lewis
 Client Project #: 13-1324-0204
 P.O. #:
 Site Location: QUARTER 3

Quality Assurance Report (Continued)

Maxxam Job Number: GB4D3328

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3683210 LSY	Spiked Blank	Hexachlorobutadiene	2014/07/18		101	%	70 - 130
		Hexane	2014/07/18		109	%	70 - 130
		Heptane	2014/07/18		110	%	70 - 130
		Cyclohexane	2014/07/18		104	%	70 - 130
		Tetrahydrofuran	2014/07/18		108	%	70 - 130
		1,4-Dioxane	2014/07/18		101	%	70 - 130
		Xylene (Total)	2014/07/18		93	%	70 - 130
		Vinyl Bromide	2014/07/18		99	%	70 - 130
		Propene	2014/07/18		105	%	70 - 130
		2,2,4-Trimethylpentane	2014/07/18		109	%	70 - 130
		Carbon Disulfide	2014/07/18		100	%	70 - 130
	Method Blank	Vinyl Acetate	2014/07/18		96	%	70 - 130
		Bromochloromethane	2014/07/18		92	%	60 - 140
		D5-Chlorobenzene	2014/07/18		83	%	60 - 140
		Difluorobenzene	2014/07/18		93	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2014/07/18	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2014/07/18	<0.17		ppbv	
		Chloromethane	2014/07/18	<0.30		ppbv	
		Vinyl Chloride	2014/07/18	<0.18		ppbv	
		Chloroethane	2014/07/18	<0.30		ppbv	
		1,3-Butadiene	2014/07/18	<0.50		ppbv	
		Trichlorofluoromethane (FREON 11)	2014/07/18	<0.20		ppbv	
		Ethanol (ethyl alcohol)	2014/07/18	<2.3		ppbv	
		Trichlorotrifluoroethane	2014/07/18	<0.15		ppbv	
		2-propanol	2014/07/18	<3.0		ppbv	
		2-Propanone	2014/07/18	<0.80		ppbv	
		Methyl Ethyl Ketone (2-Butanone)	2014/07/18	<3.0		ppbv	
		Methyl Isobutyl Ketone	2014/07/18	<3.2		ppbv	
		Methyl Butyl Ketone (2-Hexanone)	2014/07/18	<2.0		ppbv	
		Methyl t-butyl ether (MTBE)	2014/07/18	<0.20		ppbv	
		Ethyl Acetate	2014/07/18	<2.2		ppbv	
		1,1-Dichloroethylene	2014/07/18	<0.25		ppbv	
		cis-1,2-Dichloroethylene	2014/07/18	<0.19		ppbv	
		trans-1,2-Dichloroethylene	2014/07/18	<0.20		ppbv	
		Methylene Chloride(Dichloromethane)	2014/07/18	<0.80		ppbv	
		Chloroform	2014/07/18	<0.15		ppbv	
		Carbon Tetrachloride	2014/07/18	<0.30		ppbv	
		1,1-Dichloroethane	2014/07/18	<0.20		ppbv	
		1,2-Dichloroethane	2014/07/18	<0.20		ppbv	
		Ethylene Dibromide	2014/07/18	<0.17		ppbv	
		1,1,1-Trichloroethane	2014/07/18	<0.30		ppbv	
		1,1,2-Trichloroethane	2014/07/18	<0.15		ppbv	
		1,1,2,2-Tetrachloroethane	2014/07/18	<0.20		ppbv	
		cis-1,3-Dichloropropene	2014/07/18	<0.18		ppbv	
		trans-1,3-Dichloropropene	2014/07/18	<0.17		ppbv	
		1,2-Dichloropropane	2014/07/18	<0.40		ppbv	
		Bromomethane	2014/07/18	<0.18		ppbv	
		Bromoform	2014/07/18	<0.20		ppbv	
		Bromodichloromethane	2014/07/18	<0.20		ppbv	
		Dibromochloromethane	2014/07/18	<0.20		ppbv	
		Trichloroethylene	2014/07/18	<0.30		ppbv	
		Tetrachloroethylene	2014/07/18	<0.20		ppbv	
		Benzene	2014/07/18	<0.18		ppbv	
		Toluene	2014/07/18	<0.20		ppbv	
		Ethylbenzene	2014/07/18	<0.20		ppbv	

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QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3683210 LSY	Method Blank	p+m-Xylene	2014/07/18	<0.37		ppbv	
		o-Xylene	2014/07/18	<0.20		ppbv	
		Styrene	2014/07/18	<0.20		ppbv	
		4-ethyltoluene	2014/07/18	<2.2		ppbv	
		1,3,5-Trimethylbenzene	2014/07/18	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2014/07/18	<0.50		ppbv	
		Chlorobenzene	2014/07/18	<0.20		ppbv	
		Benzyl chloride	2014/07/18	<1.0		ppbv	
		1,3-Dichlorobenzene	2014/07/18	<0.40		ppbv	
		1,4-Dichlorobenzene	2014/07/18	<0.40		ppbv	
		1,2-Dichlorobenzene	2014/07/18	<0.40		ppbv	
		1,2,4-Trichlorobenzene	2014/07/18	<2.0		ppbv	
		Hexachlorobutadiene	2014/07/18	<3.0		ppbv	
		Hexane	2014/07/18	<0.30		ppbv	
		Heptane	2014/07/18	<0.30		ppbv	
		Cyclohexane	2014/07/18	<0.20		ppbv	
		Tetrahydrofuran	2014/07/18	<0.40		ppbv	
		1,4-Dioxane	2014/07/18	<2.0		ppbv	
		Xylene (Total)	2014/07/18	<0.60		ppbv	
		Vinyl Bromide	2014/07/18	<0.20		ppbv	
		Propene	2014/07/18	<0.30		ppbv	
		2,2,4-Trimethylpentane	2014/07/18	<0.20		ppbv	
		Carbon Disulfide	2014/07/18	<0.50		ppbv	
Vinyl Acetate	2014/07/18	<0.20		ppbv			
3694167 NS2	Method Blank	Bromochloromethane	2014/07/17		93	%	60 - 140
		D5-Chlorobenzene	2014/07/17		87	%	60 - 140
		Difluorobenzene	2014/07/17		96	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2014/07/17	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2014/07/17	<0.17		ppbv	
		Chloromethane	2014/07/17	<0.30		ppbv	
		Vinyl Chloride	2014/07/17	<0.18		ppbv	
		Chloroethane	2014/07/17	<0.30		ppbv	
		1,3-Butadiene	2014/07/17	<0.50		ppbv	
		Trichlorofluoromethane (FREON 11)	2014/07/17	<0.20		ppbv	
		Ethanol (ethyl alcohol)	2014/07/17	<2.3		ppbv	
		Trichlorotrifluoroethane	2014/07/17	<0.15		ppbv	
		2-propanol	2014/07/17	<3.0		ppbv	
		2-Propanone	2014/07/17	<0.80		ppbv	
		Methyl Ethyl Ketone (2-Butanone)	2014/07/17	<3.0		ppbv	
		Methyl Isobutyl Ketone	2014/07/17	<3.2		ppbv	
		Methyl Butyl Ketone (2-Hexanone)	2014/07/17	<2.0		ppbv	
		Methyl t-butyl ether (MTBE)	2014/07/17	<0.20		ppbv	
		Ethyl Acetate	2014/07/17	<2.2		ppbv	
		1,1-Dichloroethylene	2014/07/17	<0.25		ppbv	
		cis-1,2-Dichloroethylene	2014/07/17	<0.19		ppbv	
		trans-1,2-Dichloroethylene	2014/07/17	<0.20		ppbv	
		Methylene Chloride(Dichloromethane)	2014/07/17	<0.80		ppbv	
		Chloroform	2014/07/17	<0.15		ppbv	
		Carbon Tetrachloride	2014/07/17	<0.30		ppbv	
		1,1-Dichloroethane	2014/07/17	<0.20		ppbv	
		1,2-Dichloroethane	2014/07/17	<0.20		ppbv	
Ethylene Dibromide	2014/07/17	<0.17		ppbv			
1,1,1-Trichloroethane	2014/07/17	<0.30		ppbv			
1,1,2-Trichloroethane	2014/07/17	<0.15		ppbv			
1,1,2,2-Tetrachloroethane	2014/07/17	<0.20		ppbv			

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QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3694167 NS2	Method Blank	cis-1,3-Dichloropropene	2014/07/17	<0.18		ppbv	
		trans-1,3-Dichloropropene	2014/07/17	<0.17		ppbv	
		1,2-Dichloropropane	2014/07/17	<0.40		ppbv	
		Bromomethane	2014/07/17	<0.18		ppbv	
		Bromoform	2014/07/17	<0.20		ppbv	
		Bromodichloromethane	2014/07/17	<0.20		ppbv	
		Dibromochloromethane	2014/07/17	<0.20		ppbv	
		Trichloroethylene	2014/07/17	<0.30		ppbv	
		Tetrachloroethylene	2014/07/17	<0.20		ppbv	
		Benzene	2014/07/17	<0.18		ppbv	
		Toluene	2014/07/17	<0.20		ppbv	
		Ethylbenzene	2014/07/17	<0.20		ppbv	
		p+m-Xylene	2014/07/17	<0.37		ppbv	
		o-Xylene	2014/07/17	<0.20		ppbv	
		Styrene	2014/07/17	<0.20		ppbv	
		4-ethyltoluene	2014/07/17	<2.2		ppbv	
		1,3,5-Trimethylbenzene	2014/07/17	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2014/07/17	<0.50		ppbv	
		Chlorobenzene	2014/07/17	<0.20		ppbv	
		Benzyl chloride	2014/07/17	<1.0		ppbv	
		1,3-Dichlorobenzene	2014/07/17	<0.40		ppbv	
		1,4-Dichlorobenzene	2014/07/17	<0.40		ppbv	
		1,2-Dichlorobenzene	2014/07/17	<0.40		ppbv	
		1,2,4-Trichlorobenzene	2014/07/17	<2.0		ppbv	
		Hexachlorobutadiene	2014/07/17	<3.0		ppbv	
		Hexane	2014/07/17	<0.30		ppbv	
		Heptane	2014/07/17	<0.30		ppbv	
		Cyclohexane	2014/07/17	<0.20		ppbv	
		Tetrahydrofuran	2014/07/17	<0.40		ppbv	
		1,4-Dioxane	2014/07/17	<2.0		ppbv	
		Xylene (Total)	2014/07/17	<0.60		ppbv	
		Vinyl Bromide	2014/07/17	<0.20		ppbv	
		Propene	2014/07/17	<1.0		ppbv	
		2,2,4-Trimethylpentane	2014/07/17	<0.20		ppbv	
		Carbon Disulfide	2014/07/17	<0.50		ppbv	
Vinyl Acetate	2014/07/17	<0.20		ppbv			
3694172 JIW	Method Blank	Bromochloromethane	2014/07/29		92	%	60 - 140
		D5-Chlorobenzene	2014/07/29		88	%	60 - 140
		Difluorobenzene	2014/07/29		94	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2014/07/29	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2014/07/29	<0.17		ppbv	
		Chloromethane	2014/07/29	<0.30		ppbv	
		Vinyl Chloride	2014/07/29	<0.18		ppbv	
		Chloroethane	2014/07/29	<0.30		ppbv	
		1,3-Butadiene	2014/07/29	<0.50		ppbv	
		Trichlorofluoromethane (FREON 11)	2014/07/29	<0.20		ppbv	
		Ethanol (ethyl alcohol)	2014/07/29	<2.3		ppbv	
		Trichlorotrifluoroethane	2014/07/29	<0.15		ppbv	
		2-propanol	2014/07/29	<3.0		ppbv	
		2-Propanone	2014/07/29	<0.80		ppbv	
		Methyl Ethyl Ketone (2-Butanone)	2014/07/29	<3.0		ppbv	
		Methyl Isobutyl Ketone	2014/07/29	<3.2		ppbv	
		Methyl Butyl Ketone (2-Hexanone)	2014/07/29	<2.0		ppbv	
		Methyl t-butyl ether (MTBE)	2014/07/29	<0.20		ppbv	
Ethyl Acetate	2014/07/29	<2.2		ppbv			

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QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3694172 JIW	Method Blank	1,1-Dichloroethylene	2014/07/29	<0.25		ppbv	
		cis-1,2-Dichloroethylene	2014/07/29	<0.19		ppbv	
		trans-1,2-Dichloroethylene	2014/07/29	<0.20		ppbv	
		Methylene Chloride(Dichloromethane)	2014/07/29	<0.80		ppbv	
		Chloroform	2014/07/29	<0.15		ppbv	
		Carbon Tetrachloride	2014/07/29	<0.30		ppbv	
		1,1-Dichloroethane	2014/07/29	<0.20		ppbv	
		1,2-Dichloroethane	2014/07/29	<0.20		ppbv	
		Ethylene Dibromide	2014/07/29	<0.17		ppbv	
		1,1,1-Trichloroethane	2014/07/29	<0.30		ppbv	
		1,1,2-Trichloroethane	2014/07/29	<0.15		ppbv	
		1,1,2,2-Tetrachloroethane	2014/07/29	<0.20		ppbv	
		cis-1,3-Dichloropropene	2014/07/29	<0.18		ppbv	
		trans-1,3-Dichloropropene	2014/07/29	<0.17		ppbv	
		1,2-Dichloropropane	2014/07/29	<0.40		ppbv	
		Bromomethane	2014/07/29	<0.18		ppbv	
		Bromoform	2014/07/29	<0.20		ppbv	
		Bromodichloromethane	2014/07/29	<0.20		ppbv	
		Dibromochloromethane	2014/07/29	<0.20		ppbv	
		Trichloroethylene	2014/07/29	<0.30		ppbv	
		Tetrachloroethylene	2014/07/29	<0.20		ppbv	
		Benzene	2014/07/29	<0.18		ppbv	
		Toluene	2014/07/29	<0.20		ppbv	
		Ethylbenzene	2014/07/29	<0.20		ppbv	
		p+m-Xylene	2014/07/29	<0.37		ppbv	
		o-Xylene	2014/07/29	<0.20		ppbv	
		Styrene	2014/07/29	<0.20		ppbv	
		4-ethyltoluene	2014/07/29	<2.2		ppbv	
		1,3,5-Trimethylbenzene	2014/07/29	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2014/07/29	<0.50		ppbv	
		Chlorobenzene	2014/07/29	<0.20		ppbv	
		Benzyl chloride	2014/07/29	<1.0		ppbv	
		1,3-Dichlorobenzene	2014/07/29	<0.40		ppbv	
		1,4-Dichlorobenzene	2014/07/29	<0.40		ppbv	
		1,2-Dichlorobenzene	2014/07/29	<0.40		ppbv	
		1,2,4-Trichlorobenzene	2014/07/29	<2.0		ppbv	
		Hexachlorobutadiene	2014/07/29	<3.0		ppbv	
		Hexane	2014/07/29	<0.30		ppbv	
		Heptane	2014/07/29	<0.30		ppbv	
		Cyclohexane	2014/07/29	<0.20		ppbv	
Tetrahydrofuran	2014/07/29	<0.40		ppbv			
1,4-Dioxane	2014/07/29	<2.0		ppbv			
Xylene (Total)	2014/07/29	<0.60		ppbv			
Vinyl Bromide	2014/07/29	<0.20		ppbv			
Propene	2014/07/29	<0.30		ppbv			
2,2,4-Trimethylpentane	2014/07/29	<0.20		ppbv			
Carbon Disulfide	2014/07/29	<0.50		ppbv			
Vinyl Acetate	2014/07/29	<0.20		ppbv			
3694176 S_S	Method Blank	Bromochloromethane	2014/07/28		116	%	60 - 140
		D5-Chlorobenzene	2014/07/28		100	%	60 - 140
		Difluorobenzene	2014/07/28		117	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2014/07/28	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2014/07/28	<0.17		ppbv	
		Chloromethane	2014/07/28	<0.30		ppbv	
		Vinyl Chloride	2014/07/28	<0.18		ppbv	

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QA/QC Batch			Date Analyzed					
Num Init	QC Type	Parameter	yyyy/mm/dd	Value	%Recovery	Units	QC Limits	
3694176 S_S	Method Blank	Chloroethane	2014/07/28	<0.30		ppbv		
		1,3-Butadiene	2014/07/28	<0.50		ppbv		
		Trichlorofluoromethane (FREON 11)	2014/07/28	<0.20		ppbv		
		Ethanol (ethyl alcohol)	2014/07/28	<2.3		ppbv		
		Trichlorotrifluoroethane	2014/07/28	<0.15		ppbv		
		2-propanol	2014/07/28	<3.0		ppbv		
		2-Propanone	2014/07/28	<0.80		ppbv		
		Methyl Ethyl Ketone (2-Butanone)	2014/07/28	<3.0		ppbv		
		Methyl Isobutyl Ketone	2014/07/28	<3.2		ppbv		
		Methyl Butyl Ketone (2-Hexanone)	2014/07/28	<2.0		ppbv		
		Methyl t-butyl ether (MTBE)	2014/07/28	<0.20		ppbv		
		Ethyl Acetate	2014/07/28	<2.2		ppbv		
		1,1-Dichloroethylene	2014/07/28	<0.25		ppbv		
		cis-1,2-Dichloroethylene	2014/07/28	<0.19		ppbv		
		trans-1,2-Dichloroethylene	2014/07/28	<0.20		ppbv		
		Methylene Chloride(Dichloromethane)	2014/07/28	<0.80		ppbv		
		Chloroform	2014/07/28	<0.15		ppbv		
		Carbon Tetrachloride	2014/07/28	<0.30		ppbv		
		1,1-Dichloroethane	2014/07/28	<0.20		ppbv		
		1,2-Dichloroethane	2014/07/28	<0.20		ppbv		
		Ethylene Dibromide	2014/07/28	<0.17		ppbv		
		1,1,1-Trichloroethane	2014/07/28	<0.30		ppbv		
		1,1,2-Trichloroethane	2014/07/28	<0.15		ppbv		
		1,1,2,2-Tetrachloroethane	2014/07/28	<0.20		ppbv		
		cis-1,3-Dichloropropene	2014/07/28	<0.18		ppbv		
		trans-1,3-Dichloropropene	2014/07/28	<0.17		ppbv		
		1,2-Dichloropropane	2014/07/28	<0.40		ppbv		
		Bromomethane	2014/07/28	<0.18		ppbv		
		Bromoform	2014/07/28	<0.20		ppbv		
		Bromodichloromethane	2014/07/28	<0.20		ppbv		
		Dibromochloromethane	2014/07/28	<0.20		ppbv		
		Trichloroethylene	2014/07/28	<0.30		ppbv		
		Tetrachloroethylene	2014/07/28	<0.20		ppbv		
		Benzene	2014/07/28	<0.18		ppbv		
		Toluene	2014/07/28	<0.20		ppbv		
		Ethylbenzene	2014/07/28	<0.20		ppbv		
		p+m-Xylene	2014/07/28	<0.37		ppbv		
		o-Xylene	2014/07/28	<0.20		ppbv		
		Styrene	2014/07/28	<0.20		ppbv		
		4-ethyltoluene	2014/07/28	<2.2		ppbv		
		1,3,5-Trimethylbenzene	2014/07/28	<0.50		ppbv		
		1,2,4-Trimethylbenzene	2014/07/28	<0.50		ppbv		
		Chlorobenzene	2014/07/28	<0.20		ppbv		
		Benzyl chloride	2014/07/28	<1.0		ppbv		
		1,3-Dichlorobenzene	2014/07/28	<0.40		ppbv		
		1,4-Dichlorobenzene	2014/07/28	<0.40		ppbv		
		1,2-Dichlorobenzene	2014/07/28	<0.40		ppbv		
		1,2,4-Trichlorobenzene	2014/07/28	<2.0		ppbv		
		Hexachlorobutadiene	2014/07/28	<3.0		ppbv		
		Hexane	2014/07/28	<0.30		ppbv		
		Heptane	2014/07/28	<0.30		ppbv		
		Cyclohexane	2014/07/28	<0.20		ppbv		
		Tetrahydrofuran	2014/07/28	<0.40		ppbv		
		1,4-Dioxane	2014/07/28	<2.0		ppbv		
		Xylene (Total)	2014/07/28	<0.60		ppbv		

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QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3694176 S_S	Method Blank	Vinyl Bromide	2014/07/28	<0.20		ppbv	
		Propene	2014/07/28	<0.30		ppbv	
		2,2,4-Trimethylpentane	2014/07/28	<0.20		ppbv	
		Carbon Disulfide	2014/07/28	<0.50		ppbv	
		Vinyl Acetate	2014/07/28	<0.20		ppbv	
3694191 JIW	Method Blank	Bromochloromethane	2014/07/22		87	%	60 - 140
		D5-Chlorobenzene	2014/07/22		79	%	60 - 140
		Difluorobenzene	2014/07/22		86	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2014/07/22	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2014/07/22	<0.17		ppbv	
		Chloromethane	2014/07/22	<0.30		ppbv	
		Vinyl Chloride	2014/07/22	<0.18		ppbv	
		Chloroethane	2014/07/22	<0.30		ppbv	
		1,3-Butadiene	2014/07/22	<0.50		ppbv	
		Trichlorofluoromethane (FREON 11)	2014/07/22	<0.20		ppbv	
		Ethanol (ethyl alcohol)	2014/07/22	<2.3		ppbv	
		Trichlorotrifluoroethane	2014/07/22	<0.15		ppbv	
		2-propanol	2014/07/22	<3.0		ppbv	
		2-Propanone	2014/07/22	<0.80		ppbv	
		Methyl Ethyl Ketone (2-Butanone)	2014/07/22	<3.0		ppbv	
		Methyl Isobutyl Ketone	2014/07/22	<3.2		ppbv	
		Methyl Butyl Ketone (2-Hexanone)	2014/07/22	<2.0		ppbv	
		Methyl t-butyl ether (MTBE)	2014/07/22	<0.20		ppbv	
		Ethyl Acetate	2014/07/22	<2.2		ppbv	
		1,1-Dichloroethylene	2014/07/22	<0.25		ppbv	
		cis-1,2-Dichloroethylene	2014/07/22	<0.19		ppbv	
		trans-1,2-Dichloroethylene	2014/07/22	<0.20		ppbv	
		Methylene Chloride(Dichloromethane)	2014/07/22	<0.80		ppbv	
		Chloroform	2014/07/22	<0.15		ppbv	
		Carbon Tetrachloride	2014/07/22	<0.30		ppbv	
		1,1-Dichloroethane	2014/07/22	<0.20		ppbv	
		1,2-Dichloroethane	2014/07/22	<0.20		ppbv	
		Ethylene Dibromide	2014/07/22	<0.17		ppbv	
		1,1,1-Trichloroethane	2014/07/22	<0.30		ppbv	
		1,1,2-Trichloroethane	2014/07/22	<0.15		ppbv	
		1,1,2,2-Tetrachloroethane	2014/07/22	<0.20		ppbv	
		cis-1,3-Dichloropropene	2014/07/22	<0.18		ppbv	
		trans-1,3-Dichloropropene	2014/07/22	<0.17		ppbv	
		1,2-Dichloropropane	2014/07/22	<0.40		ppbv	
		Bromomethane	2014/07/22	<0.18		ppbv	
		Bromoform	2014/07/22	<0.20		ppbv	
		Bromodichloromethane	2014/07/22	<0.20		ppbv	
Dibromochloromethane	2014/07/22	<0.20		ppbv			
Trichloroethylene	2014/07/22	<0.30		ppbv			
Tetrachloroethylene	2014/07/22	<0.20		ppbv			
Benzene	2014/07/22	<0.18		ppbv			
Toluene	2014/07/22	<0.20		ppbv			
Ethylbenzene	2014/07/22	<0.20		ppbv			
p+m-Xylene	2014/07/22	<0.37		ppbv			
o-Xylene	2014/07/22	<0.20		ppbv			
Styrene	2014/07/22	<0.20		ppbv			
4-ethyltoluene	2014/07/22	<2.2		ppbv			
1,3,5-Trimethylbenzene	2014/07/22	<0.50		ppbv			
1,2,4-Trimethylbenzene	2014/07/22	<0.50		ppbv			
Chlorobenzene	2014/07/22	<0.20		ppbv			

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QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3694191 JIW	Method Blank	Benzyl chloride	2014/07/22	<1.0		ppbv	
		1,3-Dichlorobenzene	2014/07/22	<0.40		ppbv	
		1,4-Dichlorobenzene	2014/07/22	<0.40		ppbv	
		1,2-Dichlorobenzene	2014/07/22	<0.40		ppbv	
		1,2,4-Trichlorobenzene	2014/07/22	<2.0		ppbv	
		Hexachlorobutadiene	2014/07/22	<3.0		ppbv	
		Hexane	2014/07/22	<0.30		ppbv	
		Heptane	2014/07/22	<0.30		ppbv	
		Cyclohexane	2014/07/22	<0.20		ppbv	
		Tetrahydrofuran	2014/07/22	<0.40		ppbv	
		1,4-Dioxane	2014/07/22	<2.0		ppbv	
		Xylene (Total)	2014/07/22	<0.60		ppbv	
		Vinyl Bromide	2014/07/22	<0.20		ppbv	
		Propene	2014/07/22	<0.30		ppbv	
		2,2,4-Trimethylpentane	2014/07/22	<0.20		ppbv	
		Carbon Disulfide	2014/07/22	<0.50		ppbv	
		3694223 JIW	Method Blank	Vinyl Acetate	2014/07/22	<0.20	
Bromochloromethane	2014/07/16				88	%	60 - 140
D5-Chlorobenzene	2014/07/16				79	%	60 - 140
Difluorobenzene	2014/07/16				87	%	60 - 140
Dichlorodifluoromethane (FREON 12)	2014/07/16			<0.20		ppbv	
1,2-Dichlorotetrafluoroethane	2014/07/16			<0.17		ppbv	
Chloromethane	2014/07/16			<0.30		ppbv	
Vinyl Chloride	2014/07/16			<0.18		ppbv	
Chloroethane	2014/07/16			<0.30		ppbv	
1,3-Butadiene	2014/07/16			<0.50		ppbv	
Trichlorofluoromethane (FREON 11)	2014/07/16			<0.20		ppbv	
Ethanol (ethyl alcohol)	2014/07/16			<2.3		ppbv	
Trichlorotrifluoroethane	2014/07/16			<0.15		ppbv	
2-propanol	2014/07/16			<3.0		ppbv	
2-Propanone	2014/07/16			<0.80		ppbv	
Methyl Ethyl Ketone (2-Butanone)	2014/07/16			<3.0		ppbv	
Methyl Isobutyl Ketone	2014/07/16			<3.2		ppbv	
Methyl Butyl Ketone (2-Hexanone)	2014/07/16			<2.0		ppbv	
Methyl t-butyl ether (MTBE)	2014/07/16			<0.20		ppbv	
Ethyl Acetate	2014/07/16			<2.2		ppbv	
1,1-Dichloroethylene	2014/07/16			<0.25		ppbv	
cis-1,2-Dichloroethylene	2014/07/16			<0.19		ppbv	
trans-1,2-Dichloroethylene	2014/07/16			<0.20		ppbv	
Methylene Chloride(Dichloromethane)	2014/07/16			<0.80		ppbv	
Chloroform	2014/07/16			<0.15		ppbv	
Carbon Tetrachloride	2014/07/16			<0.30		ppbv	
1,1-Dichloroethane	2014/07/16			<0.20		ppbv	
1,2-Dichloroethane	2014/07/16			<0.20		ppbv	
Ethylene Dibromide	2014/07/16			<0.17		ppbv	
1,1,1-Trichloroethane	2014/07/16			<0.30		ppbv	
1,1,2-Trichloroethane	2014/07/16			<0.15		ppbv	
1,1,2,2-Tetrachloroethane	2014/07/16			<0.20		ppbv	
cis-1,3-Dichloropropene	2014/07/16			<0.18		ppbv	
trans-1,3-Dichloropropene	2014/07/16	<0.17		ppbv			
1,2-Dichloropropane	2014/07/16	<0.40		ppbv			
Bromomethane	2014/07/16	<0.18		ppbv			
Bromoform	2014/07/16	<0.20		ppbv			
Bromodichloromethane	2014/07/16	<0.20		ppbv			
Dibromochloromethane	2014/07/16	<0.20		ppbv			

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QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3694223 JIW	Method Blank	Trichloroethylene	2014/07/16	<0.30		ppbv	
		Tetrachloroethylene	2014/07/16	<0.20		ppbv	
		Benzene	2014/07/16	<0.18		ppbv	
		Toluene	2014/07/16	<0.20		ppbv	
		Ethylbenzene	2014/07/16	<0.20		ppbv	
		p+m-Xylene	2014/07/16	<0.37		ppbv	
		o-Xylene	2014/07/16	<0.20		ppbv	
		Styrene	2014/07/16	<0.20		ppbv	
		4-ethyltoluene	2014/07/16	<2.2		ppbv	
		1,3,5-Trimethylbenzene	2014/07/16	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2014/07/16	<0.50		ppbv	
		Chlorobenzene	2014/07/16	<0.20		ppbv	
		Benzyl chloride	2014/07/16	<1.0		ppbv	
		1,3-Dichlorobenzene	2014/07/16	<0.40		ppbv	
		1,4-Dichlorobenzene	2014/07/16	<0.40		ppbv	
		1,2-Dichlorobenzene	2014/07/16	<0.40		ppbv	
		1,2,4-Trichlorobenzene	2014/07/16	<2.0		ppbv	
		Hexachlorobutadiene	2014/07/16	<3.0		ppbv	
		Hexane	2014/07/16	<0.30		ppbv	
		Heptane	2014/07/16	<0.30		ppbv	
		Cyclohexane	2014/07/16	<0.20		ppbv	
		Tetrahydrofuran	2014/07/16	<0.40		ppbv	
		1,4-Dioxane	2014/07/16	<2.0		ppbv	
		Xylene (Total)	2014/07/16	<0.60		ppbv	
		Vinyl Bromide	2014/07/16	<0.20		ppbv	
		Propene	2014/07/16	<0.30		ppbv	
		2,2,4-Trimethylpentane	2014/07/16	<0.20		ppbv	
		Carbon Disulfide	2014/07/16	<0.50		ppbv	
		Vinyl Acetate	2014/07/16	<0.20		ppbv	
		3694239 JIW	Method Blank	Bromochloromethane	2014/07/15		87
D5-Chlorobenzene	2014/07/15				81	%	60 - 140
Difluorobenzene	2014/07/15				88	%	60 - 140
Dichlorodifluoromethane (FREON 12)	2014/07/15			<0.20		ppbv	
1,2-Dichlorotetrafluoroethane	2014/07/15			<0.17		ppbv	
Chloromethane	2014/07/15			<0.30		ppbv	
Vinyl Chloride	2014/07/15			<0.18		ppbv	
Chloroethane	2014/07/15			<0.30		ppbv	
1,3-Butadiene	2014/07/15			<0.50		ppbv	
Trichlorofluoromethane (FREON 11)	2014/07/15			<0.20		ppbv	
Ethanol (ethyl alcohol)	2014/07/15			<2.3		ppbv	
Trichlorotrifluoroethane	2014/07/15			<0.15		ppbv	
2-propanol	2014/07/15			<3.0		ppbv	
2-Propanone	2014/07/15			<0.80		ppbv	
Methyl Ethyl Ketone (2-Butanone)	2014/07/15			<3.0		ppbv	
Methyl Isobutyl Ketone	2014/07/15			<3.2		ppbv	
Methyl Butyl Ketone (2-Hexanone)	2014/07/15			<2.0		ppbv	
Methyl t-butyl ether (MTBE)	2014/07/15			<0.20		ppbv	
Ethyl Acetate	2014/07/15			<2.2		ppbv	
1,1-Dichloroethylene	2014/07/15			<0.25		ppbv	
cis-1,2-Dichloroethylene	2014/07/15			<0.19		ppbv	
trans-1,2-Dichloroethylene	2014/07/15			<0.20		ppbv	
Methylene Chloride(Dichloromethane)	2014/07/15			<0.80		ppbv	
Chloroform	2014/07/15			<0.15		ppbv	
Carbon Tetrachloride	2014/07/15			<0.30		ppbv	
1,1-Dichloroethane	2014/07/15			<0.20		ppbv	

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QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3694239 JIW	Method Blank	1,2-Dichloroethane	2014/07/15	<0.20		ppbv	
		Ethylene Dibromide	2014/07/15	<0.17		ppbv	
		1,1,1-Trichloroethane	2014/07/15	<0.30		ppbv	
		1,1,2-Trichloroethane	2014/07/15	<0.15		ppbv	
		1,1,2,2-Tetrachloroethane	2014/07/15	<0.20		ppbv	
		cis-1,3-Dichloropropene	2014/07/15	<0.18		ppbv	
		trans-1,3-Dichloropropene	2014/07/15	<0.17		ppbv	
		1,2-Dichloropropane	2014/07/15	<0.40		ppbv	
		Bromomethane	2014/07/15	<0.18		ppbv	
		Bromoform	2014/07/15	<0.20		ppbv	
		Bromodichloromethane	2014/07/15	<0.20		ppbv	
		Dibromochloromethane	2014/07/15	<0.20		ppbv	
		Trichloroethylene	2014/07/15	<0.30		ppbv	
		Tetrachloroethylene	2014/07/15	<0.20		ppbv	
		Benzene	2014/07/15	<0.18		ppbv	
		Toluene	2014/07/15	<0.20		ppbv	
		Ethylbenzene	2014/07/15	<0.20		ppbv	
		p+m-Xylene	2014/07/15	<0.37		ppbv	
		o-Xylene	2014/07/15	<0.20		ppbv	
		Styrene	2014/07/15	<0.20		ppbv	
		4-ethyltoluene	2014/07/15	<2.2		ppbv	
		1,3,5-Trimethylbenzene	2014/07/15	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2014/07/15	<0.50		ppbv	
		Chlorobenzene	2014/07/15	<0.20		ppbv	
		Benzyl chloride	2014/07/15	<1.0		ppbv	
		1,3-Dichlorobenzene	2014/07/15	<0.40		ppbv	
		1,4-Dichlorobenzene	2014/07/15	<0.40		ppbv	
		1,2-Dichlorobenzene	2014/07/15	<0.40		ppbv	
		1,2,4-Trichlorobenzene	2014/07/15	<2.0		ppbv	
		Hexachlorobutadiene	2014/07/15	<3.0		ppbv	
		Hexane	2014/07/15	<0.30		ppbv	
		Heptane	2014/07/15	<0.30		ppbv	
		Cyclohexane	2014/07/15	<0.20		ppbv	
Tetrahydrofuran	2014/07/15	<0.40		ppbv			
1,4-Dioxane	2014/07/15	<2.0		ppbv			
Xylene (Total)	2014/07/15	<0.60		ppbv			
Vinyl Bromide	2014/07/15	<0.20		ppbv			
Propene	2014/07/15	<0.30		ppbv			
2,2,4-Trimethylpentane	2014/07/15	<0.20		ppbv			
Carbon Disulfide	2014/07/15	<0.50		ppbv			
Vinyl Acetate	2014/07/15	<0.20		ppbv			
3694251 JIW	Method Blank	Bromochloromethane	2014/07/14		107	%	60 - 140
		D5-Chlorobenzene	2014/07/14		99	%	60 - 140
		Difluorobenzene	2014/07/14		108	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2014/07/14	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2014/07/14	<0.17		ppbv	
		Chloromethane	2014/07/14	<0.30		ppbv	
		Vinyl Chloride	2014/07/14	<0.18		ppbv	
		Chloroethane	2014/07/14	<0.30		ppbv	
		1,3-Butadiene	2014/07/14	<0.50		ppbv	
		Trichlorofluoromethane (FREON 11)	2014/07/14	<0.20		ppbv	
		Ethanol (ethyl alcohol)	2014/07/14	<2.3		ppbv	
		Trichlorotrifluoroethane	2014/07/14	<0.15		ppbv	
		2-propanol	2014/07/14	<3.0		ppbv	
		2-Propanone	2014/07/14	<0.80		ppbv	

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3694251 JIW	Method Blank	Methyl Ethyl Ketone (2-Butanone)	2014/07/14	<3.0		ppbv	
		Methyl Isobutyl Ketone	2014/07/14	<3.2		ppbv	
		Methyl Butyl Ketone (2-Hexanone)	2014/07/14	<2.0		ppbv	
		Methyl t-butyl ether (MTBE)	2014/07/14	<0.20		ppbv	
		Ethyl Acetate	2014/07/14	<2.2		ppbv	
		1,1-Dichloroethylene	2014/07/14	<0.25		ppbv	
		cis-1,2-Dichloroethylene	2014/07/14	<0.19		ppbv	
		trans-1,2-Dichloroethylene	2014/07/14	<0.20		ppbv	
		Methylene Chloride(Dichloromethane)	2014/07/14	<0.80		ppbv	
		Chloroform	2014/07/14	<0.15		ppbv	
		Carbon Tetrachloride	2014/07/14	<0.30		ppbv	
		1,1-Dichloroethane	2014/07/14	<0.20		ppbv	
		1,2-Dichloroethane	2014/07/14	<0.20		ppbv	
		Ethylene Dibromide	2014/07/14	<0.17		ppbv	
		1,1,1-Trichloroethane	2014/07/14	<0.30		ppbv	
		1,1,2-Trichloroethane	2014/07/14	<0.15		ppbv	
		1,1,2,2-Tetrachloroethane	2014/07/14	<0.20		ppbv	
		cis-1,3-Dichloropropene	2014/07/14	<0.18		ppbv	
		trans-1,3-Dichloropropene	2014/07/14	<0.17		ppbv	
		1,2-Dichloropropane	2014/07/14	<0.40		ppbv	
		Bromomethane	2014/07/14	<0.18		ppbv	
		Bromoform	2014/07/14	<0.20		ppbv	
		Bromodichloromethane	2014/07/14	<0.20		ppbv	
		Dibromochloromethane	2014/07/14	<0.20		ppbv	
		Trichloroethylene	2014/07/14	<0.30		ppbv	
		Tetrachloroethylene	2014/07/14	<0.20		ppbv	
		Benzene	2014/07/14	<0.18		ppbv	
		Toluene	2014/07/14	<0.20		ppbv	
		Ethylbenzene	2014/07/14	<0.20		ppbv	
		p+m-Xylene	2014/07/14	<0.37		ppbv	
		o-Xylene	2014/07/14	<0.20		ppbv	
		Styrene	2014/07/14	<0.20		ppbv	
		4-ethyltoluene	2014/07/14	<2.2		ppbv	
		1,3,5-Trimethylbenzene	2014/07/14	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2014/07/14	<0.50		ppbv	
		Chlorobenzene	2014/07/14	<0.20		ppbv	
		Benzyl chloride	2014/07/14	<1.0		ppbv	
		1,3-Dichlorobenzene	2014/07/14	<0.40		ppbv	
		1,4-Dichlorobenzene	2014/07/14	<0.40		ppbv	
		1,2-Dichlorobenzene	2014/07/14	<0.40		ppbv	
1,2,4-Trichlorobenzene	2014/07/14	<2.0		ppbv			
Hexachlorobutadiene	2014/07/14	<3.0		ppbv			
Hexane	2014/07/14	<0.30		ppbv			
Heptane	2014/07/14	<0.30		ppbv			
Cyclohexane	2014/07/14	<0.20		ppbv			
Tetrahydrofuran	2014/07/14	<0.40		ppbv			
1,4-Dioxane	2014/07/14	<2.0		ppbv			
Xylene (Total)	2014/07/14	<0.60		ppbv			
Vinyl Bromide	2014/07/14	<0.20		ppbv			
Propene	2014/07/14	<0.30		ppbv			
2,2,4-Trimethylpentane	2014/07/14	<0.20		ppbv			
Carbon Disulfide	2014/07/14	<0.50		ppbv			
Vinyl Acetate	2014/07/14	<0.20		ppbv			
3694330 LSY	Spiked Blank	Bromochloromethane	2014/07/29		105	%	60 - 140
		D5-Chlorobenzene	2014/07/29		104	%	60 - 140

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3694330 LSY	Spiked Blank	Difluorobenzene	2014/07/29		106	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2014/07/29		90	%	70 - 130
		1,2-Dichlorotetrafluoroethane	2014/07/29		92	%	70 - 130
		Chloromethane	2014/07/29		100	%	70 - 130
		Vinyl Chloride	2014/07/29		99	%	70 - 130
		Chloroethane	2014/07/29		99	%	70 - 130
		1,3-Butadiene	2014/07/29		107	%	70 - 130
		Trichlorofluoromethane (FREON 11)	2014/07/29		87	%	70 - 130
		Ethanol (ethyl alcohol)	2014/07/29		73	%	70 - 130
		Trichlorotrifluoroethane	2014/07/29		92	%	70 - 130
		2-propanol	2014/07/29		97	%	70 - 130
		2-Propanone	2014/07/29		94	%	70 - 130
		Methyl Ethyl Ketone (2-Butanone)	2014/07/29		93	%	70 - 130
		Methyl Isobutyl Ketone	2014/07/29		107	%	70 - 130
		Methyl Butyl Ketone (2-Hexanone)	2014/07/29		108	%	70 - 130
		Methyl t-butyl ether (MTBE)	2014/07/29		95	%	70 - 130
		Ethyl Acetate	2014/07/29		115	%	70 - 130
		1,1-Dichloroethylene	2014/07/29		94	%	70 - 130
		cis-1,2-Dichloroethylene	2014/07/29		97	%	70 - 130
		trans-1,2-Dichloroethylene	2014/07/29		101	%	70 - 130
		Methylene Chloride(Dichloromethane)	2014/07/29		95	%	70 - 130
		Chloroform	2014/07/29		92	%	70 - 130
		Carbon Tetrachloride	2014/07/29		89	%	70 - 130
		1,1-Dichloroethane	2014/07/29		98	%	70 - 130
		1,2-Dichloroethane	2014/07/29		88	%	70 - 130
		Ethylene Dibromide	2014/07/29		95	%	70 - 130
		1,1,1-Trichloroethane	2014/07/29		88	%	70 - 130
		1,1,2-Trichloroethane	2014/07/29		95	%	70 - 130
		1,1,2,2-Tetrachloroethane	2014/07/29		100	%	70 - 130
		cis-1,3-Dichloropropene	2014/07/29		94	%	70 - 130
		trans-1,3-Dichloropropene	2014/07/29		96	%	70 - 130
		1,2-Dichloropropane	2014/07/29		100	%	70 - 130
		Bromomethane	2014/07/29		92	%	70 - 130
		Bromoform	2014/07/29		103	%	70 - 130
		Bromodichloromethane	2014/07/29		102	%	70 - 130
		Dibromochloromethane	2014/07/29		103	%	70 - 130
		Trichloroethylene	2014/07/29		90	%	70 - 130
		Tetrachloroethylene	2014/07/29		89	%	70 - 130
		Benzene	2014/07/29		95	%	70 - 130
		Toluene	2014/07/29		94	%	70 - 130
		Ethylbenzene	2014/07/29		91	%	70 - 130
		p+m-Xylene	2014/07/29		91	%	70 - 130
		o-Xylene	2014/07/29		91	%	70 - 130
		Styrene	2014/07/29		91	%	70 - 130
		4-ethyltoluene	2014/07/29		103	%	70 - 130
		1,3,5-Trimethylbenzene	2014/07/29		91	%	70 - 130
		1,2,4-Trimethylbenzene	2014/07/29		93	%	70 - 130
		Chlorobenzene	2014/07/29		91	%	70 - 130
		Benzyl chloride	2014/07/29		109	%	70 - 130
		1,3-Dichlorobenzene	2014/07/29		98	%	70 - 130
		1,4-Dichlorobenzene	2014/07/29		101	%	70 - 130
		1,2-Dichlorobenzene	2014/07/29		96	%	70 - 130
		1,2,4-Trichlorobenzene	2014/07/29		114	%	70 - 130
		Hexachlorobutadiene	2014/07/29		94	%	70 - 130
		Hexane	2014/07/29		107	%	70 - 130

Golder Associates Ltd
 Attention: Jonathan Lewis
 Client Project #: 13-1324-0204
 P.O. #:
 Site Location: QUARTER 3

Quality Assurance Report (Continued)

Maxxam Job Number: GB4D3328

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3694330 LSY	Spiked Blank	Heptane	2014/07/29		107	%	70 - 130
		Cyclohexane	2014/07/29		105	%	70 - 130
		Tetrahydrofuran	2014/07/29		106	%	70 - 130
		1,4-Dioxane	2014/07/29		100	%	70 - 130
		Xylene (Total)	2014/07/29		91	%	70 - 130
		Vinyl Bromide	2014/07/29		98	%	70 - 130
		Propene	2014/07/29		99	%	70 - 130
		2,2,4-Trimethylpentane	2014/07/29		110	%	70 - 130
		Carbon Disulfide	2014/07/29		101	%	70 - 130
	Method Blank	Vinyl Acetate	2014/07/29		93	%	70 - 130
		Bromochloromethane	2014/07/29		94	%	60 - 140
		D5-Chlorobenzene	2014/07/29		87	%	60 - 140
		Difluorobenzene	2014/07/29		95	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2014/07/29	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2014/07/29	<0.17		ppbv	
		Chloromethane	2014/07/29	<0.30		ppbv	
		Vinyl Chloride	2014/07/29	<0.18		ppbv	
		Chloroethane	2014/07/29	<0.30		ppbv	
		1,3-Butadiene	2014/07/29	<0.50		ppbv	
		Trichlorofluoromethane (FREON 11)	2014/07/29	<0.20		ppbv	
		Ethanol (ethyl alcohol)	2014/07/29	<2.3		ppbv	
		Trichlorotrifluoroethane	2014/07/29	<0.15		ppbv	
		2-propanol	2014/07/29	<3.0		ppbv	
		2-Propanone	2014/07/29	<0.80		ppbv	
		Methyl Ethyl Ketone (2-Butanone)	2014/07/29	<3.0		ppbv	
		Methyl Isobutyl Ketone	2014/07/29	<3.2		ppbv	
		Methyl Butyl Ketone (2-Hexanone)	2014/07/29	<2.0		ppbv	
		Methyl t-butyl ether (MTBE)	2014/07/29	<0.20		ppbv	
		Ethyl Acetate	2014/07/29	<2.2		ppbv	
		1,1-Dichloroethylene	2014/07/29	<0.25		ppbv	
		cis-1,2-Dichloroethylene	2014/07/29	<0.19		ppbv	
		trans-1,2-Dichloroethylene	2014/07/29	<0.20		ppbv	
		Methylene Chloride(Dichloromethane)	2014/07/29	<0.80		ppbv	
		Chloroform	2014/07/29	<0.15		ppbv	
		Carbon Tetrachloride	2014/07/29	<0.30		ppbv	
		1,1-Dichloroethane	2014/07/29	<0.20		ppbv	
		1,2-Dichloroethane	2014/07/29	<0.20		ppbv	
		Ethylene Dibromide	2014/07/29	<0.17		ppbv	
		1,1,1-Trichloroethane	2014/07/29	<0.30		ppbv	
		1,1,2-Trichloroethane	2014/07/29	<0.15		ppbv	
		1,1,2,2-Tetrachloroethane	2014/07/29	<0.20		ppbv	
		cis-1,3-Dichloropropene	2014/07/29	<0.18		ppbv	
		trans-1,3-Dichloropropene	2014/07/29	<0.17		ppbv	
		1,2-Dichloropropane	2014/07/29	<0.40		ppbv	
		Bromomethane	2014/07/29	<0.18		ppbv	
		Bromoform	2014/07/29	<0.20		ppbv	
		Bromodichloromethane	2014/07/29	<0.20		ppbv	
		Dibromochloromethane	2014/07/29	<0.20		ppbv	
		Trichloroethylene	2014/07/29	<0.30		ppbv	
		Tetrachloroethylene	2014/07/29	<0.20		ppbv	
		Benzene	2014/07/29	<0.18		ppbv	
		Toluene	2014/07/29	<0.20		ppbv	
		Ethylbenzene	2014/07/29	<0.20		ppbv	
		p+m-Xylene	2014/07/29	<0.37		ppbv	
		o-Xylene	2014/07/29	<0.20		ppbv	

Golder Associates Ltd
 Attention: Jonathan Lewis
 Client Project #: 13-1324-0204
 P.O. #:
 Site Location: QUARTER 3

Quality Assurance Report (Continued)

Maxxam Job Number: GB4D3328

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3694330 LSY	Method Blank	Styrene	2014/07/29	<0.20		ppbv	
		4-ethyltoluene	2014/07/29	<2.2		ppbv	
		1,3,5-Trimethylbenzene	2014/07/29	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2014/07/29	<0.50		ppbv	
		Chlorobenzene	2014/07/29	<0.20		ppbv	
		Benzyl chloride	2014/07/29	<1.0		ppbv	
		1,3-Dichlorobenzene	2014/07/29	<0.40		ppbv	
		1,4-Dichlorobenzene	2014/07/29	<0.40		ppbv	
		1,2-Dichlorobenzene	2014/07/29	<0.40		ppbv	
		1,2,4-Trichlorobenzene	2014/07/29	<2.0		ppbv	
		Hexachlorobutadiene	2014/07/29	<3.0		ppbv	
		Hexane	2014/07/29	<0.30		ppbv	
		Heptane	2014/07/29	<0.30		ppbv	
		Cyclohexane	2014/07/29	<0.20		ppbv	
		Tetrahydrofuran	2014/07/29	<0.40		ppbv	
		1,4-Dioxane	2014/07/29	<2.0		ppbv	
		Xylene (Total)	2014/07/29	<0.60		ppbv	
		Vinyl Bromide	2014/07/29	<0.20		ppbv	
		Propene	2014/07/29	<0.30		ppbv	
		2,2,4-Trimethylpentane	2014/07/29	<0.20		ppbv	
		Carbon Disulfide	2014/07/29	<0.50		ppbv	
		Vinyl Acetate	2014/07/29	<0.20		ppbv	

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.

Your Project #: 13-1324-0204
Site#: MEDIA PREP
Site Location: QUARTER 4

Attention:Julie Burghardt

Golder Associates Ltd
102, 2535-3rd Ave SE
Calgary, AB
CANADA T2A 7W5

Report Date: 2014/10/31
Report #: R3207225
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B4K2417

Received: 2014/10/29, 10:08

Sample Matrix: Air Sampling Media
Samples Received: 18

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Volatile Organics in Air (TO-15) (1)	1	N/A	2014/10/15	BRL SOP-00304	EPA TO-15 m
Volatile Organics in Air (TO-15) (1)	2	N/A	2014/10/16	BRL SOP-00304	EPA TO-15 m
Volatile Organics in Air (TO-15) (1)	4	N/A	2014/10/21	BRL SOP-00304	EPA TO-15 m
Volatile Organics in Air (TO-15) (1)	3	N/A	2014/10/22	BRL SOP-00304	EPA TO-15 m
Volatile Organics in Air (TO-15) (1)	4	N/A	2014/10/23	BRL SOP-00304	EPA TO-15 m
Volatile Organics in Air (TO-15) (1)	1	N/A	2014/10/24	BRL SOP-00304	EPA TO-15 m
Volatile Organics in Air (TO-15) (1)	3	N/A	2014/10/27	BRL SOP-00304	EPA TO-15 m

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

(1) Air sampling canisters have been cleaned in accordance with U.S. EPA Method TO14A. At the end of the cleaning, evacuation, and pressurization cycles, one canister was selected and was pressurized with Zero Air. This canister was then analyzed via TO14A on a GC/MS. The canister must have been found to contain <0.2 ppbv concentration of all target analytes in order for the batch to have been considered clean. Each canister also underwent a leak check prior to shipment.

Please Note: SUMMA® canister samples will be retained by Maxxam for a period of 5 calendar days or as contractually agreed from the date of this report, after which time they will be cleaned for reuse. If you require a longer sample storage period, please contact your service representative.

Encryption Key



Theresa Stephenson
31 Oct 2014 15:35:34 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Theresa Stephenson, Project Manager
Email: TStephenson@maxxam.ca
Phone# (905)817-5763

Maxxam 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.

Maxxam Job #: B4K2417
Report Date: 2014/10/31

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 4

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		YF0235		YF0236	YF0237		
Sampling Date		2014/10/29 10:12		2014/10/29 10:12	2014/10/29 10:12		
	Units	1.4L SUMMA #1 PROOFED 1385	QC Batch	1.4L SUMMA #2 PROOFED 2529	1.4L SUMMA #3 PROOFED 1892	RDL	QC Batch
Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	3805206	<0.20	<0.20	0.20	3805302
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	3805206	<0.17	<0.17	0.17	3805302
Chloromethane	ppbv	<0.30	3805206	<0.30	<0.30	0.30	3805302
Vinyl Chloride	ppbv	<0.18	3805206	<0.18	<0.18	0.18	3805302
Chloroethane	ppbv	<0.30	3805206	<0.30	<0.30	0.30	3805302
1,3-Butadiene	ppbv	<0.50	3805206	<0.50	<0.50	0.50	3805302
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	3805206	<0.20	<0.20	0.20	3805302
Ethanol (ethyl alcohol)	ppbv	<2.3	3805206	<2.3	<2.3	2.3	3805302
Trichlorotrifluoroethane	ppbv	<0.15	3805206	<0.15	<0.15	0.15	3805302
2-propanol	ppbv	<3.0	3805206	<3.0	<3.0	3.0	3805302
2-Propanone	ppbv	<0.80	3805206	<0.80	<0.80	0.80	3805302
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3805206	<3.0	<3.0	3.0	3805302
Methyl Isobutyl Ketone	ppbv	<3.2	3805206	<3.2	<3.2	3.2	3805302
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	3805206	<2.0	<2.0	2.0	3805302
Methyl t-butyl ether (MTBE)	ppbv	<0.20	3805206	<0.20	<0.20	0.20	3805302
Ethyl Acetate	ppbv	<2.2	3805206	<2.2	<2.2	2.2	3805302
1,1-Dichloroethylene	ppbv	<0.25	3805206	<0.25	<0.25	0.25	3805302
cis-1,2-Dichloroethylene	ppbv	<0.19	3805206	<0.19	<0.19	0.19	3805302
trans-1,2-Dichloroethylene	ppbv	<0.20	3805206	<0.20	<0.20	0.20	3805302
Methylene Chloride(Dichloromethane)	ppbv	<0.80	3805206	<0.80	<0.80	0.80	3805302
Chloroform	ppbv	<0.15	3805206	<0.15	<0.15	0.15	3805302
Carbon Tetrachloride	ppbv	<0.30	3805206	<0.30	<0.30	0.30	3805302
1,1-Dichloroethane	ppbv	<0.20	3805206	<0.20	<0.20	0.20	3805302
1,2-Dichloroethane	ppbv	<0.20	3805206	<0.20	<0.20	0.20	3805302
Ethylene Dibromide	ppbv	<0.17	3805206	<0.17	<0.17	0.17	3805302
1,1,1-Trichloroethane	ppbv	<0.30	3805206	<0.30	<0.30	0.30	3805302
1,1,2-Trichloroethane	ppbv	<0.15	3805206	<0.15	<0.15	0.15	3805302
1,1,2,2-Tetrachloroethane	ppbv	<0.20	3805206	<0.20	<0.20	0.20	3805302
cis-1,3-Dichloropropene	ppbv	<0.18	3805206	<0.18	<0.18	0.18	3805302
trans-1,3-Dichloropropene	ppbv	<0.17	3805206	<0.17	<0.17	0.17	3805302
1,2-Dichloropropane	ppbv	<0.40	3805206	<0.40	<0.40	0.40	3805302
Bromomethane	ppbv	<0.18	3805206	<0.18	<0.18	0.18	3805302
Bromoform	ppbv	<0.20	3805206	<0.20	<0.20	0.20	3805302
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B4K2417
Report Date: 2014/10/31

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 4

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		YF0235		YF0236	YF0237		
Sampling Date		2014/10/29 10:12		2014/10/29 10:12	2014/10/29 10:12		
	Units	1.4L SUMMA #1 PROOFED 1385	QC Batch	1.4L SUMMA #2 PROOFED 2529	1.4L SUMMA #3 PROOFED 1892	RDL	QC Batch
Bromodichloromethane	ppbv	<0.20	3805206	<0.20	<0.20	0.20	3805302
Dibromochloromethane	ppbv	<0.20	3805206	<0.20	<0.20	0.20	3805302
Trichloroethylene	ppbv	<0.30	3805206	<0.30	<0.30	0.30	3805302
Tetrachloroethylene	ppbv	<0.20	3805206	<0.20	<0.20	0.20	3805302
Benzene	ppbv	<0.18	3805206	<0.18	<0.18	0.18	3805302
Toluene	ppbv	<0.20	3805206	<0.20	<0.20	0.20	3805302
Ethylbenzene	ppbv	<0.20	3805206	<0.20	<0.20	0.20	3805302
p+m-Xylene	ppbv	<0.37	3805206	<0.37	<0.37	0.37	3805302
o-Xylene	ppbv	<0.20	3805206	<0.20	<0.20	0.20	3805302
Styrene	ppbv	<0.20	3805206	<0.20	<0.20	0.20	3805302
4-ethyltoluene	ppbv	<2.2	3805206	<2.2	<2.2	2.2	3805302
1,3,5-Trimethylbenzene	ppbv	<0.50	3805206	<0.50	<0.50	0.50	3805302
1,2,4-Trimethylbenzene	ppbv	<0.50	3805206	<0.50	<0.50	0.50	3805302
Chlorobenzene	ppbv	<0.20	3805206	<0.20	<0.20	0.20	3805302
Benzyl chloride	ppbv	<1.0	3805206	<1.0	<1.0	1.0	3805302
1,3-Dichlorobenzene	ppbv	<0.40	3805206	<0.40	<0.40	0.40	3805302
1,4-Dichlorobenzene	ppbv	<0.40	3805206	<0.40	<0.40	0.40	3805302
1,2-Dichlorobenzene	ppbv	<0.40	3805206	<0.40	<0.40	0.40	3805302
1,2,4-Trichlorobenzene	ppbv	<2.0	3805206	<2.0	<2.0	2.0	3805302
Hexachlorobutadiene	ppbv	<3.0	3805206	<3.0	<3.0	3.0	3805302
Hexane	ppbv	<0.30	3805206	<0.30	<0.30	0.30	3805302
Heptane	ppbv	<0.30	3805206	<0.30	<0.30	0.30	3805302
Cyclohexane	ppbv	<0.20	3805206	<0.20	<0.20	0.20	3805302
Tetrahydrofuran	ppbv	<0.40	3805206	<0.40	<0.40	0.40	3805302
1,4-Dioxane	ppbv	<2.0	3805206	<2.0	<2.0	2.0	3805302
Xylene (Total)	ppbv	<0.60	3805206	<0.60	<0.60	0.60	3805302
Vinyl Bromide	ppbv	<0.20	3805206	<0.20	<0.20	0.20	3805302
Propene	ppbv	<0.30	3805206	<0.30	<0.30	0.30	3805302
2,2,4-Trimethylpentane	ppbv	<0.20	3805206	<0.20	<0.20	0.20	3805302
Carbon Disulfide	ppbv	<0.50	3805206	<0.50	<0.50	0.50	3805302
Vinyl Acetate	ppbv	<0.20	3805206	<0.20	<0.20	0.20	3805302
Surrogate Recovery (%)							
Bromochloromethane	%	91	3805206	86	82		3805302
D5-Chlorobenzene	%	88	3805206	81	76		3805302
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B4K2417
Report Date: 2014/10/31

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 4

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		YF0235		YF0236	YF0237		
Sampling Date		2014/10/29 10:12		2014/10/29 10:12	2014/10/29 10:12		
	Units	1.4L SUMMA #1 PROOFED 1385	QC Batch	1.4L SUMMA #2 PROOFED 2529	1.4L SUMMA #3 PROOFED 1892	RDL	QC Batch
Difluorobenzene	%	95	3805206	86	82		3805302
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							

Maxxam Job #: B4K2417
Report Date: 2014/10/31

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 4

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		YF0238		YF0239		YF0240		
Sampling Date		2014/10/29 10:12		2014/10/29 10:12		2014/10/29 10:12		
	Units	1.4L SUMMA #4 PROOFED 2525	QC Batch	1.4L SUMMA #5 PROOFED 2389	QC Batch	1.4L SUMMA #6 PROOFED 2504	RDL	QC Batch
Volatile Organics								
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	3805206	<0.20	3799928	<0.20	0.20	3794693
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	3805206	<0.17	3799928	<0.17	0.17	3794693
Chloromethane	ppbv	<0.30	3805206	<0.30	3799928	<0.30	0.30	3794693
Vinyl Chloride	ppbv	<0.18	3805206	<0.18	3799928	<0.18	0.18	3794693
Chloroethane	ppbv	<0.30	3805206	<0.30	3799928	<0.30	0.30	3794693
1,3-Butadiene	ppbv	<0.50	3805206	<0.50	3799928	<0.50	0.50	3794693
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	3805206	<0.20	3799928	<0.20	0.20	3794693
Ethanol (ethyl alcohol)	ppbv	<2.3	3805206	<2.3	3799928	<2.3	2.3	3794693
Trichlorotrifluoroethane	ppbv	<0.15	3805206	<0.15	3799928	<0.15	0.15	3794693
2-propanol	ppbv	<3.0	3805206	<3.0	3799928	<3.0	3.0	3794693
2-Propanone	ppbv	<0.80	3805206	<0.80	3799928	<0.80	0.80	3794693
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3805206	<3.0	3799928	<3.0	3.0	3794693
Methyl Isobutyl Ketone	ppbv	<3.2	3805206	<3.2	3799928	<3.2	3.2	3794693
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	3805206	<2.0	3799928	<2.0	2.0	3794693
Methyl t-butyl ether (MTBE)	ppbv	<0.20	3805206	<0.20	3799928	<0.20	0.20	3794693
Ethyl Acetate	ppbv	<2.2	3805206	<2.2	3799928	<2.2	2.2	3794693
1,1-Dichloroethylene	ppbv	<0.25	3805206	<0.25	3799928	<0.25	0.25	3794693
cis-1,2-Dichloroethylene	ppbv	<0.19	3805206	<0.19	3799928	<0.19	0.19	3794693
trans-1,2-Dichloroethylene	ppbv	<0.20	3805206	<0.20	3799928	<0.20	0.20	3794693
Methylene Chloride(Dichloromethane)	ppbv	<0.80	3805206	<0.80	3799928	<0.80	0.80	3794693
Chloroform	ppbv	<0.15	3805206	<0.15	3799928	<0.15	0.15	3794693
Carbon Tetrachloride	ppbv	<0.30	3805206	<0.30	3799928	<0.30	0.30	3794693
1,1-Dichloroethane	ppbv	<0.20	3805206	<0.20	3799928	<0.20	0.20	3794693
1,2-Dichloroethane	ppbv	<0.20	3805206	<0.20	3799928	<0.20	0.20	3794693
Ethylene Dibromide	ppbv	<0.17	3805206	<0.17	3799928	<0.17	0.17	3794693
1,1,1-Trichloroethane	ppbv	<0.30	3805206	<0.30	3799928	<0.30	0.30	3794693
1,1,2-Trichloroethane	ppbv	<0.15	3805206	<0.15	3799928	<0.15	0.15	3794693
1,1,2,2-Tetrachloroethane	ppbv	<0.20	3805206	<0.20	3799928	<0.20	0.20	3794693
cis-1,3-Dichloropropene	ppbv	<0.18	3805206	<0.18	3799928	<0.18	0.18	3794693
trans-1,3-Dichloropropene	ppbv	<0.17	3805206	<0.17	3799928	<0.17	0.17	3794693
1,2-Dichloropropane	ppbv	<0.40	3805206	<0.40	3799928	<0.40	0.40	3794693
Bromomethane	ppbv	<0.18	3805206	<0.18	3799928	<0.18	0.18	3794693
Bromoform	ppbv	<0.20	3805206	<0.20	3799928	<0.20	0.20	3794693
RDL = Reportable Detection Limit QC Batch = Quality Control Batch								

Maxxam Job #: B4K2417
Report Date: 2014/10/31

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 4

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		YF0238		YF0239		YF0240		
Sampling Date		2014/10/29 10:12		2014/10/29 10:12		2014/10/29 10:12		
	Units	1.4L SUMMA #4 PROOFED 2525	QC Batch	1.4L SUMMA #5 PROOFED 2389	QC Batch	1.4L SUMMA #6 PROOFED 2504	RDL	QC Batch
Bromodichloromethane	ppbv	<0.20	3805206	<0.20	3799928	<0.20	0.20	3794693
Dibromochloromethane	ppbv	<0.20	3805206	<0.20	3799928	<0.20	0.20	3794693
Trichloroethylene	ppbv	<0.30	3805206	<0.30	3799928	<0.30	0.30	3794693
Tetrachloroethylene	ppbv	<0.20	3805206	<0.20	3799928	<0.20	0.20	3794693
Benzene	ppbv	<0.18	3805206	<0.18	3799928	<0.18	0.18	3794693
Toluene	ppbv	<0.20	3805206	<0.20	3799928	<0.20	0.20	3794693
Ethylbenzene	ppbv	<0.20	3805206	<0.20	3799928	<0.20	0.20	3794693
p+m-Xylene	ppbv	<0.37	3805206	<0.37	3799928	<0.37	0.37	3794693
o-Xylene	ppbv	<0.20	3805206	<0.20	3799928	<0.20	0.20	3794693
Styrene	ppbv	<0.20	3805206	<0.20	3799928	<0.20	0.20	3794693
4-ethyltoluene	ppbv	<2.2	3805206	<2.2	3799928	<2.2	2.2	3794693
1,3,5-Trimethylbenzene	ppbv	<0.50	3805206	<0.50	3799928	<0.50	0.50	3794693
1,2,4-Trimethylbenzene	ppbv	<0.50	3805206	<0.50	3799928	<0.50	0.50	3794693
Chlorobenzene	ppbv	<0.20	3805206	<0.20	3799928	<0.20	0.20	3794693
Benzyl chloride	ppbv	<1.0	3805206	<1.0	3799928	<1.0	1.0	3794693
1,3-Dichlorobenzene	ppbv	<0.40	3805206	<0.40	3799928	<0.40	0.40	3794693
1,4-Dichlorobenzene	ppbv	<0.40	3805206	<0.40	3799928	<0.40	0.40	3794693
1,2-Dichlorobenzene	ppbv	<0.40	3805206	<0.40	3799928	<0.40	0.40	3794693
1,2,4-Trichlorobenzene	ppbv	<2.0	3805206	<2.0	3799928	<2.0	2.0	3794693
Hexachlorobutadiene	ppbv	<3.0	3805206	<3.0	3799928	<3.0	3.0	3794693
Hexane	ppbv	<0.30	3805206	<0.30	3799928	<0.30	0.30	3794693
Heptane	ppbv	<0.30	3805206	<0.30	3799928	<0.30	0.30	3794693
Cyclohexane	ppbv	<0.20	3805206	<0.20	3799928	<0.20	0.20	3794693
Tetrahydrofuran	ppbv	<0.40	3805206	<0.40	3799928	<0.40	0.40	3794693
1,4-Dioxane	ppbv	<2.0	3805206	<2.0	3799928	<2.0	2.0	3794693
Xylene (Total)	ppbv	<0.60	3805206	<0.60	3799928	<0.60	0.60	3794693
Vinyl Bromide	ppbv	<0.20	3805206	<0.20	3799928	<0.20	0.20	3794693
Propene	ppbv	<0.30	3805206	<0.30	3799928	<0.30	0.30	3794693
2,2,4-Trimethylpentane	ppbv	<0.20	3805206	<0.20	3799928	<0.20	0.20	3794693
Carbon Disulfide	ppbv	<0.50	3805206	<0.50	3799928	<0.50	0.50	3794693
Vinyl Acetate	ppbv	<0.20	3805206	<0.20	3799928	<0.20	0.20	3794693
Surrogate Recovery (%)								
Bromochloromethane	%	84	3805206	101	3799928	79		3794693
D5-Chlorobenzene	%	80	3805206	91	3799928	78		3794693
RDL = Reportable Detection Limit QC Batch = Quality Control Batch								

Maxxam Job #: B4K2417
Report Date: 2014/10/31

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 4

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		YF0238		YF0239		YF0240		
Sampling Date		2014/10/29 10:12		2014/10/29 10:12		2014/10/29 10:12		
	Units	1.4L SUMMA #4 PROOFED 2525	QC Batch	1.4L SUMMA #5 PROOFED 2389	QC Batch	1.4L SUMMA #6 PROOFED 2504	RDL	QC Batch
Difluorobenzene	%	77	3805206	103	3799928	83		3794693
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								

Maxxam Job #: B4K2417
Report Date: 2014/10/31

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 4

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		YF0283		YF0284		YF0285		
Sampling Date		2014/10/29 10:12		2014/10/29 10:12		2014/10/29 10:12		
	Units	6L SUMMA #1 PROOFED 14251	QC Batch	6L SUMMA #2 PROOFED 14238	QC Batch	6L SUMMA #3 PROOFED 17177	RDL	QC Batch
Volatile Organics								
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	3805315	<0.20	3805289	<0.20	0.20	3805309
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	3805315	<0.17	3805289	<0.17	0.17	3805309
Chloromethane	ppbv	<0.30	3805315	<0.30	3805289	<0.30	0.30	3805309
Vinyl Chloride	ppbv	<0.18	3805315	<0.18	3805289	<0.18	0.18	3805309
Chloroethane	ppbv	<0.30	3805315	<0.30	3805289	<0.30	0.30	3805309
1,3-Butadiene	ppbv	<0.50	3805315	<0.50	3805289	<0.50	0.50	3805309
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	3805315	<0.20	3805289	<0.20	0.20	3805309
Ethanol (ethyl alcohol)	ppbv	<2.3	3805315	<2.3	3805289	<2.3	2.3	3805309
Trichlorotrifluoroethane	ppbv	<0.15	3805315	<0.15	3805289	<0.15	0.15	3805309
2-propanol	ppbv	<3.0	3805315	<3.0	3805289	<3.0	3.0	3805309
2-Propanone	ppbv	<0.80	3805315	<0.80	3805289	<0.80	0.80	3805309
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3805315	<3.0	3805289	<3.0	3.0	3805309
Methyl Isobutyl Ketone	ppbv	<3.2	3805315	<3.2	3805289	<3.2	3.2	3805309
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	3805315	<2.0	3805289	<2.0	2.0	3805309
Methyl t-butyl ether (MTBE)	ppbv	<0.20	3805315	<0.20	3805289	<0.20	0.20	3805309
Ethyl Acetate	ppbv	<2.2	3805315	<2.2	3805289	<2.2	2.2	3805309
1,1-Dichloroethylene	ppbv	<0.25	3805315	<0.25	3805289	<0.25	0.25	3805309
cis-1,2-Dichloroethylene	ppbv	<0.19	3805315	<0.19	3805289	<0.19	0.19	3805309
trans-1,2-Dichloroethylene	ppbv	<0.20	3805315	<0.20	3805289	<0.20	0.20	3805309
Methylene Chloride(Dichloromethane)	ppbv	<0.80	3805315	<0.80	3805289	<0.80	0.80	3805309
Chloroform	ppbv	<0.15	3805315	<0.15	3805289	<0.15	0.15	3805309
Carbon Tetrachloride	ppbv	<0.30	3805315	<0.30	3805289	<0.30	0.30	3805309
1,1-Dichloroethane	ppbv	<0.20	3805315	<0.20	3805289	<0.20	0.20	3805309
1,2-Dichloroethane	ppbv	<0.20	3805315	<0.20	3805289	<0.20	0.20	3805309
Ethylene Dibromide	ppbv	<0.17	3805315	<0.17	3805289	<0.17	0.17	3805309
1,1,1-Trichloroethane	ppbv	<0.30	3805315	<0.30	3805289	<0.30	0.30	3805309
1,1,2-Trichloroethane	ppbv	<0.15	3805315	<0.15	3805289	<0.15	0.15	3805309
1,1,2,2-Tetrachloroethane	ppbv	<0.20	3805315	<0.20	3805289	<0.20	0.20	3805309
cis-1,3-Dichloropropene	ppbv	<0.18	3805315	<0.18	3805289	<0.18	0.18	3805309
trans-1,3-Dichloropropene	ppbv	<0.17	3805315	<0.17	3805289	<0.17	0.17	3805309
1,2-Dichloropropane	ppbv	<0.40	3805315	<0.40	3805289	<0.40	0.40	3805309
Bromomethane	ppbv	<0.18	3805315	<0.18	3805289	<0.18	0.18	3805309
Bromoform	ppbv	<0.20	3805315	<0.20	3805289	<0.20	0.20	3805309
RDL = Reportable Detection Limit QC Batch = Quality Control Batch								

Maxxam Job #: B4K2417
Report Date: 2014/10/31

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 4

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		YF0283		YF0284		YF0285		
Sampling Date		2014/10/29 10:12		2014/10/29 10:12		2014/10/29 10:12		
	Units	6L SUMMA #1 PROOFED 14251	QC Batch	6L SUMMA #2 PROOFED 14238	QC Batch	6L SUMMA #3 PROOFED 17177	RDL	QC Batch
Bromodichloromethane	ppbv	<0.20	3805315	<0.20	3805289	<0.20	0.20	3805309
Dibromochloromethane	ppbv	<0.20	3805315	<0.20	3805289	<0.20	0.20	3805309
Trichloroethylene	ppbv	<0.30	3805315	<0.30	3805289	<0.30	0.30	3805309
Tetrachloroethylene	ppbv	<0.20	3805315	<0.20	3805289	<0.20	0.20	3805309
Benzene	ppbv	<0.18	3805315	<0.18	3805289	<0.18	0.18	3805309
Toluene	ppbv	<0.20	3805315	<0.20	3805289	<0.20	0.20	3805309
Ethylbenzene	ppbv	<0.20	3805315	<0.20	3805289	<0.20	0.20	3805309
p+m-Xylene	ppbv	<0.37	3805315	<0.37	3805289	<0.37	0.37	3805309
o-Xylene	ppbv	<0.20	3805315	<0.20	3805289	<0.20	0.20	3805309
Styrene	ppbv	<0.20	3805315	<0.20	3805289	<0.20	0.20	3805309
4-ethyltoluene	ppbv	<2.2	3805315	<2.2	3805289	<2.2	2.2	3805309
1,3,5-Trimethylbenzene	ppbv	<0.50	3805315	<0.50	3805289	<0.50	0.50	3805309
1,2,4-Trimethylbenzene	ppbv	<0.50	3805315	<0.50	3805289	<0.50	0.50	3805309
Chlorobenzene	ppbv	<0.20	3805315	<0.20	3805289	<0.20	0.20	3805309
Benzyl chloride	ppbv	<1.0	3805315	<1.0	3805289	<1.0	1.0	3805309
1,3-Dichlorobenzene	ppbv	<0.40	3805315	<0.40	3805289	<0.40	0.40	3805309
1,4-Dichlorobenzene	ppbv	<0.40	3805315	<0.40	3805289	<0.40	0.40	3805309
1,2-Dichlorobenzene	ppbv	<0.40	3805315	<0.40	3805289	<0.40	0.40	3805309
1,2,4-Trichlorobenzene	ppbv	<2.0	3805315	<2.0	3805289	<2.0	2.0	3805309
Hexachlorobutadiene	ppbv	<3.0	3805315	<3.0	3805289	<3.0	3.0	3805309
Hexane	ppbv	<0.30	3805315	<0.30	3805289	<0.30	0.30	3805309
Heptane	ppbv	<0.30	3805315	<0.30	3805289	<0.30	0.30	3805309
Cyclohexane	ppbv	<0.20	3805315	<0.20	3805289	<0.20	0.20	3805309
Tetrahydrofuran	ppbv	<0.40	3805315	<0.40	3805289	<0.40	0.40	3805309
1,4-Dioxane	ppbv	<2.0	3805315	<2.0	3805289	<2.0	2.0	3805309
Xylene (Total)	ppbv	<0.60	3805315	<0.60	3805289	<0.60	0.60	3805309
Vinyl Bromide	ppbv	<0.20	3805315	<0.20	3805289	<0.20	0.20	3805309
Propene	ppbv	<0.30	3805315	<0.30	3805289	<0.30	0.30	3805309
2,2,4-Trimethylpentane	ppbv	<0.20	3805315	<0.20	3805289	<0.20	0.20	3805309
Carbon Disulfide	ppbv	<0.50	3805315	<0.50	3805289	<0.50	0.50	3805309
Vinyl Acetate	ppbv	<0.20	3805315	<0.20	3805289	<0.20	0.20	3805309
Surrogate Recovery (%)								
Bromochloromethane	%	94	3805315	90	3805289	82		3805309
D5-Chlorobenzene	%	88	3805315	91	3805289	75		3805309
RDL = Reportable Detection Limit QC Batch = Quality Control Batch								

Maxxam Job #: B4K2417
Report Date: 2014/10/31

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 4

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		YF0283		YF0284		YF0285		
Sampling Date		2014/10/29 10:12		2014/10/29 10:12		2014/10/29 10:12		
	Units	6L SUMMA #1 PROOFED 14251	QC Batch	6L SUMMA #2 PROOFED 14238	QC Batch	6L SUMMA #3 PROOFED 17177	RDL	QC Batch
Difluorobenzene	%	96	3805315	94	3805289	82		3805309
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								

Maxxam Job #: B4K2417
Report Date: 2014/10/31

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 4

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		YF0286		YF0287		YF0288		
Sampling Date		2014/10/29 10:12		2014/10/29 10:12		2014/10/29 10:12		
	Units	6L SUMMA #4 PROOFED 14273	QC Batch	6L SUMMA #5 PROOFED 309	QC Batch	6L SUMMA #6 PROOFED 17189	RDL	QC Batch
Volatile Organics								
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	3801582	<0.20	3796130	<0.20	0.20	3805296
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	3801582	<0.17	3796130	<0.17	0.17	3805296
Chloromethane	ppbv	<0.30	3801582	<0.30	3796130	<0.30	0.30	3805296
Vinyl Chloride	ppbv	<0.18	3801582	<0.18	3796130	<0.18	0.18	3805296
Chloroethane	ppbv	<0.30	3801582	<0.30	3796130	<0.30	0.30	3805296
1,3-Butadiene	ppbv	<0.50	3801582	<0.50	3796130	<0.50	0.50	3805296
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	3801582	<0.20	3796130	<0.20	0.20	3805296
Ethanol (ethyl alcohol)	ppbv	<2.3	3801582	<2.3	3796130	<2.3	2.3	3805296
Trichlorotrifluoroethane	ppbv	<0.15	3801582	<0.15	3796130	<0.15	0.15	3805296
2-propanol	ppbv	<3.0	3801582	<3.0	3796130	<3.0	3.0	3805296
2-Propanone	ppbv	<0.80	3801582	<0.80	3796130	<0.80	0.80	3805296
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3801582	<3.0	3796130	<3.0	3.0	3805296
Methyl Isobutyl Ketone	ppbv	<3.2	3801582	<3.2	3796130	<3.2	3.2	3805296
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	3801582	<2.0	3796130	<2.0	2.0	3805296
Methyl t-butyl ether (MTBE)	ppbv	<0.20	3801582	<0.20	3796130	<0.20	0.20	3805296
Ethyl Acetate	ppbv	<2.2	3801582	<2.2	3796130	<2.2	2.2	3805296
1,1-Dichloroethylene	ppbv	<0.25	3801582	<0.25	3796130	<0.25	0.25	3805296
cis-1,2-Dichloroethylene	ppbv	<0.19	3801582	<0.19	3796130	<0.19	0.19	3805296
trans-1,2-Dichloroethylene	ppbv	<0.20	3801582	<0.20	3796130	<0.20	0.20	3805296
Methylene Chloride(Dichloromethane)	ppbv	<0.80	3801582	<0.80	3796130	<0.80	0.80	3805296
Chloroform	ppbv	<0.15	3801582	<0.15	3796130	<0.15	0.15	3805296
Carbon Tetrachloride	ppbv	<0.30	3801582	<0.30	3796130	<0.30	0.30	3805296
1,1-Dichloroethane	ppbv	<0.20	3801582	<0.20	3796130	<0.20	0.20	3805296
1,2-Dichloroethane	ppbv	<0.20	3801582	<0.20	3796130	<0.20	0.20	3805296
Ethylene Dibromide	ppbv	<0.17	3801582	<0.17	3796130	<0.17	0.17	3805296
1,1,1-Trichloroethane	ppbv	<0.30	3801582	<0.30	3796130	<0.30	0.30	3805296
1,1,2-Trichloroethane	ppbv	<0.15	3801582	<0.15	3796130	<0.15	0.15	3805296
1,1,2,2-Tetrachloroethane	ppbv	<0.20	3801582	<0.20	3796130	<0.20	0.20	3805296
cis-1,3-Dichloropropene	ppbv	<0.18	3801582	<0.18	3796130	<0.18	0.18	3805296
trans-1,3-Dichloropropene	ppbv	<0.17	3801582	<0.17	3796130	<0.17	0.17	3805296
1,2-Dichloropropane	ppbv	<0.40	3801582	<0.40	3796130	<0.40	0.40	3805296
Bromomethane	ppbv	<0.18	3801582	<0.18	3796130	<0.18	0.18	3805296
Bromoform	ppbv	<0.20	3801582	<0.20	3796130	<0.20	0.20	3805296
RDL = Reportable Detection Limit QC Batch = Quality Control Batch								

Maxxam Job #: B4K2417
Report Date: 2014/10/31

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 4

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		YF0286		YF0287		YF0288		
Sampling Date		2014/10/29 10:12		2014/10/29 10:12		2014/10/29 10:12		
	Units	6L SUMMA #4 PROOFED 14273	QC Batch	6L SUMMA #5 PROOFED 309	QC Batch	6L SUMMA #6 PROOFED 17189	RDL	QC Batch
Bromodichloromethane	ppbv	<0.20	3801582	<0.20	3796130	<0.20	0.20	3805296
Dibromochloromethane	ppbv	<0.20	3801582	<0.20	3796130	<0.20	0.20	3805296
Trichloroethylene	ppbv	<0.30	3801582	<0.30	3796130	<0.30	0.30	3805296
Tetrachloroethylene	ppbv	<0.20	3801582	<0.20	3796130	<0.20	0.20	3805296
Benzene	ppbv	<0.18	3801582	<0.18	3796130	<0.18	0.18	3805296
Toluene	ppbv	<0.20	3801582	<0.20	3796130	<0.20	0.20	3805296
Ethylbenzene	ppbv	<0.20	3801582	<0.20	3796130	<0.20	0.20	3805296
p+m-Xylene	ppbv	<0.37	3801582	<0.37	3796130	<0.37	0.37	3805296
o-Xylene	ppbv	<0.20	3801582	<0.20	3796130	<0.20	0.20	3805296
Styrene	ppbv	<0.20	3801582	<0.20	3796130	<0.20	0.20	3805296
4-ethyltoluene	ppbv	<2.2	3801582	<2.2	3796130	<2.2	2.2	3805296
1,3,5-Trimethylbenzene	ppbv	<0.50	3801582	<0.50	3796130	<0.50	0.50	3805296
1,2,4-Trimethylbenzene	ppbv	<0.50	3801582	<0.50	3796130	<0.50	0.50	3805296
Chlorobenzene	ppbv	<0.20	3801582	<0.20	3796130	<0.20	0.20	3805296
Benzyl chloride	ppbv	<1.0	3801582	<1.0	3796130	<1.0	1.0	3805296
1,3-Dichlorobenzene	ppbv	<0.40	3801582	<0.40	3796130	<0.40	0.40	3805296
1,4-Dichlorobenzene	ppbv	<0.40	3801582	<0.40	3796130	<0.40	0.40	3805296
1,2-Dichlorobenzene	ppbv	<0.40	3801582	<0.40	3796130	<0.40	0.40	3805296
1,2,4-Trichlorobenzene	ppbv	<2.0	3801582	<2.0	3796130	<2.0	2.0	3805296
Hexachlorobutadiene	ppbv	<3.0	3801582	<3.0	3796130	<3.0	3.0	3805296
Hexane	ppbv	<0.30	3801582	<0.30	3796130	<0.30	0.30	3805296
Heptane	ppbv	<0.30	3801582	<0.30	3796130	<0.30	0.30	3805296
Cyclohexane	ppbv	<0.20	3801582	<0.20	3796130	<0.20	0.20	3805296
Tetrahydrofuran	ppbv	<0.40	3801582	<0.40	3796130	<0.40	0.40	3805296
1,4-Dioxane	ppbv	<2.0	3801582	<2.0	3796130	<2.0	2.0	3805296
Xylene (Total)	ppbv	<0.60	3801582	<0.60	3796130	<0.60	0.60	3805296
Vinyl Bromide	ppbv	<0.20	3801582	<0.20	3796130	<0.20	0.20	3805296
Propene	ppbv	<0.30	3801582	<0.30	3796130	<0.30	0.30	3805296
2,2,4-Trimethylpentane	ppbv	<0.20	3801582	<0.20	3796130	<0.20	0.20	3805296
Carbon Disulfide	ppbv	<0.50	3801582	<0.50	3796130	<0.50	0.50	3805296
Vinyl Acetate	ppbv	<0.20	3801582	<0.20	3796130	<0.20	0.20	3805296
Surrogate Recovery (%)								
Bromochloromethane	%	117	3801582	91	3796130	93		3805296
D5-Chlorobenzene	%	109	3801582	90	3796130	90		3805296
RDL = Reportable Detection Limit QC Batch = Quality Control Batch								

Maxxam Job #: B4K2417
Report Date: 2014/10/31

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 4

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		YF0286		YF0287		YF0288		
Sampling Date		2014/10/29 10:12		2014/10/29 10:12		2014/10/29 10:12		
	Units	6L SUMMA #4 PROOFED 14273	QC Batch	6L SUMMA #5 PROOFED 309	QC Batch	6L SUMMA #6 PROOFED 17189	RDL	QC Batch
Difluorobenzene	%	120	3801582	96	3796130	93		3805296
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								

Maxxam Job #: B4K2417
Report Date: 2014/10/31

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 4

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		YF0289	YF0290		YF0291		
Sampling Date		2014/10/29 10:12	2014/10/29 10:12		2014/10/29 10:12		
	Units	6L SUMMA #7 PROOFED 14531	6L SUMMA #8 PROOFED 14146	QC Batch	6L SUMMA #9 PROOFED 14271	RDL	QC Batch
Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	<0.20	3805296	<0.20	0.20	3805235
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	<0.17	3805296	<0.17	0.17	3805235
Chloromethane	ppbv	<0.30	<0.30	3805296	<0.30	0.30	3805235
Vinyl Chloride	ppbv	<0.18	<0.18	3805296	<0.18	0.18	3805235
Chloroethane	ppbv	<0.30	<0.30	3805296	<0.30	0.30	3805235
1,3-Butadiene	ppbv	<0.50	<0.50	3805296	<0.50	0.50	3805235
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	<0.20	3805296	<0.20	0.20	3805235
Ethanol (ethyl alcohol)	ppbv	<2.3	<2.3	3805296	<2.3	2.3	3805235
Trichlorotrifluoroethane	ppbv	<0.15	<0.15	3805296	<0.15	0.15	3805235
2-propanol	ppbv	<3.0	<3.0	3805296	<3.0	3.0	3805235
2-Propanone	ppbv	<0.80	<0.80	3805296	<0.80	0.80	3805235
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	<3.0	3805296	<3.0	3.0	3805235
Methyl Isobutyl Ketone	ppbv	<3.2	<3.2	3805296	<3.2	3.2	3805235
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	<2.0	3805296	<2.0	2.0	3805235
Methyl t-butyl ether (MTBE)	ppbv	<0.20	<0.20	3805296	<0.20	0.20	3805235
Ethyl Acetate	ppbv	<2.2	<2.2	3805296	<2.2	2.2	3805235
1,1-Dichloroethylene	ppbv	<0.25	<0.25	3805296	<0.25	0.25	3805235
cis-1,2-Dichloroethylene	ppbv	<0.19	<0.19	3805296	<0.19	0.19	3805235
trans-1,2-Dichloroethylene	ppbv	<0.20	<0.20	3805296	<0.20	0.20	3805235
Methylene Chloride(Dichloromethane)	ppbv	<0.80	<0.80	3805296	<0.80	0.80	3805235
Chloroform	ppbv	<0.15	<0.15	3805296	<0.15	0.15	3805235
Carbon Tetrachloride	ppbv	<0.30	<0.30	3805296	<0.30	0.30	3805235
1,1-Dichloroethane	ppbv	<0.20	<0.20	3805296	<0.20	0.20	3805235
1,2-Dichloroethane	ppbv	<0.20	<0.20	3805296	<0.20	0.20	3805235
Ethylene Dibromide	ppbv	<0.17	<0.17	3805296	<0.17	0.17	3805235
1,1,1-Trichloroethane	ppbv	<0.30	<0.30	3805296	<0.30	0.30	3805235
1,1,2-Trichloroethane	ppbv	<0.15	<0.15	3805296	<0.15	0.15	3805235
1,1,2,2-Tetrachloroethane	ppbv	<0.20	<0.20	3805296	<0.20	0.20	3805235
cis-1,3-Dichloropropene	ppbv	<0.18	<0.18	3805296	<0.18	0.18	3805235
trans-1,3-Dichloropropene	ppbv	<0.17	<0.17	3805296	<0.17	0.17	3805235
1,2-Dichloropropane	ppbv	<0.40	<0.40	3805296	<0.40	0.40	3805235
Bromomethane	ppbv	<0.18	<0.18	3805296	<0.18	0.18	3805235
Bromoform	ppbv	<0.20	<0.20	3805296	<0.20	0.20	3805235
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B4K2417
Report Date: 2014/10/31

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 4

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		YF0289	YF0290		YF0291		
Sampling Date		2014/10/29 10:12	2014/10/29 10:12		2014/10/29 10:12		
	Units	6L SUMMA #7 PROOFED 14531	6L SUMMA #8 PROOFED 14146	QC Batch	6L SUMMA #9 PROOFED 14271	RDL	QC Batch
Bromodichloromethane	ppbv	<0.20	<0.20	3805296	<0.20	0.20	3805235
Dibromochloromethane	ppbv	<0.20	<0.20	3805296	<0.20	0.20	3805235
Trichloroethylene	ppbv	<0.30	<0.30	3805296	<0.30	0.30	3805235
Tetrachloroethylene	ppbv	<0.20	<0.20	3805296	<0.20	0.20	3805235
Benzene	ppbv	<0.18	<0.18	3805296	<0.18	0.18	3805235
Toluene	ppbv	<0.20	<0.20	3805296	<0.20	0.20	3805235
Ethylbenzene	ppbv	<0.20	<0.20	3805296	<0.20	0.20	3805235
p+m-Xylene	ppbv	<0.37	<0.37	3805296	<0.37	0.37	3805235
o-Xylene	ppbv	<0.20	<0.20	3805296	<0.20	0.20	3805235
Styrene	ppbv	<0.20	<0.20	3805296	<0.20	0.20	3805235
4-ethyltoluene	ppbv	<2.2	<2.2	3805296	<2.2	2.2	3805235
1,3,5-Trimethylbenzene	ppbv	<0.50	<0.50	3805296	<0.50	0.50	3805235
1,2,4-Trimethylbenzene	ppbv	<0.50	<0.50	3805296	<0.50	0.50	3805235
Chlorobenzene	ppbv	<0.20	<0.20	3805296	<0.20	0.20	3805235
Benzyl chloride	ppbv	<1.0	<1.0	3805296	<1.0	1.0	3805235
1,3-Dichlorobenzene	ppbv	<0.40	<0.40	3805296	<0.40	0.40	3805235
1,4-Dichlorobenzene	ppbv	<0.40	<0.40	3805296	<0.40	0.40	3805235
1,2-Dichlorobenzene	ppbv	<0.40	<0.40	3805296	<0.40	0.40	3805235
1,2,4-Trichlorobenzene	ppbv	<2.0	<2.0	3805296	<2.0	2.0	3805235
Hexachlorobutadiene	ppbv	<3.0	<3.0	3805296	<3.0	3.0	3805235
Hexane	ppbv	<0.30	<0.30	3805296	<0.30	0.30	3805235
Heptane	ppbv	<0.30	<0.30	3805296	<0.30	0.30	3805235
Cyclohexane	ppbv	<0.20	<0.20	3805296	<0.20	0.20	3805235
Tetrahydrofuran	ppbv	<0.40	<0.40	3805296	<0.40	0.40	3805235
1,4-Dioxane	ppbv	<2.0	<2.0	3805296	<2.0	2.0	3805235
Xylene (Total)	ppbv	<0.60	<0.60	3805296	<0.60	0.60	3805235
Vinyl Bromide	ppbv	<0.20	<0.20	3805296	<0.20	0.20	3805235
Propene	ppbv	<0.30	<0.30	3805296	<0.30	0.30	3805235
2,2,4-Trimethylpentane	ppbv	<0.20	<0.20	3805296	<0.20	0.20	3805235
Carbon Disulfide	ppbv	<0.50	<0.50	3805296	<0.50	0.50	3805235
Vinyl Acetate	ppbv	<0.20	<0.20	3805296	<0.20	0.20	3805235
Surrogate Recovery (%)							
Bromochloromethane	%	96	89	3805296	74		3805235
D5-Chlorobenzene	%	92	87	3805296	70		3805235
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B4K2417
Report Date: 2014/10/31

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 4

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		YF0289	YF0290		YF0291		
Sampling Date		2014/10/29 10:12	2014/10/29 10:12		2014/10/29 10:12		
	Units	6L SUMMA #7 PROOFED 14531	6L SUMMA #8 PROOFED 14146	QC Batch	6L SUMMA #9 PROOFED 14271	RDL	QC Batch
Difluorobenzene	%	96	90	3805296	60		3805235
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							

Maxxam Job #: B4K2417
Report Date: 2014/10/31

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 4

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		YF0292		YF0293		YF0294		
Sampling Date		2014/10/29 10:12		2014/10/29 10:12		2014/10/29 10:12		
	Units	6L SUMMA #10 PROOFED 248	QC Batch	6L SUMMA #11 PROOFED 17190	QC Batch	6L SUMMA #12 PROOFED 14263	RDL	QC Batch
Volatile Organics								
Dichlorodifluoromethane (FREON 12)	ppbv	<0.20	3787068	<0.20	3805251	<0.20	0.20	3805206
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	3787068	<0.17	3805251	<0.17	0.17	3805206
Chloromethane	ppbv	<0.30	3787068	<0.30	3805251	<0.30	0.30	3805206
Vinyl Chloride	ppbv	<0.18	3787068	<0.18	3805251	<0.18	0.18	3805206
Chloroethane	ppbv	<0.30	3787068	<0.30	3805251	<0.30	0.30	3805206
1,3-Butadiene	ppbv	<0.50	3787068	<0.50	3805251	<0.50	0.50	3805206
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	3787068	<0.20	3805251	<0.20	0.20	3805206
Ethanol (ethyl alcohol)	ppbv	<2.3	3787068	<2.3	3805251	<2.3	2.3	3805206
Trichlorotrifluoroethane	ppbv	<0.15	3787068	<0.15	3805251	<0.15	0.15	3805206
2-propanol	ppbv	<3.0	3787068	<3.0	3805251	<3.0	3.0	3805206
2-Propanone	ppbv	<0.80	3787068	<0.80	3805251	<0.80	0.80	3805206
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3787068	<3.0	3805251	<3.0	3.0	3805206
Methyl Isobutyl Ketone	ppbv	<3.2	3787068	<3.2	3805251	<3.2	3.2	3805206
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	3787068	<2.0	3805251	<2.0	2.0	3805206
Methyl t-butyl ether (MTBE)	ppbv	<0.20	3787068	<0.20	3805251	<0.20	0.20	3805206
Ethyl Acetate	ppbv	<2.2	3787068	<2.2	3805251	<2.2	2.2	3805206
1,1-Dichloroethylene	ppbv	<0.25	3787068	<0.25	3805251	<0.25	0.25	3805206
cis-1,2-Dichloroethylene	ppbv	<0.19	3787068	<0.19	3805251	<0.19	0.19	3805206
trans-1,2-Dichloroethylene	ppbv	<0.20	3787068	<0.20	3805251	<0.20	0.20	3805206
Methylene Chloride(Dichloromethane)	ppbv	<0.80	3787068	<0.80	3805251	<0.80	0.80	3805206
Chloroform	ppbv	<0.15	3787068	<0.15	3805251	<0.15	0.15	3805206
Carbon Tetrachloride	ppbv	<0.30	3787068	<0.30	3805251	<0.30	0.30	3805206
1,1-Dichloroethane	ppbv	<0.20	3787068	<0.20	3805251	<0.20	0.20	3805206
1,2-Dichloroethane	ppbv	<0.20	3787068	<0.20	3805251	<0.20	0.20	3805206
Ethylene Dibromide	ppbv	<0.17	3787068	<0.17	3805251	<0.17	0.17	3805206
1,1,1-Trichloroethane	ppbv	<0.30	3787068	<0.30	3805251	<0.30	0.30	3805206
1,1,2-Trichloroethane	ppbv	<0.15	3787068	<0.15	3805251	<0.15	0.15	3805206
1,1,2,2-Tetrachloroethane	ppbv	<0.20	3787068	<0.20	3805251	<0.20	0.20	3805206
cis-1,3-Dichloropropene	ppbv	<0.18	3787068	<0.18	3805251	<0.18	0.18	3805206
trans-1,3-Dichloropropene	ppbv	<0.17	3787068	<0.17	3805251	<0.17	0.17	3805206
1,2-Dichloropropane	ppbv	<0.40	3787068	<0.40	3805251	<0.40	0.40	3805206
Bromomethane	ppbv	<0.18	3787068	<0.18	3805251	<0.18	0.18	3805206
Bromoform	ppbv	<0.20	3787068	<0.20	3805251	<0.20	0.20	3805206
RDL = Reportable Detection Limit QC Batch = Quality Control Batch								

Maxxam Job #: B4K2417
Report Date: 2014/10/31

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 4

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		YF0292		YF0293		YF0294		
Sampling Date		2014/10/29 10:12		2014/10/29 10:12		2014/10/29 10:12		
	Units	6L SUMMA #10 PROOFED 248	QC Batch	6L SUMMA #11 PROOFED 17190	QC Batch	6L SUMMA #12 PROOFED 14263	RDL	QC Batch
Bromodichloromethane	ppbv	<0.20	3787068	<0.20	3805251	<0.20	0.20	3805206
Dibromochloromethane	ppbv	<0.20	3787068	<0.20	3805251	<0.20	0.20	3805206
Trichloroethylene	ppbv	<0.30	3787068	<0.30	3805251	<0.30	0.30	3805206
Tetrachloroethylene	ppbv	<0.20	3787068	<0.20	3805251	<0.20	0.20	3805206
Benzene	ppbv	<0.18	3787068	<0.18	3805251	<0.18	0.18	3805206
Toluene	ppbv	<0.20	3787068	<0.20	3805251	<0.20	0.20	3805206
Ethylbenzene	ppbv	<0.20	3787068	<0.20	3805251	<0.20	0.20	3805206
p+m-Xylene	ppbv	<0.37	3787068	<0.37	3805251	<0.37	0.37	3805206
o-Xylene	ppbv	<0.20	3787068	<0.20	3805251	<0.20	0.20	3805206
Styrene	ppbv	<0.20	3787068	<0.20	3805251	<0.20	0.20	3805206
4-ethyltoluene	ppbv	<2.2	3787068	<2.2	3805251	<2.2	2.2	3805206
1,3,5-Trimethylbenzene	ppbv	<0.50	3787068	<0.50	3805251	<0.50	0.50	3805206
1,2,4-Trimethylbenzene	ppbv	<0.50	3787068	<0.50	3805251	<0.50	0.50	3805206
Chlorobenzene	ppbv	<0.20	3787068	<0.20	3805251	<0.20	0.20	3805206
Benzyl chloride	ppbv	<1.0	3787068	<1.0	3805251	<1.0	1.0	3805206
1,3-Dichlorobenzene	ppbv	<0.40	3787068	<0.40	3805251	<0.40	0.40	3805206
1,4-Dichlorobenzene	ppbv	<0.40	3787068	<0.40	3805251	<0.40	0.40	3805206
1,2-Dichlorobenzene	ppbv	<0.40	3787068	<0.40	3805251	<0.40	0.40	3805206
1,2,4-Trichlorobenzene	ppbv	<2.0	3787068	<2.0	3805251	<2.0	2.0	3805206
Hexachlorobutadiene	ppbv	<3.0	3787068	<3.0	3805251	<3.0	3.0	3805206
Hexane	ppbv	<0.30	3787068	<0.30	3805251	<0.30	0.30	3805206
Heptane	ppbv	<0.30	3787068	<0.30	3805251	<0.30	0.30	3805206
Cyclohexane	ppbv	<0.20	3787068	<0.20	3805251	<0.20	0.20	3805206
Tetrahydrofuran	ppbv	<0.40	3787068	<0.40	3805251	<0.40	0.40	3805206
1,4-Dioxane	ppbv	<2.0	3787068	<2.0	3805251	<2.0	2.0	3805206
Xylene (Total)	ppbv	<0.60	3787068	<0.60	3805251	<0.60	0.60	3805206
Vinyl Bromide	ppbv	<0.20	3787068	<0.20	3805251	<0.20	0.20	3805206
Propene	ppbv	<0.30	3787068	<0.30	3805251	<0.30	0.30	3805206
2,2,4-Trimethylpentane	ppbv	<0.20	3787068	<0.20	3805251	<0.20	0.20	3805206
Carbon Disulfide	ppbv	<0.50	3787068	<0.50	3805251	<0.50	0.50	3805206
Vinyl Acetate	ppbv	<0.20	3787068	<0.20	3805251	<0.20	0.20	3805206
Surrogate Recovery (%)								
Bromochloromethane	%	79	3787068	76	3805251	103		3805206
D5-Chlorobenzene	%	75	3787068	69	3805251	99		3805206
RDL = Reportable Detection Limit QC Batch = Quality Control Batch								

Maxxam Job #: B4K2417
Report Date: 2014/10/31

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 4

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		YF0292		YF0293		YF0294		
Sampling Date		2014/10/29 10:12		2014/10/29 10:12		2014/10/29 10:12		
	Units	6L SUMMA #10 PROOFED 248	QC Batch	6L SUMMA #11 PROOFED 17190	QC Batch	6L SUMMA #12 PROOFED 14263	RDL	QC Batch
Difluorobenzene	%	83	3787068	82	3805251	101		3805206
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								

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GENERAL COMMENTS

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
3787068	LSY	Spiked Blank	Bromochloromethane	2014/10/15		105	%	60 - 140
			D5-Chlorobenzene	2014/10/15		105	%	60 - 140
			Difluorobenzene	2014/10/15		106	%	60 - 140
			Dichlorodifluoromethane (FREON 12)	2014/10/15		102	%	70 - 130
			1,2-Dichlorotetrafluoroethane	2014/10/15		102	%	70 - 130
			Chloromethane	2014/10/15		113	%	70 - 130
			Vinyl Chloride	2014/10/15		111	%	70 - 130
			Chloroethane	2014/10/15		111	%	70 - 130
			1,3-Butadiene	2014/10/15		116	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2014/10/15		116	%	70 - 130
			Ethanol (ethyl alcohol)	2014/10/15		103	%	70 - 130
			Trichlorotrifluoroethane	2014/10/15		110	%	70 - 130
			2-propanol	2014/10/15		103	%	70 - 130
			2-Propanone	2014/10/15		117	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2014/10/15		118	%	70 - 130
			Methyl Isobutyl Ketone	2014/10/15		117	%	70 - 130
			Methyl Butyl Ketone (2-Hexanone)	2014/10/15		118	%	70 - 130
			Methyl t-butyl ether (MTBE)	2014/10/15		105	%	70 - 130
			Ethyl Acetate	2014/10/15		119	%	70 - 130
			1,1-Dichloroethylene	2014/10/15		111	%	70 - 130
			cis-1,2-Dichloroethylene	2014/10/15		112	%	70 - 130
			trans-1,2-Dichloroethylene	2014/10/15		117	%	70 - 130
			Methylene Chloride(Dichloromethane)	2014/10/15		114	%	70 - 130
			Chloroform	2014/10/15		119	%	70 - 130
			Carbon Tetrachloride	2014/10/15		114	%	70 - 130
			1,1-Dichloroethane	2014/10/15		107	%	70 - 130
			1,2-Dichloroethane	2014/10/15		114	%	70 - 130
			Ethylene Dibromide	2014/10/15		112	%	70 - 130
			1,1,1-Trichloroethane	2014/10/15		116	%	70 - 130
			1,1,2-Trichloroethane	2014/10/15		115	%	70 - 130
			1,1,2,2-Tetrachloroethane	2014/10/15		103	%	70 - 130
			cis-1,3-Dichloropropene	2014/10/15		117	%	70 - 130
			trans-1,3-Dichloropropene	2014/10/15		109	%	70 - 130
			1,2-Dichloropropane	2014/10/15		112	%	70 - 130
			Bromomethane	2014/10/15		111	%	70 - 130
			Bromoform	2014/10/15		119	%	70 - 130
			Bromodichloromethane	2014/10/15		126	%	70 - 130
			Dibromochloromethane	2014/10/15		128	%	70 - 130
			Trichloroethylene	2014/10/15		113	%	70 - 130
			Tetrachloroethylene	2014/10/15		116	%	70 - 130
			Benzene	2014/10/15		109	%	70 - 130
			Toluene	2014/10/15		113	%	70 - 130
			Ethylbenzene	2014/10/15		107	%	70 - 130
			p+m-Xylene	2014/10/15		105	%	70 - 130
			o-Xylene	2014/10/15		114	%	70 - 130
			Styrene	2014/10/15		84	%	70 - 130
			4-ethyltoluene	2014/10/15		115	%	70 - 130
			1,3,5-Trimethylbenzene	2014/10/15		102	%	70 - 130
			1,2,4-Trimethylbenzene	2014/10/15		107	%	70 - 130
			Chlorobenzene	2014/10/15		105	%	70 - 130
			Benzyl chloride	2014/10/15		89	%	70 - 130
			1,3-Dichlorobenzene	2014/10/15		102	%	70 - 130
			1,4-Dichlorobenzene	2014/10/15		102	%	70 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			1,2-Dichlorobenzene	2014/10/15		99	%	70 - 130
			1,2,4-Trichlorobenzene	2014/10/15		84	%	70 - 130
			Hexachlorobutadiene	2014/10/15		109	%	70 - 130
			Hexane	2014/10/15		108	%	70 - 130
			Heptane	2014/10/15		119	%	70 - 130
			Cyclohexane	2014/10/15		109	%	70 - 130
			Tetrahydrofuran	2014/10/15		108	%	70 - 130
			1,4-Dioxane	2014/10/15		108	%	70 - 130
			Xylene (Total)	2014/10/15		108	%	70 - 130
			Vinyl Bromide	2014/10/15		109	%	70 - 130
			Propene	2014/10/15		109	%	70 - 130
			2,2,4-Trimethylpentane	2014/10/15		114	%	70 - 130
			Carbon Disulfide	2014/10/15		112	%	70 - 130
			Vinyl Acetate	2014/10/15		109	%	70 - 130
3787068	LSY	Method Blank	Bromochloromethane	2014/10/15		85	%	60 - 140
			D5-Chlorobenzene	2014/10/15		80	%	60 - 140
			Difluorobenzene	2014/10/15		90	%	60 - 140
			Dichlorodifluoromethane (FREON 12)	2014/10/15	<0.20		ppbv	
			1,2-Dichlorotetrafluoroethane	2014/10/15	<0.17		ppbv	
			Chloromethane	2014/10/15	<0.30		ppbv	
			Vinyl Chloride	2014/10/15	<0.18		ppbv	
			Chloroethane	2014/10/15	<0.30		ppbv	
			1,3-Butadiene	2014/10/15	<0.50		ppbv	
			Trichlorofluoromethane (FREON 11)	2014/10/15	<0.20		ppbv	
			Ethanol (ethyl alcohol)	2014/10/15	<2.3		ppbv	
			Trichlorotrifluoroethane	2014/10/15	<0.15		ppbv	
			2-propanol	2014/10/15	<3.0		ppbv	
			2-Propanone	2014/10/15	<0.80		ppbv	
			Methyl Ethyl Ketone (2-Butanone)	2014/10/15	<3.0		ppbv	
			Methyl Isobutyl Ketone	2014/10/15	<3.2		ppbv	
			Methyl Butyl Ketone (2-Hexanone)	2014/10/15	<2.0		ppbv	
			Methyl t-butyl ether (MTBE)	2014/10/15	<0.20		ppbv	
			Ethyl Acetate	2014/10/15	<2.2		ppbv	
			1,1-Dichloroethylene	2014/10/15	<0.25		ppbv	
			cis-1,2-Dichloroethylene	2014/10/15	<0.19		ppbv	
			trans-1,2-Dichloroethylene	2014/10/15	<0.20		ppbv	
			Methylene Chloride(Dichloromethane)	2014/10/15	<0.80		ppbv	
			Chloroform	2014/10/15	<0.15		ppbv	
			Carbon Tetrachloride	2014/10/15	<0.30		ppbv	
			1,1-Dichloroethane	2014/10/15	<0.20		ppbv	
			1,2-Dichloroethane	2014/10/15	<0.20		ppbv	
			Ethylene Dibromide	2014/10/15	<0.17		ppbv	
			1,1,1-Trichloroethane	2014/10/15	<0.30		ppbv	
			1,1,2-Trichloroethane	2014/10/15	<0.15		ppbv	
			1,1,2,2-Tetrachloroethane	2014/10/15	<0.20		ppbv	
			cis-1,3-Dichloropropene	2014/10/15	<0.18		ppbv	
			trans-1,3-Dichloropropene	2014/10/15	<0.17		ppbv	
			1,2-Dichloropropane	2014/10/15	<0.40		ppbv	
			Bromomethane	2014/10/15	<0.18		ppbv	
			Bromoform	2014/10/15	<0.20		ppbv	
			Bromodichloromethane	2014/10/15	<0.20		ppbv	
			Dibromochloromethane	2014/10/15	<0.20		ppbv	
			Trichloroethylene	2014/10/15	<0.30		ppbv	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			Tetrachloroethylene	2014/10/15	<0.20		ppbv	
			Benzene	2014/10/15	<0.18		ppbv	
			Toluene	2014/10/15	<0.20		ppbv	
			Ethylbenzene	2014/10/15	<0.20		ppbv	
			p+m-Xylene	2014/10/15	<0.37		ppbv	
			o-Xylene	2014/10/15	<0.20		ppbv	
			Styrene	2014/10/15	<0.20		ppbv	
			4-ethyltoluene	2014/10/15	<2.2		ppbv	
			1,3,5-Trimethylbenzene	2014/10/15	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2014/10/15	<0.50		ppbv	
			Chlorobenzene	2014/10/15	<0.20		ppbv	
			Benzyl chloride	2014/10/15	<1.0		ppbv	
			1,3-Dichlorobenzene	2014/10/15	<0.40		ppbv	
			1,4-Dichlorobenzene	2014/10/15	<0.40		ppbv	
			1,2-Dichlorobenzene	2014/10/15	<0.40		ppbv	
			1,2,4-Trichlorobenzene	2014/10/15	<2.0		ppbv	
			Hexachlorobutadiene	2014/10/15	<3.0		ppbv	
			Hexane	2014/10/15	<0.30		ppbv	
			Heptane	2014/10/15	<0.30		ppbv	
			Cyclohexane	2014/10/15	<0.20		ppbv	
			Tetrahydrofuran	2014/10/15	<0.40		ppbv	
			1,4-Dioxane	2014/10/15	<2.0		ppbv	
			Xylene (Total)	2014/10/15	<0.60		ppbv	
			Vinyl Bromide	2014/10/15	<0.20		ppbv	
			Propene	2014/10/15	<0.30		ppbv	
			2,2,4-Trimethylpentane	2014/10/15	<0.20		ppbv	
			Carbon Disulfide	2014/10/15	<0.50		ppbv	
			Vinyl Acetate	2014/10/15	<0.20		ppbv	
3794693	AGU	Spiked Blank	Bromochloromethane	2014/10/21		101	%	60 - 140
			D5-Chlorobenzene	2014/10/21		101	%	60 - 140
			Difluorobenzene	2014/10/21		101	%	60 - 140
			Dichlorodifluoromethane (FREON 12)	2014/10/21		91	%	70 - 130
			1,2-Dichlorotetrafluoroethane	2014/10/21		91	%	70 - 130
			Chloromethane	2014/10/21		100	%	70 - 130
			Vinyl Chloride	2014/10/21		102	%	70 - 130
			Chloroethane	2014/10/21		102	%	70 - 130
			1,3-Butadiene	2014/10/21		101	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2014/10/21		103	%	70 - 130
			Ethanol (ethyl alcohol)	2014/10/21		83	%	70 - 130
			Trichlorotrifluoroethane	2014/10/21		103	%	70 - 130
			2-propanol	2014/10/21		89	%	70 - 130
			2-Propanone	2014/10/21		107	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2014/10/21		105	%	70 - 130
			Methyl Isobutyl Ketone	2014/10/21		93	%	70 - 130
			Methyl Butyl Ketone (2-Hexanone)	2014/10/21		92	%	70 - 130
			Methyl t-butyl ether (MTBE)	2014/10/21		96	%	70 - 130
			Ethyl Acetate	2014/10/21		104	%	70 - 130
			1,1-Dichloroethylene	2014/10/21		102	%	70 - 130
			cis-1,2-Dichloroethylene	2014/10/21		103	%	70 - 130
			trans-1,2-Dichloroethylene	2014/10/21		103	%	70 - 130
			Methylene Chloride(Dichloromethane)	2014/10/21		103	%	70 - 130
			Chloroform	2014/10/21		107	%	70 - 130
			Carbon Tetrachloride	2014/10/21		104	%	70 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			1,1-Dichloroethane	2014/10/21		96	%	70 - 130
			1,2-Dichloroethane	2014/10/21		100	%	70 - 130
			Ethylene Dibromide	2014/10/21		98	%	70 - 130
			1,1,1-Trichloroethane	2014/10/21		102	%	70 - 130
			1,1,2-Trichloroethane	2014/10/21		101	%	70 - 130
			1,1,2,2-Tetrachloroethane	2014/10/21		89	%	70 - 130
			cis-1,3-Dichloropropene	2014/10/21		109	%	70 - 130
			trans-1,3-Dichloropropene	2014/10/21		104	%	70 - 130
			1,2-Dichloropropane	2014/10/21		101	%	70 - 130
			Bromomethane	2014/10/21		100	%	70 - 130
			Bromoform	2014/10/21		102	%	70 - 130
			Bromodichloromethane	2014/10/21		102	%	70 - 130
			Dibromochloromethane	2014/10/21		106	%	70 - 130
			Trichloroethylene	2014/10/21		104	%	70 - 130
			Tetrachloroethylene	2014/10/21		100	%	70 - 130
			Benzene	2014/10/21		102	%	70 - 130
			Toluene	2014/10/21		103	%	70 - 130
			Ethylbenzene	2014/10/21		99	%	70 - 130
			p+m-Xylene	2014/10/21		98	%	70 - 130
			o-Xylene	2014/10/21		104	%	70 - 130
			Styrene	2014/10/21		77	%	70 - 130
			4-ethyltoluene	2014/10/21		96	%	70 - 130
			1,3,5-Trimethylbenzene	2014/10/21		91	%	70 - 130
			1,2,4-Trimethylbenzene	2014/10/21		96	%	70 - 130
			Chlorobenzene	2014/10/21		100	%	70 - 130
			Benzyl chloride	2014/10/21		85	%	70 - 130
			1,3-Dichlorobenzene	2014/10/21		93	%	70 - 130
			1,4-Dichlorobenzene	2014/10/21		93	%	70 - 130
			1,2-Dichlorobenzene	2014/10/21		87	%	70 - 130
			1,2,4-Trichlorobenzene	2014/10/21		77	%	70 - 130
			Hexachlorobutadiene	2014/10/21		86	%	70 - 130
			Hexane	2014/10/21		97	%	70 - 130
			Heptane	2014/10/21		102	%	70 - 130
			Cyclohexane	2014/10/21		97	%	70 - 130
			Tetrahydrofuran	2014/10/21		94	%	70 - 130
			1,4-Dioxane	2014/10/21		89	%	70 - 130
			Xylene (Total)	2014/10/21		100	%	70 - 130
			Vinyl Bromide	2014/10/21		97	%	70 - 130
			Propene	2014/10/21		101	%	70 - 130
			2,2,4-Trimethylpentane	2014/10/21		96	%	70 - 130
			Carbon Disulfide	2014/10/21		96	%	70 - 130
			Vinyl Acetate	2014/10/21		95	%	70 - 130
3794693	AGU	Method Blank	Bromochloromethane	2014/10/21		91	%	60 - 140
			D5-Chlorobenzene	2014/10/21		90	%	60 - 140
			Difluorobenzene	2014/10/21		94	%	60 - 140
			Dichlorodifluoromethane (FREON 12)	2014/10/21	<0.20		ppbv	
			1,2-Dichlorotetrafluoroethane	2014/10/21	<0.17		ppbv	
			Chloromethane	2014/10/21	<0.30		ppbv	
			Vinyl Chloride	2014/10/21	<0.18		ppbv	
			Chloroethane	2014/10/21	<0.30		ppbv	
			1,3-Butadiene	2014/10/21	<0.50		ppbv	
			Trichlorofluoromethane (FREON 11)	2014/10/21	<0.20		ppbv	
			Ethanol (ethyl alcohol)	2014/10/21	<2.3		ppbv	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			Trichlorotrifluoroethane	2014/10/21	<0.15		ppbv	
			2-propanol	2014/10/21	<3.0		ppbv	
			2-Propanone	2014/10/21	<0.80		ppbv	
			Methyl Ethyl Ketone (2-Butanone)	2014/10/21	<3.0		ppbv	
			Methyl Isobutyl Ketone	2014/10/21	<3.2		ppbv	
			Methyl Butyl Ketone (2-Hexanone)	2014/10/21	<2.0		ppbv	
			Methyl t-butyl ether (MTBE)	2014/10/21	<0.20		ppbv	
			Ethyl Acetate	2014/10/21	<2.2		ppbv	
			1,1-Dichloroethylene	2014/10/21	<0.25		ppbv	
			cis-1,2-Dichloroethylene	2014/10/21	<0.19		ppbv	
			trans-1,2-Dichloroethylene	2014/10/21	<0.20		ppbv	
			Methylene Chloride(Dichloromethane)	2014/10/21	<0.80		ppbv	
			Chloroform	2014/10/21	<0.15		ppbv	
			Carbon Tetrachloride	2014/10/21	<0.30		ppbv	
			1,1-Dichloroethane	2014/10/21	<0.20		ppbv	
			1,2-Dichloroethane	2014/10/21	<0.20		ppbv	
			Ethylene Dibromide	2014/10/21	<0.17		ppbv	
			1,1,1-Trichloroethane	2014/10/21	<0.30		ppbv	
			1,1,2-Trichloroethane	2014/10/21	<0.15		ppbv	
			1,1,2,2-Tetrachloroethane	2014/10/21	<0.20		ppbv	
			cis-1,3-Dichloropropene	2014/10/21	<0.18		ppbv	
			trans-1,3-Dichloropropene	2014/10/21	<0.17		ppbv	
			1,2-Dichloropropane	2014/10/21	<0.40		ppbv	
			Bromomethane	2014/10/21	<0.18		ppbv	
			Bromoform	2014/10/21	<0.20		ppbv	
			Bromodichloromethane	2014/10/21	<0.20		ppbv	
			Dibromochloromethane	2014/10/21	<0.20		ppbv	
			Trichloroethylene	2014/10/21	<0.30		ppbv	
			Tetrachloroethylene	2014/10/21	<0.20		ppbv	
			Benzene	2014/10/21	<0.18		ppbv	
			Toluene	2014/10/21	<0.20		ppbv	
			Ethylbenzene	2014/10/21	<0.20		ppbv	
			p+m-Xylene	2014/10/21	<0.37		ppbv	
			o-Xylene	2014/10/21	<0.20		ppbv	
			Styrene	2014/10/21	<0.20		ppbv	
			4-ethyltoluene	2014/10/21	<2.2		ppbv	
			1,3,5-Trimethylbenzene	2014/10/21	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2014/10/21	<0.50		ppbv	
			Chlorobenzene	2014/10/21	<0.20		ppbv	
			Benzyl chloride	2014/10/21	<1.0		ppbv	
			1,3-Dichlorobenzene	2014/10/21	<0.40		ppbv	
			1,4-Dichlorobenzene	2014/10/21	<0.40		ppbv	
			1,2-Dichlorobenzene	2014/10/21	<0.40		ppbv	
			1,2,4-Trichlorobenzene	2014/10/21	<2.0		ppbv	
			Hexachlorobutadiene	2014/10/21	<3.0		ppbv	
			Hexane	2014/10/21	<0.30		ppbv	
			Heptane	2014/10/21	<0.30		ppbv	
			Cyclohexane	2014/10/21	<0.20		ppbv	
			Tetrahydrofuran	2014/10/21	<0.40		ppbv	
			1,4-Dioxane	2014/10/21	<2.0		ppbv	
			Xylene (Total)	2014/10/21	<0.60		ppbv	
			Vinyl Bromide	2014/10/21	<0.20		ppbv	
			Propene	2014/10/21	<0.30		ppbv	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
3796130	LSY	Spiked Blank	2,2,4-Trimethylpentane	2014/10/21	<0.20		ppbv	
			Carbon Disulfide	2014/10/21	<0.50		ppbv	
			Vinyl Acetate	2014/10/21	<0.20		ppbv	
			Bromochloromethane	2014/10/22		105	%	60 - 140
			D5-Chlorobenzene	2014/10/22		104	%	60 - 140
			Difluorobenzene	2014/10/22		105	%	60 - 140
			Dichlorodifluoromethane (FREON 12)	2014/10/22		92	%	70 - 130
			1,2-Dichlorotetrafluoroethane	2014/10/22		92	%	70 - 130
			Chloromethane	2014/10/22		101	%	70 - 130
			Vinyl Chloride	2014/10/22		102	%	70 - 130
			Chloroethane	2014/10/22		101	%	70 - 130
			1,3-Butadiene	2014/10/22		99	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2014/10/22		103	%	70 - 130
			Ethanol (ethyl alcohol)	2014/10/22		86	%	70 - 130
			Trichlorotrifluoroethane	2014/10/22		104	%	70 - 130
			2-propanol	2014/10/22		88	%	70 - 130
			2-Propanone	2014/10/22		107	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2014/10/22		105	%	70 - 130
			Methyl Isobutyl Ketone	2014/10/22		95	%	70 - 130
			Methyl Butyl Ketone (2-Hexanone)	2014/10/22		94	%	70 - 130
			Methyl t-butyl ether (MTBE)	2014/10/22		93	%	70 - 130
			Ethyl Acetate	2014/10/22		103	%	70 - 130
			1,1-Dichloroethylene	2014/10/22		103	%	70 - 130
			cis-1,2-Dichloroethylene	2014/10/22		104	%	70 - 130
			trans-1,2-Dichloroethylene	2014/10/22		104	%	70 - 130
			Methylene Chloride(Dichloromethane)	2014/10/22		104	%	70 - 130
			Chloroform	2014/10/22		108	%	70 - 130
			Carbon Tetrachloride	2014/10/22		106	%	70 - 130
			1,1-Dichloroethane	2014/10/22		96	%	70 - 130
			1,2-Dichloroethane	2014/10/22		102	%	70 - 130
			Ethylene Dibromide	2014/10/22		101	%	70 - 130
			1,1,1-Trichloroethane	2014/10/22		105	%	70 - 130
			1,1,2-Trichloroethane	2014/10/22		104	%	70 - 130
			1,1,2,2-Tetrachloroethane	2014/10/22		92	%	70 - 130
			cis-1,3-Dichloropropene	2014/10/22		110	%	70 - 130
			trans-1,3-Dichloropropene	2014/10/22		105	%	70 - 130
			1,2-Dichloropropane	2014/10/22		103	%	70 - 130
			Bromomethane	2014/10/22		101	%	70 - 130
			Bromoform	2014/10/22		105	%	70 - 130
			Bromodichloromethane	2014/10/22		107	%	70 - 130
Dibromochloromethane	2014/10/22		112	%	70 - 130			
Trichloroethylene	2014/10/22		106	%	70 - 130			
Tetrachloroethylene	2014/10/22		103	%	70 - 130			
Benzene	2014/10/22		103	%	70 - 130			
Toluene	2014/10/22		105	%	70 - 130			
Ethylbenzene	2014/10/22		99	%	70 - 130			
p+m-Xylene	2014/10/22		97	%	70 - 130			
o-Xylene	2014/10/22		104	%	70 - 130			
Styrene	2014/10/22		77	%	70 - 130			
4-ethyltoluene	2014/10/22		99	%	70 - 130			
1,3,5-Trimethylbenzene	2014/10/22		91	%	70 - 130			
1,2,4-Trimethylbenzene	2014/10/22		96	%	70 - 130			
Chlorobenzene	2014/10/22		100	%	70 - 130			

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			Benzyl chloride	2014/10/22		84	%	70 - 130
			1,3-Dichlorobenzene	2014/10/22		95	%	70 - 130
			1,4-Dichlorobenzene	2014/10/22		95	%	70 - 130
			1,2-Dichlorobenzene	2014/10/22		89	%	70 - 130
			1,2,4-Trichlorobenzene	2014/10/22		78	%	70 - 130
			Hexachlorobutadiene	2014/10/22		90	%	70 - 130
			Hexane	2014/10/22		97	%	70 - 130
			Heptane	2014/10/22		105	%	70 - 130
			Cyclohexane	2014/10/22		97	%	70 - 130
			Tetrahydrofuran	2014/10/22		93	%	70 - 130
			1,4-Dioxane	2014/10/22		90	%	70 - 130
			Xylene (Total)	2014/10/22		100	%	70 - 130
			Vinyl Bromide	2014/10/22		95	%	70 - 130
			Propene	2014/10/22		100	%	70 - 130
			2,2,4-Trimethylpentane	2014/10/22		97	%	70 - 130
			Carbon Disulfide	2014/10/22		98	%	70 - 130
			Vinyl Acetate	2014/10/22		94	%	70 - 130
3796130	LSY	Method Blank	Bromochloromethane	2014/10/22		86	%	60 - 140
			D5-Chlorobenzene	2014/10/22		86	%	60 - 140
			Difluorobenzene	2014/10/22		92	%	60 - 140
			Dichlorodifluoromethane (FREON 12)	2014/10/22	<0.20		ppbv	
			1,2-Dichlorotetrafluoroethane	2014/10/22	<0.17		ppbv	
			Chloromethane	2014/10/22	<0.30		ppbv	
			Vinyl Chloride	2014/10/22	<0.18		ppbv	
			Chloroethane	2014/10/22	<0.30		ppbv	
			1,3-Butadiene	2014/10/22	<0.50		ppbv	
			Trichlorofluoromethane (FREON 11)	2014/10/22	<0.20		ppbv	
			Ethanol (ethyl alcohol)	2014/10/22	<2.3		ppbv	
			Trichlorotrifluoroethane	2014/10/22	<0.15		ppbv	
			2-propanol	2014/10/22	<3.0		ppbv	
			2-Propanone	2014/10/22	<0.80		ppbv	
			Methyl Ethyl Ketone (2-Butanone)	2014/10/22	<3.0		ppbv	
			Methyl Isobutyl Ketone	2014/10/22	<3.2		ppbv	
			Methyl Butyl Ketone (2-Hexanone)	2014/10/22	<2.0		ppbv	
			Methyl t-butyl ether (MTBE)	2014/10/22	<0.20		ppbv	
			Ethyl Acetate	2014/10/22	<2.2		ppbv	
			1,1-Dichloroethylene	2014/10/22	<0.25		ppbv	
			cis-1,2-Dichloroethylene	2014/10/22	<0.19		ppbv	
			trans-1,2-Dichloroethylene	2014/10/22	<0.20		ppbv	
			Methylene Chloride(Dichloromethane)	2014/10/22	<0.80		ppbv	
			Chloroform	2014/10/22	<0.15		ppbv	
			Carbon Tetrachloride	2014/10/22	<0.30		ppbv	
			1,1-Dichloroethane	2014/10/22	<0.20		ppbv	
			1,2-Dichloroethane	2014/10/22	<0.20		ppbv	
			Ethylene Dibromide	2014/10/22	<0.17		ppbv	
			1,1,1-Trichloroethane	2014/10/22	<0.30		ppbv	
			1,1,2-Trichloroethane	2014/10/22	<0.15		ppbv	
			1,1,2,2-Tetrachloroethane	2014/10/22	<0.20		ppbv	
			cis-1,3-Dichloropropene	2014/10/22	<0.18		ppbv	
			trans-1,3-Dichloropropene	2014/10/22	<0.17		ppbv	
			1,2-Dichloropropane	2014/10/22	<0.40		ppbv	
			Bromomethane	2014/10/22	<0.18		ppbv	
			Bromoform	2014/10/22	<0.20		ppbv	

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			Bromodichloromethane	2014/10/22	<0.20		ppbv	
			Dibromochloromethane	2014/10/22	<0.20		ppbv	
			Trichloroethylene	2014/10/22	<0.30		ppbv	
			Tetrachloroethylene	2014/10/22	<0.20		ppbv	
			Benzene	2014/10/22	<0.18		ppbv	
			Toluene	2014/10/22	<0.20		ppbv	
			Ethylbenzene	2014/10/22	<0.20		ppbv	
			p+m-Xylene	2014/10/22	<0.37		ppbv	
			o-Xylene	2014/10/22	<0.20		ppbv	
			Styrene	2014/10/22	<0.20		ppbv	
			4-ethyltoluene	2014/10/22	<2.2		ppbv	
			1,3,5-Trimethylbenzene	2014/10/22	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2014/10/22	<0.50		ppbv	
			Chlorobenzene	2014/10/22	<0.20		ppbv	
			Benzyl chloride	2014/10/22	<1.0		ppbv	
			1,3-Dichlorobenzene	2014/10/22	<0.40		ppbv	
			1,4-Dichlorobenzene	2014/10/22	<0.40		ppbv	
			1,2-Dichlorobenzene	2014/10/22	<0.40		ppbv	
			1,2,4-Trichlorobenzene	2014/10/22	<2.0		ppbv	
			Hexachlorobutadiene	2014/10/22	<3.0		ppbv	
			Hexane	2014/10/22	<0.30		ppbv	
			Heptane	2014/10/22	<0.30		ppbv	
			Cyclohexane	2014/10/22	<0.20		ppbv	
			Tetrahydrofuran	2014/10/22	<0.40		ppbv	
			1,4-Dioxane	2014/10/22	<2.0		ppbv	
			Xylene (Total)	2014/10/22	<0.60		ppbv	
			Vinyl Bromide	2014/10/22	<0.20		ppbv	
			Propene	2014/10/22	<0.30		ppbv	
			2,2,4-Trimethylpentane	2014/10/22	<0.20		ppbv	
			Carbon Disulfide	2014/10/22	<0.50		ppbv	
			Vinyl Acetate	2014/10/22	<0.20		ppbv	
3799928	NB2	Spiked Blank	Bromochloromethane	2014/10/23		117	%	60 - 140
			D5-Chlorobenzene	2014/10/23		112	%	60 - 140
			Difluorobenzene	2014/10/23		117	%	60 - 140
			Dichlorodifluoromethane (FREON 12)	2014/10/23		112	%	70 - 130
			1,2-Dichlorotetrafluoroethane	2014/10/23		104	%	70 - 130
			Chloromethane	2014/10/23		111	%	70 - 130
			Vinyl Chloride	2014/10/23		113	%	70 - 130
			Chloroethane	2014/10/23		107	%	70 - 130
			1,3-Butadiene	2014/10/23		108	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2014/10/23		116	%	70 - 130
			Ethanol (ethyl alcohol)	2014/10/23		93	%	70 - 130
			Trichlorotrifluoroethane	2014/10/23		113	%	70 - 130
			2-propanol	2014/10/23		101	%	70 - 130
			2-Propanone	2014/10/23		126	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2014/10/23		91	%	70 - 130
			Methyl Isobutyl Ketone	2014/10/23		103	%	70 - 130
			Methyl Butyl Ketone (2-Hexanone)	2014/10/23		109	%	70 - 130
			Methyl t-butyl ether (MTBE)	2014/10/23		106	%	70 - 130
			Ethyl Acetate	2014/10/23		106	%	70 - 130
			1,1-Dichloroethylene	2014/10/23		111	%	70 - 130
			cis-1,2-Dichloroethylene	2014/10/23		109	%	70 - 130
			trans-1,2-Dichloroethylene	2014/10/23		108	%	70 - 130

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			Methylene Chloride(Dichloromethane)	2014/10/23		107	%	70 - 130
			Chloroform	2014/10/23		115	%	70 - 130
			Carbon Tetrachloride	2014/10/23		114	%	70 - 130
			1,1-Dichloroethane	2014/10/23		100	%	70 - 130
			1,2-Dichloroethane	2014/10/23		106	%	70 - 130
			Ethylene Dibromide	2014/10/23		110	%	70 - 130
			1,1,1-Trichloroethane	2014/10/23		111	%	70 - 130
			1,1,2-Trichloroethane	2014/10/23		111	%	70 - 130
			1,1,2,2-Tetrachloroethane	2014/10/23		99	%	70 - 130
			cis-1,3-Dichloropropene	2014/10/23		116	%	70 - 130
			trans-1,3-Dichloropropene	2014/10/23		115	%	70 - 130
			1,2-Dichloropropane	2014/10/23		104	%	70 - 130
			Bromomethane	2014/10/23		111	%	70 - 130
			Bromoform	2014/10/23		116	%	70 - 130
			Bromodichloromethane	2014/10/23		112	%	70 - 130
			Dibromochloromethane	2014/10/23		122	%	70 - 130
			Trichloroethylene	2014/10/23		114	%	70 - 130
			Tetrachloroethylene	2014/10/23		114	%	70 - 130
			Benzene	2014/10/23		108	%	70 - 130
			Toluene	2014/10/23		112	%	70 - 130
			Ethylbenzene	2014/10/23		107	%	70 - 130
			p+m-Xylene	2014/10/23		105	%	70 - 130
			o-Xylene	2014/10/23		110	%	70 - 130
			Styrene	2014/10/23		90	%	70 - 130
			4-ethyltoluene	2014/10/23		109	%	70 - 130
			1,3,5-Trimethylbenzene	2014/10/23		103	%	70 - 130
			1,2,4-Trimethylbenzene	2014/10/23		106	%	70 - 130
			Chlorobenzene	2014/10/23		106	%	70 - 130
			Benzyl chloride	2014/10/23		78	%	70 - 130
			1,3-Dichlorobenzene	2014/10/23		95	%	70 - 130
			1,4-Dichlorobenzene	2014/10/23		91	%	70 - 130
			1,2-Dichlorobenzene	2014/10/23		92	%	70 - 130
			1,2,4-Trichlorobenzene	2014/10/23		75	%	70 - 130
			Hexachlorobutadiene	2014/10/23		111	%	70 - 130
			Hexane	2014/10/23		103	%	70 - 130
			Heptane	2014/10/23		102	%	70 - 130
			Cyclohexane	2014/10/23		100	%	70 - 130
			Tetrahydrofuran	2014/10/23		98	%	70 - 130
			1,4-Dioxane	2014/10/23		101	%	70 - 130
			Xylene (Total)	2014/10/23		106	%	70 - 130
			Vinyl Bromide	2014/10/23		106	%	70 - 130
			Propene	2014/10/23		101	%	70 - 130
			2,2,4-Trimethylpentane	2014/10/23		98	%	70 - 130
			Carbon Disulfide	2014/10/23		112	%	70 - 130
			Vinyl Acetate	2014/10/23		99	%	70 - 130
3799928	NB2	Method Blank	Bromochloromethane	2014/10/23		117	%	60 - 140
			D5-Chlorobenzene	2014/10/23		103	%	60 - 140
			Difluorobenzene	2014/10/23		119	%	60 - 140
			Dichlorodifluoromethane (FREON 12)	2014/10/23	<0.20		ppbv	
			1,2-Dichlorotetrafluoroethane	2014/10/23	<0.17		ppbv	
			Chloromethane	2014/10/23	<0.30		ppbv	
			Vinyl Chloride	2014/10/23	<0.18		ppbv	
			Chloroethane	2014/10/23	<0.30		ppbv	

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			1,3-Butadiene	2014/10/23	<0.50		ppbv	
			Trichlorofluoromethane (FREON 11)	2014/10/23	<0.20		ppbv	
			Ethanol (ethyl alcohol)	2014/10/23	<2.3		ppbv	
			Trichlorotrifluoroethane	2014/10/23	<0.15		ppbv	
			2-propanol	2014/10/23	<3.0		ppbv	
			2-Propanone	2014/10/23	<0.80		ppbv	
			Methyl Ethyl Ketone (2-Butanone)	2014/10/23	<3.0		ppbv	
			Methyl Isobutyl Ketone	2014/10/23	<3.2		ppbv	
			Methyl Butyl Ketone (2-Hexanone)	2014/10/23	<2.0		ppbv	
			Methyl t-butyl ether (MTBE)	2014/10/23	<0.20		ppbv	
			Ethyl Acetate	2014/10/23	<2.2		ppbv	
			1,1-Dichloroethylene	2014/10/23	<0.25		ppbv	
			cis-1,2-Dichloroethylene	2014/10/23	<0.19		ppbv	
			trans-1,2-Dichloroethylene	2014/10/23	<0.20		ppbv	
			Methylene Chloride(Dichloromethane)	2014/10/23	<0.80		ppbv	
			Chloroform	2014/10/23	<0.15		ppbv	
			Carbon Tetrachloride	2014/10/23	<0.30		ppbv	
			1,1-Dichloroethane	2014/10/23	<0.20		ppbv	
			1,2-Dichloroethane	2014/10/23	<0.20		ppbv	
			Ethylene Dibromide	2014/10/23	<0.17		ppbv	
			1,1,1-Trichloroethane	2014/10/23	<0.30		ppbv	
			1,1,2-Trichloroethane	2014/10/23	<0.15		ppbv	
			1,1,2,2-Tetrachloroethane	2014/10/23	<0.20		ppbv	
			cis-1,3-Dichloropropene	2014/10/23	<0.18		ppbv	
			trans-1,3-Dichloropropene	2014/10/23	<0.17		ppbv	
			1,2-Dichloropropane	2014/10/23	<0.40		ppbv	
			Bromomethane	2014/10/23	<0.18		ppbv	
			Bromoform	2014/10/23	<0.20		ppbv	
			Bromodichloromethane	2014/10/23	<0.20		ppbv	
			Dibromochloromethane	2014/10/23	<0.20		ppbv	
			Trichloroethylene	2014/10/23	<0.30		ppbv	
			Tetrachloroethylene	2014/10/23	<0.20		ppbv	
			Benzene	2014/10/23	<0.18		ppbv	
			Toluene	2014/10/23	<0.20		ppbv	
			Ethylbenzene	2014/10/23	<0.20		ppbv	
			p+m-Xylene	2014/10/23	<0.37		ppbv	
			o-Xylene	2014/10/23	<0.20		ppbv	
			Styrene	2014/10/23	<0.20		ppbv	
			4-ethyltoluene	2014/10/23	<2.2		ppbv	
			1,3,5-Trimethylbenzene	2014/10/23	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2014/10/23	<0.50		ppbv	
			Chlorobenzene	2014/10/23	<0.20		ppbv	
			Benzyl chloride	2014/10/23	<1.0		ppbv	
			1,3-Dichlorobenzene	2014/10/23	<0.40		ppbv	
			1,4-Dichlorobenzene	2014/10/23	<0.40		ppbv	
			1,2-Dichlorobenzene	2014/10/23	<0.40		ppbv	
			1,2,4-Trichlorobenzene	2014/10/23	<2.0		ppbv	
			Hexachlorobutadiene	2014/10/23	<3.0		ppbv	
			Hexane	2014/10/23	<0.30		ppbv	
			Heptane	2014/10/23	<0.30		ppbv	
			Cyclohexane	2014/10/23	<0.20		ppbv	
			Tetrahydrofuran	2014/10/23	<0.40		ppbv	
			1,4-Dioxane	2014/10/23	<2.0		ppbv	

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QA/QC			Parameter	Date	Value	Recovery	Units	QC Limits
Batch	Init	QC Type		Analyzed				
3801582	NB2	Spiked Blank	Xylene (Total)	2014/10/23	<0.60		ppbv	
			Vinyl Bromide	2014/10/23	<0.20		ppbv	
			Propene	2014/10/23	<3.4		ppbv	
			2,2,4-Trimethylpentane	2014/10/23	<0.20		ppbv	
			Carbon Disulfide	2014/10/23	<0.50		ppbv	
			Vinyl Acetate	2014/10/23	<0.20		ppbv	
			Bromochloromethane	2014/10/27		118	%	60 - 140
			D5-Chlorobenzene	2014/10/27		116	%	60 - 140
			Difluorobenzene	2014/10/27		119	%	60 - 140
			Dichlorodifluoromethane (FREON 12)	2014/10/27		109	%	70 - 130
			1,2-Dichlorotetrafluoroethane	2014/10/27		104	%	70 - 130
			Chloromethane	2014/10/27		106	%	70 - 130
			Vinyl Chloride	2014/10/27		106	%	70 - 130
			Chloroethane	2014/10/27		104	%	70 - 130
			1,3-Butadiene	2014/10/27		103	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2014/10/27		122	%	70 - 130
			Ethanol (ethyl alcohol)	2014/10/27		99	%	70 - 130
			Trichlorotrifluoroethane	2014/10/27		116	%	70 - 130
			2-propanol	2014/10/27		99	%	70 - 130
			2-Propanone	2014/10/27		120	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2014/10/27		89	%	70 - 130
			Methyl Isobutyl Ketone	2014/10/27		99	%	70 - 130
			Methyl Butyl Ketone (2-Hexanone)	2014/10/27		106	%	70 - 130
			Methyl t-butyl ether (MTBE)	2014/10/27		107	%	70 - 130
			Ethyl Acetate	2014/10/27		104	%	70 - 130
			1,1-Dichloroethylene	2014/10/27		111	%	70 - 130
			cis-1,2-Dichloroethylene	2014/10/27		110	%	70 - 130
			trans-1,2-Dichloroethylene	2014/10/27		107	%	70 - 130
			Methylene Chloride(Dichloromethane)	2014/10/27		104	%	70 - 130
			Chloroform	2014/10/27		119	%	70 - 130
			Carbon Tetrachloride	2014/10/27		124	%	70 - 130
			1,1-Dichloroethane	2014/10/27		100	%	70 - 130
			1,2-Dichloroethane	2014/10/27		112	%	70 - 130
			Ethylene Dibromide	2014/10/27		116	%	70 - 130
			1,1,1-Trichloroethane	2014/10/27		120	%	70 - 130
			1,1,2-Trichloroethane	2014/10/27		115	%	70 - 130
			1,1,2,2-Tetrachloroethane	2014/10/27		105	%	70 - 130
			cis-1,3-Dichloropropene	2014/10/27		119	%	70 - 130
			trans-1,3-Dichloropropene	2014/10/27		120	%	70 - 130
			1,2-Dichloropropane	2014/10/27		102	%	70 - 130
Bromomethane	2014/10/27		112	%	70 - 130			
Bromoform	2014/10/27		135 (1)	%	70 - 130			
Bromodichloromethane	2014/10/27		118	%	70 - 130			
Dibromochloromethane	2014/10/27		133 (1)	%	70 - 130			
Trichloroethylene	2014/10/27		121	%	70 - 130			
Tetrachloroethylene	2014/10/27		123	%	70 - 130			
Benzene	2014/10/27		109	%	70 - 130			
Toluene	2014/10/27		115	%	70 - 130			
Ethylbenzene	2014/10/27		113	%	70 - 130			
p+m-Xylene	2014/10/27		113	%	70 - 130			
o-Xylene	2014/10/27		120	%	70 - 130			
Styrene	2014/10/27		104	%	70 - 130			
4-ethyltoluene	2014/10/27		122	%	70 - 130			

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			1,3,5-Trimethylbenzene	2014/10/27		114	%	70 - 130
			1,2,4-Trimethylbenzene	2014/10/27		121	%	70 - 130
			Chlorobenzene	2014/10/27		115	%	70 - 130
			Benzyl chloride	2014/10/27		106	%	70 - 130
			1,3-Dichlorobenzene	2014/10/27		119	%	70 - 130
			1,4-Dichlorobenzene	2014/10/27		118	%	70 - 130
			1,2-Dichlorobenzene	2014/10/27		114	%	70 - 130
			1,2,4-Trichlorobenzene	2014/10/27		128	%	70 - 130
			Hexachlorobutadiene	2014/10/27		139 (1)	%	70 - 130
			Hexane	2014/10/27		101	%	70 - 130
			Heptane	2014/10/27		99	%	70 - 130
			Cyclohexane	2014/10/27		97	%	70 - 130
			Tetrahydrofuran	2014/10/27		92	%	70 - 130
			1,4-Dioxane	2014/10/27		105	%	70 - 130
			Xylene (Total)	2014/10/27		115	%	70 - 130
			Vinyl Bromide	2014/10/27		109	%	70 - 130
			Propene	2014/10/27		92	%	70 - 130
			2,2,4-Trimethylpentane	2014/10/27		95	%	70 - 130
			Carbon Disulfide	2014/10/27		110	%	70 - 130
			Vinyl Acetate	2014/10/27		96	%	70 - 130
3801582	NB2	Method Blank	Bromochloromethane	2014/10/27		126	%	60 - 140
			D5-Chlorobenzene	2014/10/27		114	%	60 - 140
			Difluorobenzene	2014/10/27		131	%	60 - 140
			Dichlorodifluoromethane (FREON 12)	2014/10/27	<0.20		ppbv	
			1,2-Dichlorotetrafluoroethane	2014/10/27	<0.17		ppbv	
			Chloromethane	2014/10/27	<0.30		ppbv	
			Vinyl Chloride	2014/10/27	<0.18		ppbv	
			Chloroethane	2014/10/27	<0.30		ppbv	
			1,3-Butadiene	2014/10/27	<0.50		ppbv	
			Trichlorofluoromethane (FREON 11)	2014/10/27	<0.20		ppbv	
			Ethanol (ethyl alcohol)	2014/10/27	<2.3		ppbv	
			Trichlorotrifluoroethane	2014/10/27	<0.15		ppbv	
			2-propanol	2014/10/27	<3.0		ppbv	
			2-Propanone	2014/10/27	<0.80		ppbv	
			Methyl Ethyl Ketone (2-Butanone)	2014/10/27	<3.0		ppbv	
			Methyl Isobutyl Ketone	2014/10/27	<3.2		ppbv	
			Methyl Butyl Ketone (2-Hexanone)	2014/10/27	<2.0		ppbv	
			Methyl t-butyl ether (MTBE)	2014/10/27	<0.20		ppbv	
			Ethyl Acetate	2014/10/27	<2.2		ppbv	
			1,1-Dichloroethylene	2014/10/27	<0.25		ppbv	
			cis-1,2-Dichloroethylene	2014/10/27	<0.19		ppbv	
			trans-1,2-Dichloroethylene	2014/10/27	<0.20		ppbv	
			Methylene Chloride(Dichloromethane)	2014/10/27	<0.80		ppbv	
			Chloroform	2014/10/27	<0.15		ppbv	
			Carbon Tetrachloride	2014/10/27	<0.30		ppbv	
			1,1-Dichloroethane	2014/10/27	<0.20		ppbv	
			1,2-Dichloroethane	2014/10/27	<0.20		ppbv	
			Ethylene Dibromide	2014/10/27	<0.17		ppbv	
			1,1,1-Trichloroethane	2014/10/27	<0.30		ppbv	
			1,1,2-Trichloroethane	2014/10/27	<0.15		ppbv	
			1,1,2,2-Tetrachloroethane	2014/10/27	<0.20		ppbv	
			cis-1,3-Dichloropropene	2014/10/27	<0.18		ppbv	
			trans-1,3-Dichloropropene	2014/10/27	<0.17		ppbv	

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			1,2-Dichloropropane	2014/10/27	<0.40		ppbv	
			Bromomethane	2014/10/27	<0.18		ppbv	
			Bromoform	2014/10/27	<0.20		ppbv	
			Bromodichloromethane	2014/10/27	<0.20		ppbv	
			Dibromochloromethane	2014/10/27	<0.20		ppbv	
			Trichloroethylene	2014/10/27	<0.30		ppbv	
			Tetrachloroethylene	2014/10/27	<0.20		ppbv	
			Benzene	2014/10/27	<0.18		ppbv	
			Toluene	2014/10/27	<0.20		ppbv	
			Ethylbenzene	2014/10/27	<0.20		ppbv	
			p+m-Xylene	2014/10/27	<0.37		ppbv	
			o-Xylene	2014/10/27	<0.20		ppbv	
			Styrene	2014/10/27	<0.20		ppbv	
			4-ethyltoluene	2014/10/27	<2.2		ppbv	
			1,3,5-Trimethylbenzene	2014/10/27	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2014/10/27	<0.50		ppbv	
			Chlorobenzene	2014/10/27	<0.20		ppbv	
			Benzyl chloride	2014/10/27	<1.0		ppbv	
			1,3-Dichlorobenzene	2014/10/27	<0.40		ppbv	
			1,4-Dichlorobenzene	2014/10/27	<0.40		ppbv	
			1,2-Dichlorobenzene	2014/10/27	<0.40		ppbv	
			1,2,4-Trichlorobenzene	2014/10/27	<2.0		ppbv	
			Hexachlorobutadiene	2014/10/27	<3.0		ppbv	
			Hexane	2014/10/27	<0.30		ppbv	
			Heptane	2014/10/27	<0.30		ppbv	
			Cyclohexane	2014/10/27	<0.20		ppbv	
			Tetrahydrofuran	2014/10/27	<0.40		ppbv	
			1,4-Dioxane	2014/10/27	<2.0		ppbv	
			Xylene (Total)	2014/10/27	<0.60		ppbv	
			Vinyl Bromide	2014/10/27	<0.20		ppbv	
			Propene	2014/10/27	<3.2		ppbv	
			2,2,4-Trimethylpentane	2014/10/27	<0.20		ppbv	
			Carbon Disulfide	2014/10/27	<0.50		ppbv	
			Vinyl Acetate	2014/10/27	<0.20		ppbv	
3801582	NB2	RPD	Dichlorodifluoromethane (FREON 12)	2014/10/27	NC		%	25
			1,2-Dichlorotetrafluoroethane	2014/10/27	NC		%	25
			Chloromethane	2014/10/27	NC		%	25
			Chloroethane	2014/10/27	NC		%	25
			1,3-Butadiene	2014/10/27	NC		%	25
			Trichlorofluoromethane (FREON 11)	2014/10/27	NC		%	25
			Ethanol (ethyl alcohol)	2014/10/27	NC		%	25
			Trichlorotrifluoroethane	2014/10/27	NC		%	25
			2-propanol	2014/10/27	NC		%	25
			2-Propanone	2014/10/27	1.1		%	25
			Methyl Ethyl Ketone (2-Butanone)	2014/10/27	NC		%	25
			Methyl Isobutyl Ketone	2014/10/27	NC		%	25
			Methyl Butyl Ketone (2-Hexanone)	2014/10/27	NC		%	25
			Methyl t-butyl ether (MTBE)	2014/10/27	NC		%	25
			Ethyl Acetate	2014/10/27	NC		%	25
			1,1-Dichloroethylene	2014/10/27	NC		%	25
			cis-1,2-Dichloroethylene	2014/10/27	NC		%	25
			trans-1,2-Dichloroethylene	2014/10/27	NC		%	25
			Methylene Chloride(Dichloromethane)	2014/10/27	NC		%	25

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			Chloroform	2014/10/27	NC		%	25
			Carbon Tetrachloride	2014/10/27	NC		%	25
			1,1-Dichloroethane	2014/10/27	NC		%	25
			1,2-Dichloroethane	2014/10/27	NC		%	25
			Ethylene Dibromide	2014/10/27	NC		%	25
			1,1,1-Trichloroethane	2014/10/27	NC		%	25
			1,1,2-Trichloroethane	2014/10/27	NC		%	25
			1,1,2,2-Tetrachloroethane	2014/10/27	NC		%	25
			cis-1,3-Dichloropropene	2014/10/27	NC		%	25
			trans-1,3-Dichloropropene	2014/10/27	NC		%	25
			1,2-Dichloropropane	2014/10/27	NC		%	25
			Bromomethane	2014/10/27	NC		%	25
			Bromoform	2014/10/27	NC		%	25
			Bromodichloromethane	2014/10/27	NC		%	25
			Dibromochloromethane	2014/10/27	NC		%	25
			Trichloroethylene	2014/10/27	NC		%	25
			Tetrachloroethylene	2014/10/27	NC		%	25
			Benzene	2014/10/27	NC		%	25
			Toluene	2014/10/27	0.40		%	25
			Ethylbenzene	2014/10/27	NC		%	25
			p+m-Xylene	2014/10/27	NC		%	25
			o-Xylene	2014/10/27	NC		%	25
			Styrene	2014/10/27	NC		%	25
			4-ethyltoluene	2014/10/27	NC		%	25
			1,3,5-Trimethylbenzene	2014/10/27	NC		%	25
			1,2,4-Trimethylbenzene	2014/10/27	NC		%	25
			Chlorobenzene	2014/10/27	NC		%	25
			Benzyl chloride	2014/10/27	NC		%	25
			1,3-Dichlorobenzene	2014/10/27	NC		%	25
			1,4-Dichlorobenzene	2014/10/27	NC		%	25
			1,2-Dichlorobenzene	2014/10/27	NC		%	25
			1,2,4-Trichlorobenzene	2014/10/27	NC		%	25
			Hexachlorobutadiene	2014/10/27	NC		%	25
			Hexane	2014/10/27	NC		%	25
			Heptane	2014/10/27	NC		%	25
			Cyclohexane	2014/10/27	NC		%	25
			Tetrahydrofuran	2014/10/27	NC		%	25
			1,4-Dioxane	2014/10/27	NC		%	25
			Xylene (Total)	2014/10/27	NC		%	25
			Vinyl Bromide	2014/10/27	NC		%	25
			Propene	2014/10/27	NC		%	25
			2,2,4-Trimethylpentane	2014/10/27	NC		%	25
			Carbon Disulfide	2014/10/27	NC		%	25
			Vinyl Acetate	2014/10/27	NC		%	25
3805206	NS2	Method Blank	Bromochloromethane	2014/10/23		99	%	60 - 140
			D5-Chlorobenzene	2014/10/23		94	%	60 - 140
			Difluorobenzene	2014/10/23		97	%	60 - 140
			Dichlorodifluoromethane (FREON 12)	2014/10/23	<0.20		ppbv	
			1,2-Dichlorotetrafluoroethane	2014/10/23	<0.17		ppbv	
			Chloromethane	2014/10/23	<0.30		ppbv	
			Vinyl Chloride	2014/10/23	<0.18		ppbv	
			Chloroethane	2014/10/23	<0.30		ppbv	
			1,3-Butadiene	2014/10/23	<0.50		ppbv	

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			Trichlorofluoromethane (FREON 11)	2014/10/23	<0.20		ppbv	
			Ethanol (ethyl alcohol)	2014/10/23	<2.3		ppbv	
			Trichlorotrifluoroethane	2014/10/23	<0.15		ppbv	
			2-propanol	2014/10/23	<3.0		ppbv	
			2-Propanone	2014/10/23	<0.80		ppbv	
			Methyl Ethyl Ketone (2-Butanone)	2014/10/23	<3.0		ppbv	
			Methyl Isobutyl Ketone	2014/10/23	<3.2		ppbv	
			Methyl Butyl Ketone (2-Hexanone)	2014/10/23	<2.0		ppbv	
			Methyl t-butyl ether (MTBE)	2014/10/23	<0.20		ppbv	
			Ethyl Acetate	2014/10/23	<2.2		ppbv	
			1,1-Dichloroethylene	2014/10/23	<0.25		ppbv	
			cis-1,2-Dichloroethylene	2014/10/23	<0.19		ppbv	
			trans-1,2-Dichloroethylene	2014/10/23	<0.20		ppbv	
			Methylene Chloride(Dichloromethane)	2014/10/23	<0.80		ppbv	
			Chloroform	2014/10/23	<0.15		ppbv	
			Carbon Tetrachloride	2014/10/23	<0.30		ppbv	
			1,1-Dichloroethane	2014/10/23	<0.20		ppbv	
			1,2-Dichloroethane	2014/10/23	<0.20		ppbv	
			Ethylene Dibromide	2014/10/23	<0.17		ppbv	
			1,1,1-Trichloroethane	2014/10/23	<0.30		ppbv	
			1,1,2-Trichloroethane	2014/10/23	<0.15		ppbv	
			1,1,2,2-Tetrachloroethane	2014/10/23	<0.20		ppbv	
			cis-1,3-Dichloropropene	2014/10/23	<0.18		ppbv	
			trans-1,3-Dichloropropene	2014/10/23	<0.17		ppbv	
			1,2-Dichloropropane	2014/10/23	<0.40		ppbv	
			Bromomethane	2014/10/23	<0.18		ppbv	
			Bromoform	2014/10/23	<0.20		ppbv	
			Bromodichloromethane	2014/10/23	<0.20		ppbv	
			Dibromochloromethane	2014/10/23	<0.20		ppbv	
			Trichloroethylene	2014/10/23	<0.30		ppbv	
			Tetrachloroethylene	2014/10/23	<0.20		ppbv	
			Benzene	2014/10/23	<0.18		ppbv	
			Toluene	2014/10/23	<0.20		ppbv	
			Ethylbenzene	2014/10/23	<0.20		ppbv	
			p+m-Xylene	2014/10/23	<0.37		ppbv	
			o-Xylene	2014/10/23	<0.20		ppbv	
			Styrene	2014/10/23	<0.20		ppbv	
			4-ethyltoluene	2014/10/23	<2.2		ppbv	
			1,3,5-Trimethylbenzene	2014/10/23	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2014/10/23	<0.50		ppbv	
			Chlorobenzene	2014/10/23	<0.20		ppbv	
			Benzyl chloride	2014/10/23	<1.0		ppbv	
			1,3-Dichlorobenzene	2014/10/23	<0.40		ppbv	
			1,4-Dichlorobenzene	2014/10/23	<0.40		ppbv	
			1,2-Dichlorobenzene	2014/10/23	<0.40		ppbv	
			1,2,4-Trichlorobenzene	2014/10/23	<2.0		ppbv	
			Hexachlorobutadiene	2014/10/23	<3.0		ppbv	
			Hexane	2014/10/23	<0.30		ppbv	
			Heptane	2014/10/23	<0.30		ppbv	
			Cyclohexane	2014/10/23	<0.20		ppbv	
			Tetrahydrofuran	2014/10/23	<0.40		ppbv	
			1,4-Dioxane	2014/10/23	<2.0		ppbv	
			Xylene (Total)	2014/10/23	<0.60		ppbv	

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3805235	NS2	Method Blank	Vinyl Bromide	2014/10/23	<0.20		ppbv	
			Propene	2014/10/23	<1.0		ppbv	
			2,2,4-Trimethylpentane	2014/10/23	<0.20		ppbv	
			Carbon Disulfide	2014/10/23	<0.50		ppbv	
			Vinyl Acetate	2014/10/23	<0.20		ppbv	
			Bromochloromethane	2014/10/16		97	%	60 - 140
			D5-Chlorobenzene	2014/10/16		93	%	60 - 140
			Difluorobenzene	2014/10/16		82	%	60 - 140
			Dichlorodifluoromethane (FREON 12)	2014/10/16	<0.20		ppbv	
			1,2-Dichlorotetrafluoroethane	2014/10/16	<0.17		ppbv	
			Chloromethane	2014/10/16	<0.30		ppbv	
			Vinyl Chloride	2014/10/16	<0.18		ppbv	
			Chloroethane	2014/10/16	<0.30		ppbv	
			1,3-Butadiene	2014/10/16	<0.50		ppbv	
			Trichlorofluoromethane (FREON 11)	2014/10/16	<0.20		ppbv	
			Ethanol (ethyl alcohol)	2014/10/16	<2.3		ppbv	
			Trichlorotrifluoroethane	2014/10/16	<0.15		ppbv	
			2-propanol	2014/10/16	<3.0		ppbv	
			2-Propanone	2014/10/16	<0.80		ppbv	
			Methyl Ethyl Ketone (2-Butanone)	2014/10/16	<3.0		ppbv	
			Methyl Isobutyl Ketone	2014/10/16	<3.2		ppbv	
			Methyl Butyl Ketone (2-Hexanone)	2014/10/16	<2.0		ppbv	
			Methyl t-butyl ether (MTBE)	2014/10/16	<0.20		ppbv	
			Ethyl Acetate	2014/10/16	<2.2		ppbv	
			1,1-Dichloroethylene	2014/10/16	<0.25		ppbv	
			cis-1,2-Dichloroethylene	2014/10/16	<0.19		ppbv	
			trans-1,2-Dichloroethylene	2014/10/16	<0.20		ppbv	
			Methylene Chloride(Dichloromethane)	2014/10/16	<0.80		ppbv	
			Chloroform	2014/10/16	<0.15		ppbv	
			Carbon Tetrachloride	2014/10/16	<0.30		ppbv	
			1,1-Dichloroethane	2014/10/16	<0.20		ppbv	
			1,2-Dichloroethane	2014/10/16	<0.20		ppbv	
			Ethylene Dibromide	2014/10/16	<0.17		ppbv	
			1,1,1-Trichloroethane	2014/10/16	<0.30		ppbv	
			1,1,2-Trichloroethane	2014/10/16	<0.15		ppbv	
			1,1,2,2-Tetrachloroethane	2014/10/16	<0.20		ppbv	
			cis-1,3-Dichloropropene	2014/10/16	<0.18		ppbv	
			trans-1,3-Dichloropropene	2014/10/16	<0.17		ppbv	
			1,2-Dichloropropane	2014/10/16	<0.40		ppbv	
			Bromomethane	2014/10/16	<0.18		ppbv	
			Bromoform	2014/10/16	<0.20		ppbv	
			Bromodichloromethane	2014/10/16	<0.20		ppbv	
Dibromochloromethane	2014/10/16	<0.20		ppbv				
Trichloroethylene	2014/10/16	<0.30		ppbv				
Tetrachloroethylene	2014/10/16	<0.20		ppbv				
Benzene	2014/10/16	<0.18		ppbv				
Toluene	2014/10/16	<0.20		ppbv				
Ethylbenzene	2014/10/16	<0.20		ppbv				
p+m-Xylene	2014/10/16	<0.37		ppbv				
o-Xylene	2014/10/16	<0.20		ppbv				
Styrene	2014/10/16	<0.20		ppbv				
4-ethyltoluene	2014/10/16	<2.2		ppbv				
1,3,5-Trimethylbenzene	2014/10/16	<0.50		ppbv				

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			1,2,4-Trimethylbenzene	2014/10/16	<0.50		ppbv	
			Chlorobenzene	2014/10/16	<0.20		ppbv	
			Benzyl chloride	2014/10/16	<1.0		ppbv	
			1,3-Dichlorobenzene	2014/10/16	<0.40		ppbv	
			1,4-Dichlorobenzene	2014/10/16	<0.40		ppbv	
			1,2-Dichlorobenzene	2014/10/16	<0.40		ppbv	
			1,2,4-Trichlorobenzene	2014/10/16	<2.0		ppbv	
			Hexachlorobutadiene	2014/10/16	<3.0		ppbv	
			Hexane	2014/10/16	<0.30		ppbv	
			Heptane	2014/10/16	<0.30		ppbv	
			Cyclohexane	2014/10/16	<0.20		ppbv	
			Tetrahydrofuran	2014/10/16	<0.40		ppbv	
			1,4-Dioxane	2014/10/16	<2.0		ppbv	
			Xylene (Total)	2014/10/16	<0.60		ppbv	
			Vinyl Bromide	2014/10/16	<0.20		ppbv	
			Propene	2014/10/16	<1.0		ppbv	
			2,2,4-Trimethylpentane	2014/10/16	<0.20		ppbv	
			Carbon Disulfide	2014/10/16	<0.50		ppbv	
			Vinyl Acetate	2014/10/16	<0.20		ppbv	
3805251	LSY	Method Blank	Bromochloromethane	2014/10/16		80	%	60 - 140
			D5-Chlorobenzene	2014/10/16		71	%	60 - 140
			Difluorobenzene	2014/10/16		87	%	60 - 140
			Dichlorodifluoromethane (FREON 12)	2014/10/16	<0.20		ppbv	
			1,2-Dichlorotetrafluoroethane	2014/10/16	<0.17		ppbv	
			Chloromethane	2014/10/16	<0.30		ppbv	
			Vinyl Chloride	2014/10/16	<0.18		ppbv	
			Chloroethane	2014/10/16	<0.30		ppbv	
			1,3-Butadiene	2014/10/16	<0.50		ppbv	
			Trichlorofluoromethane (FREON 11)	2014/10/16	<0.20		ppbv	
			Ethanol (ethyl alcohol)	2014/10/16	<2.3		ppbv	
			Trichlorotrifluoroethane	2014/10/16	<0.15		ppbv	
			2-propanol	2014/10/16	<3.0		ppbv	
			2-Propanone	2014/10/16	<0.80		ppbv	
			Methyl Ethyl Ketone (2-Butanone)	2014/10/16	<3.0		ppbv	
			Methyl Isobutyl Ketone	2014/10/16	<3.2		ppbv	
			Methyl Butyl Ketone (2-Hexanone)	2014/10/16	<2.0		ppbv	
			Methyl t-butyl ether (MTBE)	2014/10/16	<0.20		ppbv	
			Ethyl Acetate	2014/10/16	<2.2		ppbv	
			1,1-Dichloroethylene	2014/10/16	<0.25		ppbv	
			cis-1,2-Dichloroethylene	2014/10/16	<0.19		ppbv	
			trans-1,2-Dichloroethylene	2014/10/16	<0.20		ppbv	
			Methylene Chloride(Dichloromethane)	2014/10/16	<0.80		ppbv	
			Chloroform	2014/10/16	<0.15		ppbv	
			Carbon Tetrachloride	2014/10/16	<0.30		ppbv	
			1,1-Dichloroethane	2014/10/16	<0.20		ppbv	
			1,2-Dichloroethane	2014/10/16	<0.20		ppbv	
			Ethylene Dibromide	2014/10/16	<0.17		ppbv	
			1,1,1-Trichloroethane	2014/10/16	<0.30		ppbv	
			1,1,2-Trichloroethane	2014/10/16	<0.15		ppbv	
			1,1,2,2-Tetrachloroethane	2014/10/16	<0.20		ppbv	
			cis-1,3-Dichloropropene	2014/10/16	<0.18		ppbv	
			trans-1,3-Dichloropropene	2014/10/16	<0.17		ppbv	
			1,2-Dichloropropane	2014/10/16	<0.40		ppbv	

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			Bromomethane	2014/10/16	<0.18		ppbv	
			Bromoform	2014/10/16	<0.20		ppbv	
			Bromodichloromethane	2014/10/16	<0.20		ppbv	
			Dibromochloromethane	2014/10/16	<0.20		ppbv	
			Trichloroethylene	2014/10/16	<0.30		ppbv	
			Tetrachloroethylene	2014/10/16	<0.20		ppbv	
			Benzene	2014/10/16	<0.18		ppbv	
			Toluene	2014/10/16	<0.20		ppbv	
			Ethylbenzene	2014/10/16	<0.20		ppbv	
			p+m-Xylene	2014/10/16	<0.37		ppbv	
			o-Xylene	2014/10/16	<0.20		ppbv	
			Styrene	2014/10/16	<0.20		ppbv	
			4-ethyltoluene	2014/10/16	<2.2		ppbv	
			1,3,5-Trimethylbenzene	2014/10/16	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2014/10/16	<0.50		ppbv	
			Chlorobenzene	2014/10/16	<0.20		ppbv	
			Benzyl chloride	2014/10/16	<1.0		ppbv	
			1,3-Dichlorobenzene	2014/10/16	<0.40		ppbv	
			1,4-Dichlorobenzene	2014/10/16	<0.40		ppbv	
			1,2-Dichlorobenzene	2014/10/16	<0.40		ppbv	
			1,2,4-Trichlorobenzene	2014/10/16	<2.0		ppbv	
			Hexachlorobutadiene	2014/10/16	<3.0		ppbv	
			Hexane	2014/10/16	<0.30		ppbv	
			Heptane	2014/10/16	<0.30		ppbv	
			Cyclohexane	2014/10/16	<0.20		ppbv	
			Tetrahydrofuran	2014/10/16	<0.40		ppbv	
			1,4-Dioxane	2014/10/16	<2.0		ppbv	
			Xylene (Total)	2014/10/16	<0.60		ppbv	
			Vinyl Bromide	2014/10/16	<0.20		ppbv	
			Propene	2014/10/16	<0.30		ppbv	
			2,2,4-Trimethylpentane	2014/10/16	<0.20		ppbv	
			Carbon Disulfide	2014/10/16	<0.50		ppbv	
			Vinyl Acetate	2014/10/16	<0.20		ppbv	
3805289	NS2	Method Blank	Bromochloromethane	2014/10/27		97	%	60 - 140
			D5-Chlorobenzene	2014/10/27		98	%	60 - 140
			Difluorobenzene	2014/10/27		98	%	60 - 140
			Dichlorodifluoromethane (FREON 12)	2014/10/27	<0.20		ppbv	
			1,2-Dichlorotetrafluoroethane	2014/10/27	<0.17		ppbv	
			Chloromethane	2014/10/27	<0.30		ppbv	
			Vinyl Chloride	2014/10/27	<0.18		ppbv	
			Chloroethane	2014/10/27	<0.30		ppbv	
			1,3-Butadiene	2014/10/27	<0.50		ppbv	
			Trichlorofluoromethane (FREON 11)	2014/10/27	<0.20		ppbv	
			Ethanol (ethyl alcohol)	2014/10/27	<2.3		ppbv	
			Trichlorotrifluoroethane	2014/10/27	<0.15		ppbv	
			2-propanol	2014/10/27	<3.0		ppbv	
			2-Propanone	2014/10/27	<0.80		ppbv	
			Methyl Ethyl Ketone (2-Butanone)	2014/10/27	<3.0		ppbv	
			Methyl Isobutyl Ketone	2014/10/27	<3.2		ppbv	
			Methyl Butyl Ketone (2-Hexanone)	2014/10/27	<2.0		ppbv	
			Methyl t-butyl ether (MTBE)	2014/10/27	<0.20		ppbv	
			Ethyl Acetate	2014/10/27	<2.2		ppbv	
			1,1-Dichloroethylene	2014/10/27	<0.25		ppbv	

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			cis-1,2-Dichloroethylene	2014/10/27	<0.19		ppbv	
			trans-1,2-Dichloroethylene	2014/10/27	<0.20		ppbv	
			Methylene Chloride(Dichloromethane)	2014/10/27	<0.80		ppbv	
			Chloroform	2014/10/27	<0.15		ppbv	
			Carbon Tetrachloride	2014/10/27	<0.30		ppbv	
			1,1-Dichloroethane	2014/10/27	<0.20		ppbv	
			1,2-Dichloroethane	2014/10/27	<0.20		ppbv	
			Ethylene Dibromide	2014/10/27	<0.17		ppbv	
			1,1,1-Trichloroethane	2014/10/27	<0.30		ppbv	
			1,1,2-Trichloroethane	2014/10/27	<0.15		ppbv	
			1,1,2,2-Tetrachloroethane	2014/10/27	<0.20		ppbv	
			cis-1,3-Dichloropropene	2014/10/27	<0.18		ppbv	
			trans-1,3-Dichloropropene	2014/10/27	<0.17		ppbv	
			1,2-Dichloropropene	2014/10/27	<0.40		ppbv	
			Bromomethane	2014/10/27	<0.18		ppbv	
			Bromoform	2014/10/27	<0.20		ppbv	
			Bromodichloromethane	2014/10/27	<0.20		ppbv	
			Dibromochloromethane	2014/10/27	<0.20		ppbv	
			Trichloroethylene	2014/10/27	<0.30		ppbv	
			Tetrachloroethylene	2014/10/27	<0.20		ppbv	
			Benzene	2014/10/27	<0.18		ppbv	
			Toluene	2014/10/27	<0.20		ppbv	
			Ethylbenzene	2014/10/27	<0.20		ppbv	
			p+m-Xylene	2014/10/27	<0.37		ppbv	
			o-Xylene	2014/10/27	<0.20		ppbv	
			Styrene	2014/10/27	<0.20		ppbv	
			4-ethyltoluene	2014/10/27	<2.2		ppbv	
			1,3,5-Trimethylbenzene	2014/10/27	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2014/10/27	<0.50		ppbv	
			Chlorobenzene	2014/10/27	<0.20		ppbv	
			Benzyl chloride	2014/10/27	<1.0		ppbv	
			1,3-Dichlorobenzene	2014/10/27	<0.40		ppbv	
			1,4-Dichlorobenzene	2014/10/27	<0.40		ppbv	
			1,2-Dichlorobenzene	2014/10/27	<0.40		ppbv	
			1,2,4-Trichlorobenzene	2014/10/27	<2.0		ppbv	
			Hexachlorobutadiene	2014/10/27	<3.0		ppbv	
			Hexane	2014/10/27	<0.30		ppbv	
			Heptane	2014/10/27	<0.30		ppbv	
			Cyclohexane	2014/10/27	<0.20		ppbv	
			Tetrahydrofuran	2014/10/27	<0.40		ppbv	
			1,4-Dioxane	2014/10/27	<2.0		ppbv	
			Xylene (Total)	2014/10/27	<0.60		ppbv	
			Vinyl Bromide	2014/10/27	<0.20		ppbv	
			Propene	2014/10/27	<0.30		ppbv	
			2,2,4-Trimethylpentane	2014/10/27	<0.20		ppbv	
			Carbon Disulfide	2014/10/27	<0.50		ppbv	
			Vinyl Acetate	2014/10/27	<0.20		ppbv	
3805296	NB2	Method Blank	Bromochloromethane	2014/10/21		96	%	60 - 140
			D5-Chlorobenzene	2014/10/21		92	%	60 - 140
			Difluorobenzene	2014/10/21		96	%	60 - 140
			Dichlorodifluoromethane (FREON 12)	2014/10/21	<0.20		ppbv	
			1,2-Dichlorotetrafluoroethane	2014/10/21	<0.17		ppbv	
			Chloromethane	2014/10/21	<0.30		ppbv	

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			Vinyl Chloride	2014/10/21	<0.18		ppbv	
			Chloroethane	2014/10/21	<0.30		ppbv	
			1,3-Butadiene	2014/10/21	<0.50		ppbv	
			Trichlorofluoromethane (FREON 11)	2014/10/21	<0.20		ppbv	
			Ethanol (ethyl alcohol)	2014/10/21	<2.3		ppbv	
			Trichlorotrifluoroethane	2014/10/21	<0.15		ppbv	
			2-propanol	2014/10/21	<3.0		ppbv	
			2-Propanone	2014/10/21	<0.80		ppbv	
			Methyl Ethyl Ketone (2-Butanone)	2014/10/21	<3.0		ppbv	
			Methyl Isobutyl Ketone	2014/10/21	<3.2		ppbv	
			Methyl Butyl Ketone (2-Hexanone)	2014/10/21	<2.0		ppbv	
			Methyl t-butyl ether (MTBE)	2014/10/21	<0.20		ppbv	
			Ethyl Acetate	2014/10/21	<2.2		ppbv	
			1,1-Dichloroethylene	2014/10/21	<0.25		ppbv	
			cis-1,2-Dichloroethylene	2014/10/21	<0.19		ppbv	
			trans-1,2-Dichloroethylene	2014/10/21	<0.20		ppbv	
			Methylene Chloride(Dichloromethane)	2014/10/21	<0.80		ppbv	
			Chloroform	2014/10/21	<0.15		ppbv	
			Carbon Tetrachloride	2014/10/21	<0.30		ppbv	
			1,1-Dichloroethane	2014/10/21	<0.20		ppbv	
			1,2-Dichloroethane	2014/10/21	<0.20		ppbv	
			Ethylene Dibromide	2014/10/21	<0.17		ppbv	
			1,1,1-Trichloroethane	2014/10/21	<0.30		ppbv	
			1,1,2-Trichloroethane	2014/10/21	<0.15		ppbv	
			1,1,2,2-Tetrachloroethane	2014/10/21	<0.20		ppbv	
			cis-1,3-Dichloropropene	2014/10/21	<0.18		ppbv	
			trans-1,3-Dichloropropene	2014/10/21	<0.17		ppbv	
			1,2-Dichloropropane	2014/10/21	<0.40		ppbv	
			Bromomethane	2014/10/21	<0.18		ppbv	
			Bromoform	2014/10/21	<0.20		ppbv	
			Bromodichloromethane	2014/10/21	<0.20		ppbv	
			Dibromochloromethane	2014/10/21	<0.20		ppbv	
			Trichloroethylene	2014/10/21	<0.30		ppbv	
			Tetrachloroethylene	2014/10/21	<0.20		ppbv	
			Benzene	2014/10/21	<0.18		ppbv	
			Toluene	2014/10/21	<0.20		ppbv	
			Ethylbenzene	2014/10/21	<0.20		ppbv	
			p+m-Xylene	2014/10/21	<0.37		ppbv	
			o-Xylene	2014/10/21	<0.20		ppbv	
			Styrene	2014/10/21	<0.20		ppbv	
			4-ethyltoluene	2014/10/21	<2.2		ppbv	
			1,3,5-Trimethylbenzene	2014/10/21	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2014/10/21	<0.50		ppbv	
			Chlorobenzene	2014/10/21	<0.20		ppbv	
			Benzyl chloride	2014/10/21	<1.0		ppbv	
			1,3-Dichlorobenzene	2014/10/21	<0.40		ppbv	
			1,4-Dichlorobenzene	2014/10/21	<0.40		ppbv	
			1,2-Dichlorobenzene	2014/10/21	<0.40		ppbv	
			1,2,4-Trichlorobenzene	2014/10/21	<2.0		ppbv	
			Hexachlorobutadiene	2014/10/21	<3.0		ppbv	
			Hexane	2014/10/21	<0.30		ppbv	
			Heptane	2014/10/21	<0.30		ppbv	
			Cyclohexane	2014/10/21	<0.20		ppbv	

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			Tetrahydrofuran	2014/10/21	<0.40		ppbv	
			1,4-Dioxane	2014/10/21	<2.0		ppbv	
			Xylene (Total)	2014/10/21	<0.60		ppbv	
			Vinyl Bromide	2014/10/21	<0.20		ppbv	
			Propene	2014/10/21	<0.30		ppbv	
			2,2,4-Trimethylpentane	2014/10/21	<0.20		ppbv	
			Carbon Disulfide	2014/10/21	<0.50		ppbv	
			Vinyl Acetate	2014/10/21	<0.20		ppbv	
3805302	NB2	Method Blank	Bromochloromethane	2014/10/22		113	%	60 - 140
			D5-Chlorobenzene	2014/10/22		104	%	60 - 140
			Difluorobenzene	2014/10/22		114	%	60 - 140
			Dichlorodifluoromethane (FREON 12)	2014/10/22	<0.20		ppbv	
			1,2-Dichlorotetrafluoroethane	2014/10/22	<0.17		ppbv	
			Chloromethane	2014/10/22	<0.30		ppbv	
			Vinyl Chloride	2014/10/22	<0.18		ppbv	
			Chloroethane	2014/10/22	<0.30		ppbv	
			1,3-Butadiene	2014/10/22	<0.50		ppbv	
			Trichlorofluoromethane (FREON 11)	2014/10/22	<0.20		ppbv	
			Ethanol (ethyl alcohol)	2014/10/22	<2.3		ppbv	
			Trichlorotrifluoroethane	2014/10/22	<0.15		ppbv	
			2-propanol	2014/10/22	<3.0		ppbv	
			2-Propanone	2014/10/22	<0.80		ppbv	
			Methyl Ethyl Ketone (2-Butanone)	2014/10/22	<3.0		ppbv	
			Methyl Isobutyl Ketone	2014/10/22	<3.2		ppbv	
			Methyl Butyl Ketone (2-Hexanone)	2014/10/22	<2.0		ppbv	
			Methyl t-butyl ether (MTBE)	2014/10/22	<0.20		ppbv	
			Ethyl Acetate	2014/10/22	<2.2		ppbv	
			1,1-Dichloroethylene	2014/10/22	<0.25		ppbv	
			cis-1,2-Dichloroethylene	2014/10/22	<0.19		ppbv	
			trans-1,2-Dichloroethylene	2014/10/22	<0.20		ppbv	
			Methylene Chloride(Dichloromethane)	2014/10/22	<0.80		ppbv	
			Chloroform	2014/10/22	<0.15		ppbv	
			Carbon Tetrachloride	2014/10/22	<0.30		ppbv	
			1,1-Dichloroethane	2014/10/22	<0.20		ppbv	
			1,2-Dichloroethane	2014/10/22	<0.20		ppbv	
			Ethylene Dibromide	2014/10/22	<0.17		ppbv	
			1,1,1-Trichloroethane	2014/10/22	<0.30		ppbv	
			1,1,2-Trichloroethane	2014/10/22	<0.15		ppbv	
			1,1,2,2-Tetrachloroethane	2014/10/22	<0.20		ppbv	
			cis-1,3-Dichloropropene	2014/10/22	<0.18		ppbv	
			trans-1,3-Dichloropropene	2014/10/22	<0.17		ppbv	
			1,2-Dichloropropane	2014/10/22	<0.40		ppbv	
			Bromomethane	2014/10/22	<0.18		ppbv	
			Bromoform	2014/10/22	<0.20		ppbv	
			Bromodichloromethane	2014/10/22	<0.20		ppbv	
			Dibromochloromethane	2014/10/22	<0.20		ppbv	
			Trichloroethylene	2014/10/22	<0.30		ppbv	
			Tetrachloroethylene	2014/10/22	<0.20		ppbv	
			Benzene	2014/10/22	<0.18		ppbv	
			Toluene	2014/10/22	<0.20		ppbv	
			Ethylbenzene	2014/10/22	<0.20		ppbv	
			p+m-Xylene	2014/10/22	<0.37		ppbv	
			o-Xylene	2014/10/22	<0.20		ppbv	

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			Styrene	2014/10/22	<0.20		ppbv	
			4-ethyltoluene	2014/10/22	<2.2		ppbv	
			1,3,5-Trimethylbenzene	2014/10/22	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2014/10/22	<0.50		ppbv	
			Chlorobenzene	2014/10/22	<0.20		ppbv	
			Benzyl chloride	2014/10/22	<1.0		ppbv	
			1,3-Dichlorobenzene	2014/10/22	<0.40		ppbv	
			1,4-Dichlorobenzene	2014/10/22	<0.40		ppbv	
			1,2-Dichlorobenzene	2014/10/22	<0.40		ppbv	
			1,2,4-Trichlorobenzene	2014/10/22	<2.0		ppbv	
			Hexachlorobutadiene	2014/10/22	<3.0		ppbv	
			Hexane	2014/10/22	<0.30		ppbv	
			Heptane	2014/10/22	<0.30		ppbv	
			Cyclohexane	2014/10/22	<0.20		ppbv	
			Tetrahydrofuran	2014/10/22	<0.40		ppbv	
			1,4-Dioxane	2014/10/22	<2.0		ppbv	
			Xylene (Total)	2014/10/22	<0.60		ppbv	
			Vinyl Bromide	2014/10/22	<0.20		ppbv	
			Propene	2014/10/22	<0.30		ppbv	
			2,2,4-Trimethylpentane	2014/10/22	<0.20		ppbv	
			Carbon Disulfide	2014/10/22	<0.50		ppbv	
			Vinyl Acetate	2014/10/22	<0.20		ppbv	
3805309	TRN	Method Blank	Bromochloromethane	2014/10/24		101	%	60 - 140
			D5-Chlorobenzene	2014/10/24		88	%	60 - 140
			Difluorobenzene	2014/10/24		103	%	60 - 140
			Dichlorodifluoromethane (FREON 12)	2014/10/24	<0.20		ppbv	
			1,2-Dichlorotetrafluoroethane	2014/10/24	<0.17		ppbv	
			Chloromethane	2014/10/24	<0.30		ppbv	
			Vinyl Chloride	2014/10/24	<0.18		ppbv	
			Chloroethane	2014/10/24	<0.30		ppbv	
			1,3-Butadiene	2014/10/24	<0.50		ppbv	
			Trichlorofluoromethane (FREON 11)	2014/10/24	<0.20		ppbv	
			Ethanol (ethyl alcohol)	2014/10/24	<2.3		ppbv	
			Trichlorotrifluoroethane	2014/10/24	<0.15		ppbv	
			2-propanol	2014/10/24	<3.0		ppbv	
			2-Propanone	2014/10/24	<0.80		ppbv	
			Methyl Ethyl Ketone (2-Butanone)	2014/10/24	<3.0		ppbv	
			Methyl Isobutyl Ketone	2014/10/24	<3.2		ppbv	
			Methyl Butyl Ketone (2-Hexanone)	2014/10/24	<2.0		ppbv	
			Methyl t-butyl ether (MTBE)	2014/10/24	<0.20		ppbv	
			Ethyl Acetate	2014/10/24	<2.2		ppbv	
			1,1-Dichloroethylene	2014/10/24	<0.25		ppbv	
			cis-1,2-Dichloroethylene	2014/10/24	<0.19		ppbv	
			trans-1,2-Dichloroethylene	2014/10/24	<0.20		ppbv	
			Methylene Chloride(Dichloromethane)	2014/10/24	<0.80		ppbv	
			Chloroform	2014/10/24	<0.15		ppbv	
			Carbon Tetrachloride	2014/10/24	<0.30		ppbv	
			1,1-Dichloroethane	2014/10/24	<0.20		ppbv	
			1,2-Dichloroethane	2014/10/24	<0.20		ppbv	
			Ethylene Dibromide	2014/10/24	<0.17		ppbv	
			1,1,1-Trichloroethane	2014/10/24	<0.30		ppbv	
			1,1,2-Trichloroethane	2014/10/24	<0.15		ppbv	
			1,1,2,2-Tetrachloroethane	2014/10/24	<0.20		ppbv	

Maxxam Job #: B4K2417
Report Date: 2014/10/31

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 4

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			cis-1,3-Dichloropropene	2014/10/24	<0.18		ppbv	
			trans-1,3-Dichloropropene	2014/10/24	<0.17		ppbv	
			1,2-Dichloropropane	2014/10/24	<0.40		ppbv	
			Bromomethane	2014/10/24	<0.18		ppbv	
			Bromoform	2014/10/24	<0.20		ppbv	
			Bromodichloromethane	2014/10/24	<0.20		ppbv	
			Dibromochloromethane	2014/10/24	<0.20		ppbv	
			Trichloroethylene	2014/10/24	<0.30		ppbv	
			Tetrachloroethylene	2014/10/24	<0.20		ppbv	
			Benzene	2014/10/24	<0.18		ppbv	
			Toluene	2014/10/24	<0.20		ppbv	
			Ethylbenzene	2014/10/24	<0.20		ppbv	
			p+m-Xylene	2014/10/24	<0.37		ppbv	
			o-Xylene	2014/10/24	<0.20		ppbv	
			Styrene	2014/10/24	<0.20		ppbv	
			4-ethyltoluene	2014/10/24	<2.2		ppbv	
			1,3,5-Trimethylbenzene	2014/10/24	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2014/10/24	<0.50		ppbv	
			Chlorobenzene	2014/10/24	<0.20		ppbv	
			Benzyl chloride	2014/10/24	<1.0		ppbv	
			1,3-Dichlorobenzene	2014/10/24	<0.40		ppbv	
			1,4-Dichlorobenzene	2014/10/24	<0.40		ppbv	
			1,2-Dichlorobenzene	2014/10/24	<0.40		ppbv	
			1,2,4-Trichlorobenzene	2014/10/24	<2.0		ppbv	
			Hexachlorobutadiene	2014/10/24	<3.0		ppbv	
			Hexane	2014/10/24	<0.30		ppbv	
			Heptane	2014/10/24	<0.30		ppbv	
			Cyclohexane	2014/10/24	<0.20		ppbv	
			Tetrahydrofuran	2014/10/24	<0.40		ppbv	
			1,4-Dioxane	2014/10/24	<2.0		ppbv	
			Xylene (Total)	2014/10/24	<0.60		ppbv	
			Vinyl Bromide	2014/10/24	<0.20		ppbv	
			Propene	2014/10/24	0.90,		ppbv	
					RDL=0.30			
			2,2,4-Trimethylpentane	2014/10/24	<0.20		ppbv	
			Carbon Disulfide	2014/10/24	<0.50		ppbv	
			Vinyl Acetate	2014/10/24	<0.20		ppbv	
3805315	TRN	Method Blank	Bromochloromethane	2014/10/27		103	%	60 - 140
			D5-Chlorobenzene	2014/10/27		91	%	60 - 140
			Difluorobenzene	2014/10/27		106	%	60 - 140
			Dichlorodifluoromethane (FREON 12)	2014/10/27	<0.20		ppbv	
			1,2-Dichlorotetrafluoroethane	2014/10/27	<0.17		ppbv	
			Chloromethane	2014/10/27	<0.30		ppbv	
			Vinyl Chloride	2014/10/27	<0.18		ppbv	
			Chloroethane	2014/10/27	<0.30		ppbv	
			1,3-Butadiene	2014/10/27	<0.50		ppbv	
			Trichlorofluoromethane (FREON 11)	2014/10/27	<0.20		ppbv	
			Ethanol (ethyl alcohol)	2014/10/27	<2.3		ppbv	
			Trichlorotrifluoroethane	2014/10/27	<0.15		ppbv	
			2-propanol	2014/10/27	<3.0		ppbv	
			2-Propanone	2014/10/27	<0.80		ppbv	
			Methyl Ethyl Ketone (2-Butanone)	2014/10/27	<3.0		ppbv	
			Methyl Isobutyl Ketone	2014/10/27	<3.2		ppbv	

Maxxam Job #: B4K2417
Report Date: 2014/10/31

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 4

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			Methyl Butyl Ketone (2-Hexanone)	2014/10/27	<2.0		ppbv	
			Methyl t-butyl ether (MTBE)	2014/10/27	<0.20		ppbv	
			Ethyl Acetate	2014/10/27	<2.2		ppbv	
			1,1-Dichloroethylene	2014/10/27	<0.25		ppbv	
			cis-1,2-Dichloroethylene	2014/10/27	<0.19		ppbv	
			trans-1,2-Dichloroethylene	2014/10/27	<0.20		ppbv	
			Methylene Chloride(Dichloromethane)	2014/10/27	<0.80		ppbv	
			Chloroform	2014/10/27	<0.15		ppbv	
			Carbon Tetrachloride	2014/10/27	<0.30		ppbv	
			1,1-Dichloroethane	2014/10/27	<0.20		ppbv	
			1,2-Dichloroethane	2014/10/27	<0.20		ppbv	
			Ethylene Dibromide	2014/10/27	<0.17		ppbv	
			1,1,1-Trichloroethane	2014/10/27	<0.30		ppbv	
			1,1,2-Trichloroethane	2014/10/27	<0.15		ppbv	
			1,1,2,2-Tetrachloroethane	2014/10/27	<0.20		ppbv	
			cis-1,3-Dichloropropene	2014/10/27	<0.18		ppbv	
			trans-1,3-Dichloropropene	2014/10/27	<0.17		ppbv	
			1,2-Dichloropropane	2014/10/27	<0.40		ppbv	
			Bromomethane	2014/10/27	<0.18		ppbv	
			Bromoform	2014/10/27	<0.20		ppbv	
			Bromodichloromethane	2014/10/27	<0.20		ppbv	
			Dibromochloromethane	2014/10/27	<0.20		ppbv	
			Trichloroethylene	2014/10/27	<0.30		ppbv	
			Tetrachloroethylene	2014/10/27	<0.20		ppbv	
			Benzene	2014/10/27	<0.18		ppbv	
			Toluene	2014/10/27	<0.20		ppbv	
			Ethylbenzene	2014/10/27	<0.20		ppbv	
			p+m-Xylene	2014/10/27	<0.37		ppbv	
			o-Xylene	2014/10/27	<0.20		ppbv	
			Styrene	2014/10/27	<0.20		ppbv	
			4-ethyltoluene	2014/10/27	<2.2		ppbv	
			1,3,5-Trimethylbenzene	2014/10/27	<0.50		ppbv	
			1,2,4-Trimethylbenzene	2014/10/27	<0.50		ppbv	
			Chlorobenzene	2014/10/27	<0.20		ppbv	
			Benzyl chloride	2014/10/27	<1.0		ppbv	
			1,3-Dichlorobenzene	2014/10/27	<0.40		ppbv	
			1,4-Dichlorobenzene	2014/10/27	<0.40		ppbv	
			1,2-Dichlorobenzene	2014/10/27	<0.40		ppbv	
			1,2,4-Trichlorobenzene	2014/10/27	<2.0		ppbv	
			Hexachlorobutadiene	2014/10/27	<3.0		ppbv	
			Hexane	2014/10/27	<0.30		ppbv	
			Heptane	2014/10/27	<0.30		ppbv	
			Cyclohexane	2014/10/27	<0.20		ppbv	
			Tetrahydrofuran	2014/10/27	<0.40		ppbv	
			1,4-Dioxane	2014/10/27	<2.0		ppbv	
			Xylene (Total)	2014/10/27	<0.60		ppbv	
			Vinyl Bromide	2014/10/27	<0.20		ppbv	
			Propene	2014/10/27	1.20,		ppbv	
					RDL=0.30			
			2,2,4-Trimethylpentane	2014/10/27	<0.20		ppbv	
			Carbon Disulfide	2014/10/27	<0.50		ppbv	

Maxxam Job #: B4K2417
Report Date: 2014/10/31

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 4

QUALITY ASSURANCE REPORT(CONT'D)

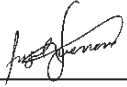
QA/QC				Date					
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	Units	QC Limits	
			Vinyl Acetate	2014/10/27	<0.20		ppbv		
<p>Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.</p> <p>Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.</p> <p>Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.</p> <p>Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.</p> <p>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 (one or both samples < 5x RDL).</p> <p>(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.</p>									

Maxxam Job #: B4K2417
Report Date: 2014/10/31

Golder Associates Ltd
Client Project #: 13-1324-0204
Site Location: QUARTER 4

VALIDATION SIGNATURE PAGE

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



Angel Guerrero, Team Leader, VOC Air



Maureen Smith, Supervisor, Volatiles

Maxxam 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.



APPENDIX B

Borehole Logs and Well/Probe Completion Details

DATA ENTRY: AM

PROJECT No.: 13-1324-0204.1000

RECORD OF BOREHOLE: MW14-1A

SHEET 1 OF 1

LOCATION: See Location Plan

DRILLING DATE: March 13, 2014

DATUM: Local

INCLINATION: -90° AZIMUTH: 0°

DRILL RIG:

DRILLING CONTRACTOR:

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (mm/hr)	FLUSH	COLOUR % RETURN	FR-FRACTURE	F-FAULT	SM-SMOOTH	FL-FLEXURED	BC-BROKEN CORE	COMMENTS/SAMPLE No
									C-C-CONCH. FRACT.	J-JOINT	R-ROUGH	U-UNDULATING	MB-MECH. BREAK	
									SH-SHEAR	P-POLISHED	ST-STEPPEED	W-WAVY	B-BEDDING	
RECOVERY		R.Q.D. %	FRACT. INDEX PER 1.5m	DISCONTINUITY DATA		ROCK STRENGTH INDEX	WEATHERING INDEX							
TOTAL CORE %	SOLID CORE %		DIP w.r.t. CORE AXIS	TYPE AND SURFACE DESCRIPTION										
0		Ground Surface		1052.75										
		(SM) Fine to coarse SILTY SAND and fine subangular to subrounded GRAVEL, medium brown, non-cohesive, moist, compact		0.00										10/20 Sand
		(GM) SILTY GRAVEL, fine to coarse, sub angular to subrounded, some fine sand, cobbles present, possible boulders, light brown to grey, non-cohesive, dry, loose		1052.29										
1				0.46										
2														
3		--- Sand, medium brown from 2.7 to 3.0 m												Hydrated Bentonite
4	Geoprobe Sonic Major Drilling	(GW) GRAVEL, some silt, fine to coarse, rounded to subangular, non-cohesive		1049.09										
				3.66										
5		BEDROCK, blue / grey / yellow, oxidized brittle		1047.87										
				4.88										
		BEDROCK, weathered siltstone, yellow to grey, brittle, loose and compressed		1047.56										
				5.18										
6														10/20 Sand
														05/11/2014 Slotted Section
7		End of DRILLHOLE.		1045.74										
				7.01										
8		NOTE: Standpipe installed to 7.0 m.												
		Measured groundwater level at 6.28 mbgs on March 20, 2014.												
		Measured groundwater level at 6.06 mbgs on June 06, 2014.												
		Measured groundwater level at 6.10 mbgs on August 05, 2014.												
9														
10														

DRILLHOLE - NO GRAPHICS FOR RECOVERY 13-1324-0204.BH_LOGS.GPJ CALGARY.GDT 3/19/15

DEPTH SCALE

1 : 50



LOGGED: JL

CHECKED: JMB

DATA ENTRY: AM

PROJECT No.: 13-1324-0204.1000

RECORD OF BOREHOLE: MW14-1B

SHEET 1 OF 1

LOCATION: See Location Plan

DRILLING DATE: March 10, 2014

DATUM: Local

INCLINATION: -90° AZIMUTH: 0°

DRILL RIG:

DRILLING CONTRACTOR:

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (mm/hr)	FLUSH	COLOUR % RETURN	FR-FRACTURE	F-FAULT	SM-SMOOTH	FL-FLEXURED	BC-BROKEN CORE	COMMENTS/SAMPLE No
									C-C-CONCH.FRACT.	J-JOINT	R-ROUGH	U-UNDULATING	MB-MECH. BREAK	
									SH-SHEAR	P-POLISHED	ST-STEPPED	W-WAVY	B-BEDDING	
RECOVERY		R.Q.D. %	FRACT. INDEX PER 1.5m	DISCONTINUITY DATA		ROCK STRENGTH INDEX	WEATHERING INDEX							
TOTAL CORE %	SOLID CORE %			DIP w.r.t. CORE AXIS	TYPE AND SURFACE DESCRIPTION									
0		Ground Surface		1052.84										
		(SM) Fine to coarse SILTY SAND and fine GRAVEL, medium brown with black / grey mottling, non-cohesive, moist to wet, loose		0.00										10/20 Sand
		(GM) SILTY GRAVEL, fine to coarse, subangular to angular, trace fine sand, light brown to grey, non-cohesive, dry, loose		1052.39										
		---		0.46										Hydrated Bentonite
1		---												
		--- Some fine sand from 1.5 to 1.8 m												
2		---												
		--- Cobbles and boulders present, fine white powder at 1.9 m												10/20 Sand
3	Geoprobe Sonic Major Drilling	---												
		--- Increase silt and sand content at 2.44 m												
4		(GW) GRAVEL, fine to coarse, rounded to subangular, some silt, cobbles or boulders present		1049.34										Slotted Section
		---		3.51										
		--- Increase silt and sand content at 3.51 m												
5		(GM) SILTY GRAVEL, cobbles present, medium brown, non-cohesive, moist, compact		1048.27										
				4.57										
		BEDROCK, blue / grey, weathered		1047.81										
		End of DRILLHOLE.		1047.66										Hydrated Bentonite
				5.18										
6		NOTE: Standpipe installed to 5.0 m.												
		Measured groundwater level at 4.51 mbgs on March 20, 2014.												
		Measured groundwater level at 4.48 mbgs on June 06, 2014.												
		Borehole dry on November 05, 2014.												
7														
8														
9														
10														

DRILLHOLE - NO GRAPHICS FOR RECOVERY 13-1324-0204.BH_LOGS.GPJ CALGARY.GDT 3/19/15

DEPTH SCALE

1 : 50



LOGGED: JL

CHECKED: JMB

DATA ENTRY: AM

PROJECT No.: 13-1324-0204.1000

RECORD OF BOREHOLE: MW14-2

SHEET 1 OF 1

LOCATION: See Location Plan

DRILLING DATE: March 7, 2014

DATUM: Local

INCLINATION: -90° AZIMUTH: 0°

DRILL RIG:

DRILLING CONTRACTOR:

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (m/hr)	FLUSH	COLOUR % RETURN	FR-FRACTURE		F-FAULT		SM-SMOOTH		FL-FLEXURED		BC-BROKEN CORE		COMMENTS/SAMPLE No		
									C-CONCH.FRACT.		J-JOINT		R-ROUGH		U-UNDULATING		MB-MECH. BREAK				
									SH-SHEAR		P-POLISHED		ST-STEPPED		W-WAVY		B-BEDDING				
									VN-VEIN		K-SLICKENSIDED		PL-PLANAR		C-CURVED		CH-CHLORITIZED				
RECOVERY		R.Q.D. %	FRACT. INDEX PER 1.5m	DISCONTINUITY DATA		ROCK STRENGTH INDEX	WEATHERING INDEX														
TOTAL CORE %	SOLID CORE %			DIP w.r.t. CORE AXIS	TYPE AND SURFACE DESCRIPTION																
0		Ground Surface (OL) Organic SILT, trace fine sand, rootlets, dark brown, non-cohesive, moist, loose (TOPSOIL)		1050.92 0.00																	
		(GM) SILTY GRAVEL, fine to coarse, trace rootlets, cobbles present, medium brown, non-cohesive, dry, loose --- Grey colour from 0.8 m		1050.46 0.46																	10/20 Sand
1		(ML) CLAYEY SILT, trace fine sand, mottled medium and dark brown, non-cohesive, dry, compact		1050.01 0.91																	Hydrated Bentonite
2		--- Cohesive, moist, firm at 2.1 m																			10/20 Sand
3	Geoprobe Sonic Major Drilling	--- Mottled tan / yellow at 2.7 m (ML) SILT, trace fine sand, tan / yellow, non-cohesive, dry, loose.		1048.02 2.90																	Slotted Section
4		(ML) CLAYEY SILT, mottled brown, grey, black and tan, cohesive, moist, soft --- Trace gravel and fine white powder, possible cobbles at 3.6 m --- Very fine white powder, possible cobbles or boulders 3.8 m		1047.26 3.66																	04/11/2014 ▽
5		BEDROCK, grey, weathered		1046.35 4.57																	Sloughing
6		End of DRILLHOLE.		1045.43 5.49																	
7		NOTE: Standpipe installed to 4.9 m. Measured groundwater level at 4.23 mbgs on March 20, 2014. Measured groundwater level at 3.88 mbgs on June 06, 2014. Measured groundwater level at 3.95 mbgs on August 04, 2014.																			

DRILLHOLE - NO GRAPHICS FOR RECOVERY 13-1324-0204.BH_LOGS.GPJ CALGARY.GDT 3/19/15

DEPTH SCALE

1 : 50



LOGGED: JL

CHECKED: JMB

DATA ENTRY: AM

PROJECT No.: 13-1324-0204.1000

RECORD OF BOREHOLE: MW14-3

SHEET 1 OF 1

LOCATION: See Location Plan

DRILLING DATE: March 11, 2014

DATUM: Local

INCLINATION: -90° AZIMUTH: 0°

DRILL RIG:

DRILLING CONTRACTOR:

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (mm/hr)	FLUSH	COLOUR % RETURN	FR-FRACTURE		F-FAULT		SM-SMOOTH		FL-FLEXURED		BC-BROKEN CORE		COMMENTS/SAMPLE No		
									C-CONCH.FRACT.		J-JOINT		R-ROUGH		U-UNDULATING		MB-MECH. BREAK				
									SH-SHEAR		P-POLISHED		ST-STEPPED		W-WAVY		B-BEDDING				
									VN-VEIN		K-SLICKENSIDED		PL-PLANAR		C-CURVED		CH-CHLORITIZED				
RECOVERY		R.Q.D. %	FRACT. INDEX PER 1.5m	DISCONTINUITY DATA		ROCK STRENGTH INDEX	WEATHERING INDEX														
TOTAL CORE %	SOLID CORE %			DIP w.r.t. CORE AXIS	TYPE AND SURFACE DESCRIPTION																
0		Ground Surface (OL) Organic SILT, medium brown, non-cohesive, moist, loose (TOPSOIL)		1051.04 0.00																10/20 Sand	
1																				Hydrated Bentonite	
2		FILL - (ML) SILT, some fine sand, medium brown, trace grey / black mottling, moist, loose		1049.52 1.52																10/20 Sand	
3	Geoprobe Sonic Major Drilling	--- Trace subrounded gravel, trace wood fragments, wet at 2.4 m		1048.00 3.05																Slotted Section	
4		GRAVEL, some silt, fine to coarse, rounded to subangular, non-cohesive		1047.23 3.81																	10/20 Sand
5		BEDROCK, grey, yellow oxidation, weathered																			Hydrated Bentonite
6		--- Weathered siltstone / sandstone, brittle at 4.6 m																			
5		End of DRILLHOLE.		1046.17 4.88																	
6		NOTE: Standpipe installed to 3.81 m.																			
6		Borehole dry on March 19, 2014, June 06, 2014, August 04, 2014, November 04, 2014.																			

DRILLHOLE - NO GRAPHICS FOR RECOVERY 13-1324-0204_BH_LOGS.GPJ CALGARY.GDT 3/19/15

DEPTH SCALE

1 : 50



LOGGED: JL

CHECKED: JMB

DATA ENTRY: AM

PROJECT No.: 13-1324-0204.1000

RECORD OF BOREHOLE: MW14-4A

SHEET 1 OF 2

LOCATION: See Location Plan

DRILLING DATE: March 11, 2014

DATUM: Local

INCLINATION: -90° AZIMUTH: 0°

DRILL RIG:

DRILLING CONTRACTOR:

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (mm)	FLUSH	COLOUR	% RETURN	FR-FRACTURE		F-FAULT		SM-SMOOTH		FL-FLEXURED		BC-BROKEN CORE		COMMENTS/SAMPLE No	
										C-CONCH. FRACT.		J-JOINT		R-ROUGH		U-UNDULATING		MB-MECH. BREAK			
										SH-SHEAR		P-POLISHED		ST-STEPPED		W-WAVY		B-BEDDING			
VN-VEIN		K-SLICKENSIDED		PL-PLANAR		C-CURVED		CH-CHLORITIZED		ROCK STRENGTH INDEX	WEATHERING INDEX										
RECOVERY		R.Q.D. %	FRACT. INDEX PER 1.5m	DISCONTINUITY DATA		DIP w.r.t. CORE AXIS	TYPE AND SURFACE DESCRIPTION														
TOTAL CORE %	SOLID CORE %																				
0		Ground Surface		1051.23																	
		(OL) Organic SILT, rootlets, dark brown / black, non-cohesive, dry, loose (TOPSOIL)		0.00																	10/20 Sand
1				1050.01																	
		(GM) SILTY GRAVEL, fine to coarse, subangular to subrounded, some fine sand, light to medium brown, non-cohesive, dry, loose		1.22																	
2				1048.79																	
		(ML) SILT, some fine to coarse gravel, cobble present, dark brown, cohesive, w<pl, firm		2.44																	
3				1048.18																	
		(GM) SILTY GRAVEL, some fine sand, cobbles present, light brown to grey, non-cohesive, dry, loose		3.05																	
4	Geoprobe Sonic Major Drilling	--- Medium brown from 4.0 m to 4.3 m --- Light brown / grey from 4.3 m		1046.65																	
		(ML) SILT, dark brown, non-cohesive, dry, compact		4.57																	
5				1046.35																	
		(GM) SILTY GRAVEL, some fine sand, cobbles present, light brown to grey, non-cohesive, dry, loose BEDROCK, grey, creosote odour, weathered, wet, loose		1046.04																	
6		--- Dry, brittle at 5.8 m --- Bedrock is stronger from 6.1 m		5.18																	
7																					
8																					
				1042.54																	
9		End of DRILLHOLE. NOTE: Standpipe installed to 8.2 m. Measured groundwater level at 3.76 mbgs on March 20, 2014. Measured groundwater level at 3.54 mbgs on June 06, 2014.		8.69																	
10		CONTINUED NEXT PAGE																			

DRILLHOLE - NO GRAPHICS FOR RECOVERY 13-1324-0204.BH.LOGS.GPJ CALGARY.GDT 3/19/15

DEPTH SCALE

1 : 50



LOGGED: JL

CHECKED: JMB

DATA ENTRY: AM

PROJECT No.: 13-1324-0204.1000

RECORD OF BOREHOLE: MW14-4A

SHEET 2 OF 2

LOCATION: See Location Plan

DRILLING DATE: March 11, 2014

DATUM: Local

INCLINATION: -90° AZIMUTH: 0°

DRILL RIG:

DRILLING CONTRACTOR:

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (mm)	FLUSH	COLOUR	% RETURN	FR-FRACTURE		F-FAULT		SM-SMOOTH		FL-FLEXURED		BC-BROKEN CORE		COMMENTS/SAMPLE No		
										C-CONCH. FRACT.		J-JOINT		R-ROUGH		U-UNDULATING		MB-MECH. BREAK				
										SH-SHEAR		P-POLISHED		ST-STEPPED		W-WAVY		B-BEDDING				
										VN-VEIN		K-SLICKENSIDED		PL-PLANAR		C-CURVED		CH-CHLORITIZED				
RECOVERY		R.Q.D. %	FRACT. INDEX PER 1.5m	DISCONTINUITY DATA			ROCK STRENGTH INDEX	WEATHERING INDEX														
TOTAL CORE %	SOLID CORE %			DIP w.r.t. CORE AXIS	TYPE AND SURFACE DESCRIPTION																	
10		Measured groundwater level at 3.66 mbgs on August 04, 2014.																				
11																						
12																						
13																						
14																						
15																						
16																						
17																						
18																						
19																						
20																						

DRILLHOLE - NO GRAPHICS FOR RECOVERY 13-1324-0204_BH_LOGS.GPJ CALGARY.GDT 3/19/15

DEPTH SCALE

1 : 50



LOGGED: JL

CHECKED: JMB

DATA ENTRY: AM

PROJECT No.: 13-1324-0204.1000

RECORD OF BOREHOLE: MW14-4B

SHEET 1 OF 1

LOCATION: See Location Plan

DRILLING DATE: March 10, 2014

DATUM: Local

INCLINATION: -90° AZIMUTH: 0°

DRILL RIG:

DRILLING CONTRACTOR:

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (mm)	FLUSH	COLOUR % RETURN	FR-FRACTURE		F-FAULT		SM-SMOOTH		FL-FLEXURED		BC-BROKEN CORE		COMMENTS/SAMPLE No	
									C-CONCH.FRACT.		J-JOINT		R-ROUGH		U-UNDULATING		MB-MECH. BREAK			
									SH-SHEAR		P-POLISHED		ST-STEPPED		W-WAVY		B-BEDDING			
VN-VEIN		K-SLICKENSIDED		PL-PLANAR		C-CURVED		CH-CHLORITIZED												
RECOVERY		R.Q.D. %	FRACT. INDEX PER 1.5m	DISCONTINUITY DATA		ROCK STRENGTH INDEX	WEATHERING INDEX													
TOTAL CORE %	SOLID CORE %			DIP w.r.t. CORE AXIS	TYPE AND SURFACE DESCRIPTION															
0		Ground Surface (OL) Organic SILT, rootlets, dark brown / black, non-cohesive, dry, loose (TOPSOIL)		1051.20 0.00																
1		(GM) SILTY GRAVEL, fine to coarse, subangular to subrounded, some fine sand, light to medium brown, non-cohesive, dry, loose		1049.98 1.22																10/20 Sand
2		(ML) SILT, some fine to coarse gravel, cobble present, dark brown, cohesive, w<pl, firm		1048.76 2.44																Hydrated Bentonite
3	Geoprobe Sonic Major Drilling	(GM) SILTY GRAVEL, some fine sand, cobbles present, light brown to grey, non-cohesive, wet, loose		1048.15 3.05																10/20 Sand
4																				Slotted Section 05/11/2014
5		BEDROCK, blue / grey, weathered		1046.01 5.18																Slotted Section Sloughing
6		End of DRILLHOLE. NOTE: Standpipe installed to 5.18 m. Measured groundwater level at 4.11 mbgs on March 19, 2014. Measured groundwater level at 3.57 mbgs on June 06, 2014. Measured groundwater level at 3.77 mbgs on August 04, 2014.		1045.71 5.49																

DRILLHOLE - NO GRAPHICS FOR RECOVERY 13-1324-0204.BH_LOGS.GPJ CALGARY.GDT 3/19/15

DEPTH SCALE

1 : 50



LOGGED: JL

CHECKED: JMB

DATA ENTRY: AM

PROJECT No.: 13-1324-0204.1000

RECORD OF BOREHOLE: MW14-5

SHEET 1 OF 1

LOCATION: See Location Plan

DRILLING DATE: March 7, 2014

DATUM: Local

INCLINATION: -90° AZIMUTH: 0°

DRILL RIG:

DRILLING CONTRACTOR:

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (m/hr)	FLUSH	COLOUR % RETURN	FR-FRACTURE	F-FAULT	SM-SMOOTH	FL-FLEXURED	BC-BROKEN CORE	COMMENTS/SAMPLE No
									C-CONCH.FRACT.	J-JOINT	R-ROUGH	U-UNDULATING	MB-MECH. BREAK	
									SH-SHEAR	P-POLISHED	ST-STEPPED	W-WAVY	B-BEDDING	
									VN-VEIN	K-SLICKENSIDED	PL-PLANAR	C-CURVED	CH-CHLORITIZED	
RECOVERY		R.Q.D. %	FRACT. INDEX PER 1.5m	DISCONTINUITY DATA		ROCK STRENGTH INDEX	WEATHERING INDEX							
TOTAL CORE %	SOLID CORE %			DIP w.r.t. CORE AXIS	TYPE AND SURFACE DESCRIPTION									
0		Ground Surface (OL) Organic SILT, trace fine sand, rootlets, non-cohesive, moist, loose to compact		1050.86 0.00										10/20 Sand
1														Hydrated Bentonite
2				1048.72										10/20 Sand
3	Geoprobe Sonic Major Drilling	(GM) SILTY GRAVEL, fine to coarse, subrounded to subangular, trace sand, cobbles present, grey, non-cohesive, dry, loose		1048.72 2.13										Slotted Section
4		(ML) SILT, some gravel, dark brown, cohesive, moist, firm		1046.89 3.96										05/11/2014 ▽
5		(GM) SILTY GRAVEL, fine to coarse, subrounded to subangular, trace sand, cobbles present, grey, non-cohesive, dry, loose --- Some brown silt at 4.6 m		1046.59 4.27										
5		BEDROCK, blue / grey, weathered, brittle		1045.83 5.18										Hydrated Bentonite
6		End of DRILLHOLE.												
6		NOTE: Standpipe installed to 5.03 m.												
6		Measured groundwater level at 4.14 mbgs on March 19, 2014.												
6		Measured groundwater level at 3.70 mbgs on June 06, 2014.												
6		Measured groundwater level at 3.83 mbgs on August 04, 2014.												
7														
8														
9														
10														

DRILLHOLE - NO GRAPHICS FOR RECOVERY 13-1324-0204_BH_LOGS.GPJ CALGARY.GDT 3/19/15

DEPTH SCALE

1 : 50



LOGGED: JL

CHECKED: JMB

DATA ENTRY: AM

PROJECT No.: 13-1324-0204.1000

RECORD OF BOREHOLE: MW14-6A

SHEET 1 OF 1

LOCATION: See Location Plan

DRILLING DATE: March 11, 2014

DATUM: Local

INCLINATION: -90° AZIMUTH: 0°

DRILL RIG:

DRILLING CONTRACTOR:

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (mm)	FLUSH	COLOUR	% RETURN	FR-FRACTURE		F-FAULT		SM-SMOOTH		FL-FLEXURED		BC-BROKEN CORE		COMMENTS/SAMPLE No		
										C-CONCH.FRACT.		J-JOINT		R-ROUGH		U-UNDULATING		MB-MECH. BREAK				
										SH-SHEAR		P-POLISHED		ST-STEPPED		W-WAVY		B-BEDDING				
VN-VEIN		K-SLICKENSIDED		PL-PLANAR		C-CURVED		CH-CHLORITIZED		ROCK STRENGTH INDEX	WEATHERING INDEX											
TOTAL CORE %	SOLID CORE %	R.Q.D. %	FRACT. INDEX PER 1.5m	DISCONTINUITY DATA		DIP w.r.t. CORE AXIS	TYPE AND SURFACE DESCRIPTION															
0		Ground Surface (OL) Organic SILT, trace fine sand, rootlets, medium to dark brown, non-cohesive, dry, loose (TOPSOIL)		1050.60 0.00																		
1		(SM) SILTY SAND, very fine, medium brown, non-cohesive, dry, loose		1049.38 1.22																		
2		--- Trace oxidation at 2.5 m																				
3		(SP) SAND and (GP) GRAVEL, some silt, fine to coarse, subrounded to subangular gravel, medium brown, non-cohesive, moist, loose		1047.86 2.74																		
4	Geoprobe Sonic Major Drilling	--- Gravel is rounded at 4.3 m																				Hydrated Bentonite
5		BEDROCK, siltstone like pieces, fine gravel, grey, weathered		1045.73 4.88																		
6		BEDROCK, blue / grey, weathered, brittle		1045.12 5.49																		
7																						10/20 Sand
8		End of DRILLHOLE.		1042.98 7.62																		Slotted Section
9		NOTE: Standpipe installed to 7.6 m. Measured groundwater level at 6.75 mbgs on March 19, 2014. Measured groundwater level at 4.14 mbgs on June 06, 2014. Measured groundwater level at 4.03 mbgs on August 04, 2014.																				

DRILLHOLE - NO GRAPHICS FOR RECOVERY 13-1324-0204.BH_LOGS.GPJ CALGARY.GDT 3/19/15

DEPTH SCALE

1 : 50



LOGGED: JL

CHECKED: JMB

DATA ENTRY: AM

PROJECT No.: 13-1324-0204.1000

RECORD OF BOREHOLE: MW14-6B

SHEET 1 OF 1

LOCATION: See Location Plan

DRILLING DATE: March 12, 2014

DATUM: Local

INCLINATION: -90° AZIMUTH: 0°

DRILL RIG:

DRILLING CONTRACTOR:

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (mm)	FLUSH	COLOUR % RETURN	FR-FRACTURE	F-FAULT	SM-SMOOTH	FL-FLEXURED	BC-BROKEN CORE	COMMENTS/SAMPLE No
									C-CONCH.FRACT.	J-JOINT	R-ROUGH	U-UNDULATING	MB-MECH. BREAK	
									SH-SHEAR	P-POLISHED	ST-STEPPED	W-WAVY	B-BEDDING	
RECOVERY		R.Q.D. %	FRACT. INDEX PER 1.5m	DISCONTINUITY DATA		ROCK STRENGTH INDEX	WEATHERING INDEX							
TOTAL CORE %	SOLID CORE %			DIP w.r.t. CORE AXIS	TYPE AND SURFACE DESCRIPTION									
0		Ground Surface (OL) Organic SILT, trace fine sand, rootlets, medium brown, non-cohesive, moist, loose		1050.65 0.00										10/20 Sand
1		(SM) SILTY SAND, very fine, medium brown, non-cohesive, dry, compact		1049.43 1.22										Hydrated Bentonite 10/20 Sand
2		(SP) Fine SAND and (GP) fine to coarse subrounded to subangular GRAVEL, some silt, light to medium brown, cobble present, non-cohesive, dry, loose		1047.91 2.74										Slotted Section
3	Geoprobe Sonic Major Drilling	--Wet at 3.7 m --Gravel is rounded at 4.0 m		1045.93 4.88										04/11/2014 ▽
4		BEDROCK, yellow, oxidation, weathered		1045.77 4.88										10/20 Sand Hydrated Bentonite
5		BEDROCK, blue / grey, brittle, weathered		1045.47 5.18										
6		End of DRILLHOLE.												
7		NOTE: Standpipe installed to 4.8 m. Measured groundwater level at 4.04 mbgs on March 19, 2014. Measured groundwater level at 3.64 mbgs on June 06, 2014. Measured groundwater level at 3.75 mbgs on August 04, 2014.												
8														
9														
10														

DRILLHOLE - NO GRAPHICS FOR RECOVERY 13-1324-0204_BH_LOGS.GPJ CALGARY.GDT 3/19/15

DEPTH SCALE

1 : 50



LOGGED: JL

CHECKED: JMB

DATA ENTRY: AM

PROJECT No.: 13-1324-0204.1000

RECORD OF BOREHOLE: MW14-7

SHEET 1 OF 1

LOCATION: See Location Plan

DRILLING DATE: March 12, 2014

DATUM: Local

INCLINATION: -90° AZIMUTH: 0°

DRILL RIG:

DRILLING CONTRACTOR:

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (mm)	FLUSH	COLOUR	% RETURN	FR-FRACTURE		F-FAULT		SM-SMOOTH		FL-FLEXURED		BC-BROKEN CORE		COMMENTS/SAMPLE No	
										C-CONCH.FRACT.		J-JOINT		R-ROUGH		U-UNDULATING		MB-MECH. BREAK			
										SH-SHEAR		P-POLISHED		ST-STEPPED		W-WAVY		B-BEDDING			
VN-VEIN		K-SLICKENSIDED		PL-PLANAR		C-CURVED		CH-CHLORITIZED		ROCK STRENGTH INDEX	WEATHERING INDEX										
TOTAL CORE %	SOLID CORE %	R.Q.D. %	FRACT. INDEX PER 1.5m	DISCONTINUITY DATA		DIP w.r.t. CORE AXIS	TYPE AND SURFACE DESCRIPTION														
0		Ground Surface (OL) Organic SILT, trace fine sand, rootlets, dark brown, non-cohesive, moist, loose (TOPSOIL)		1050.46 0.00																	
1				1049.24 1.22																	10/20 Sand
2	Geoprobe Sonic Major Drilling	FILL - (SM) SILTY SAND, fine to very fine, trace rootlets, medium brown mottled grey / black, trace oxidation, non-cohesive, dry, loose --- Moist to wet at 2.5 m																			Hydrated Bentonite
3		(SP) SAND and (GP) GRAVEL, fine to coarse, subangular to rounded --- Cobble or boulder at 3.7 m		1047.41 3.05																	10/20 Sand
4		BEDROCK, blue / grey, brittle, weathered		1046.80 3.66 1046.50 3.96																	Slotted Section
4		End of DRILLHOLE.																			04/08/2014 ▽
5		NOTE: Standpipe installed to 3.7 m. Measured groundwater level at 3.58 mbgs on March 19, 2014.																			
6		Measured groundwater level at 3.53 mbgs on June 06, 2014.																			
7		Borehole dry on November 05, 2014.																			
8																					
9																					
10																					

DRILLHOLE - NO GRAPHICS FOR RECOVERY 13-1324-0204.BH_LOGS.GPJ CALGARY.GDT 3/19/15

DEPTH SCALE

1 : 50



LOGGED: JL

CHECKED: JMB

DATA ENTRY: AM

PROJECT No.: 13-1324-0204.1000

RECORD OF BOREHOLE: MW14-8

SHEET 1 OF 1

LOCATION: See Location Plan

DRILLING DATE: March 6, 2014

DATUM: Local

INCLINATION: -90° AZIMUTH: 0°

DRILL RIG:

DRILLING CONTRACTOR:

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (mm)	FLUSH	COLOUR % RETURN	FR-FRACTURE		F-FAULT		SM-SMOOTH		FL-FLEXURED		BC-BROKEN CORE		COMMENTS/SAMPLE No			
									C-CONCH.FRACT.		J-JOINT		R-ROUGH		U-UNDULATING		MB-MECH. BREAK					
									SH-SHEAR		P-POLISHED		ST-STEPPED		W-WAVY		B-BEDDING					
									VN-VEIN		K-SLICKENSIDED		PL-PLANAR		C-CURVED		CH-CHLORITIZED					
RECOVERY		R.Q.D. %	FRACT. INDEX PER 1.5m	DISCONTINUITY DATA		ROCK STRENGTH INDEX	WEATHERING INDEX															
TOTAL CORE %	SOLID CORE %			DIP w.r.t. CORE AXIS	TYPE AND SURFACE DESCRIPTION																	
0		Ground Surface NO RECOVERY, hydrovaced, silty sand and gravel, cobbles		1050.44 0.00																		
1																					10/20 Sand Hydrated Bentonite 10/20 Sand	
2		(SM) SILTY SAND, fine to coarse, some fine to coarse gravel, cobbles present, medium brown, non-cohesive, moist, loose (SP) SAND and (GP) GRAVEL, fine to coarse, subrounded to rounded, some silt, medium brown, non cohesive, dry, loose		1048.61 1.83 1048.31 2.13																	Slotted Section	
3	Geoprobe Sonic Major Drilling																				05/11/2014 ▽	
4		-- Cobbles present, wet at 4.0 m																				
5		BEDROCK, blue / grey, weathered		1045.87 4.57																	Sloughing	
5		End of DRILLHOLE.		1045.26 5.18																		
6		NOTE: Standpipe installed to 4.1 m. Sloughing to 4.1 m. Measured groundwater level at 3.04 mbgs on June 06, 2014. Measured groundwater level at 3.22 mbgs on August 04, 2014. Borehole frozen on March 19, 2014.																				
7																						
8																						
9																						
10																						

DRILLHOLE - NO GRAPHICS FOR RECOVERY 13-1324-0204.BH_LOGS.GPJ CALGARY.GDT 3/19/15

DEPTH SCALE

1 : 50



LOGGED: JL

CHECKED: JMB

DATA ENTRY: AM

PROJECT No.: 13-1324-0204.1000

RECORD OF BOREHOLE: MW14-9

SHEET 1 OF 1

LOCATION: See Location Plan

DRILLING DATE: March 6, 2014

DATUM: Local

INCLINATION: -90° AZIMUTH: 0°

DRILL RIG:

DRILLING CONTRACTOR:

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (mm/hr)	FLUSH	COLOUR % RETURN	FR-FRACTURE		F-FAULT		SM-SMOOTH		FL-FLEXURED		BC-BROKEN CORE		COMMENTS/SAMPLE No			
									C-CONCH.FRACT.		J-JOINT		R-ROUGH		U-UNDULATING		MB-MECH. BREAK					
									SH-SHEAR		P-POLISHED		ST-STEPPED		W-WAVY		B-BEDDING					
									VN-VEIN		K-SLICKENSIDED		PL-PLANAR		C-CURVED		CH-CHLORITIZED					
RECOVERY		R.Q.D. %	FRACT. INDEX PER 1.5m	DISCONTINUITY DATA		ROCK STRENGTH INDEX	WEATHERING INDEX															
TOTAL CORE %	SOLID CORE %			DIP w.r.t. CORE AXIS	TYPE AND SURFACE DESCRIPTION																	
0		Ground Surface NO RECOVERY, hydrovaced, silty gravel and cobbles		1053.06 0.00																		
1	Geoprobe Sonic Major Drilling	(GM) SILTY GRAVEL, fine to coarse, subrounded to rounded, trace sand, cobbles present, possible boulders, light brown, trace very fine white powder, non-cohesive, dry, loose		1051.84 1.22																	10/20 Sand Hydrated Bentonite 10/20 Sand	
2																						
3																						
4																						
5		BEDROCK, grey, brittle, weathered		1048.49 4.57																		Slotted Section Hydrated Bentonite
5		End of DRILLHOLE.		1048.18 4.88																		
6		NOTE: Standpipe installed to 4.0 m. Borehole dry on March 20, 2014, June 06, 2014, August 04, 2014, November 04, 2014.																				
7																						
8																						
9																						
10																						

DRILLHOLE - NO GRAPHICS FOR RECOVERY 13-1324-0204.BH_LOGS.GPJ CALGARY.GDT 3/19/15

DEPTH SCALE

1 : 50



LOGGED: JL

CHECKED: JMB

DATA ENTRY: AM

PROJECT No.: 13-1324-0204.1000

RECORD OF BOREHOLE: VP14-01

SHEET 1 OF 1

LOCATION: See Location Plan

DRILLING DATE: March 12, 2014

DATUM: Local

INCLINATION: -90° AZIMUTH: 0°

DRILL RIG:

DRILLING CONTRACTOR:

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (mm)	FLUSH	COLOUR % RETURN	FR-FRACTURE		F-FAULT		SM-SMOOTH		FL-FLEXURED		BC-BROKEN CORE		COMMENTS/SAMPLE No		
									C-CONCH.FRACT.		J-JOINT		R-ROUGH		U-UNDULATING		MB-MECH. BREAK				
									SH-SHEAR		P-POLISHED		ST-STEPPED		W-WAVY		B-BEDDING				
									VN-VEIN		K-SLICKENSIDED		PL-PLANAR		C-CURVED		CH-CHLORITIZED				
RECOVERY		R.Q.D. %	FRACT. INDEX PER 1.5m	DISCONTINUITY DATA		ROCK STRENGTH INDEX	WEATHERING INDEX														
TOTAL CORE %	SOLID CORE %			DIP w.r.t. CORE AXIS	TYPE AND SURFACE DESCRIPTION																
0		Ground Surface (OL) Organic SILT, trace fine sand, rootlets, dark brown, non-cohesive, moist, loose (TOPSOIL)		0.00																Flush Mount Sand	
1	Geoprobe Sonic Major Drilling	(SM) SILTY SAND, fine to very fine, medium brown with grey / black mottling, trace oxidation, non-cohesive, moist, loose		1.22																Hydrated Bentonite Chips	
2		(SM) Very fine SILTY SAND and fine to coarse rounded GRAVEL, cobbles present, medium brown, trace oxidation, non cohesive, wet, loose		2.44																	Sand Vapour Probe
3		--- Wood fragments, old, rounded, worn at 3.4 m		3.66																	Hydrated Bentonite Chips
4		BEDROCK, grey / blue, weathered, very weak		3.96																	
4		End of DRILLHOLE.		3.96																	
5		NOTES: Vapour probes installed at 1.5 m and 2.7 m upon borehole completion.																			
6																					
7																					
8																					
9																					
10																					

DRILLHOLE - NO GRAPHICS FOR RECOVERY 13-1324-0204_BH_LOGS.GPJ CALGARY.GDT 3/19/15

DEPTH SCALE

1 : 50



LOGGED: JL

CHECKED: JMB

DATA ENTRY: AM

PROJECT No.: 13-1324-0204.1000

RECORD OF BOREHOLE: VP14-02

SHEET 1 OF 1

LOCATION: See Location Plan

DRILLING DATE: March 13, 2014

DATUM: Local

INCLINATION: -90° AZIMUTH: 0°

DRILL RIG:

DRILLING CONTRACTOR:

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (mm)	FLUSH	COLOUR	% RETURN	FR-FRACTURE		F-FAULT		SM-SMOOTH		FL-FLEXURED		BC-BROKEN CORE		COMMENTS/SAMPLE No			
										C-CONCH.FRACT.	J-JOINT	R-ROUGH	U-UNDULATING	MB-MECH. BREAK	SH-SHEAR	P-POLISHED	ST-STEPPED	W-WAVY	B-BEDDING				
										VN-VEIN	K-SLICKENSIDED	PL-PLANAR	C-CURVED	CH-CHLORITIZED	RECOVERY TOTAL CORE %	SOLID CORE %	R.Q.D. %	FRACT. INDEX PER 1.5m	DISCONTINUITY DATA		ROCK STRENGTH INDEX	WEATHERING INDEX	
										DIP w.r.t. CORE AXIS	TYPE AND SURFACE DESCRIPTION												
0		Ground Surface (OL) Organic SILT, trace fine sand, rootlets, dark brown with trace tan mottling, non-cohesive, moist, loose (TOPSOIL)		0.00																			
1	Geoprobe Sonic Major Drilling	FILL - (ML) SILT, some gravel, angular to subrounded, trace fine sand, cobbles present, rootlets present, dark brown, trace oxidation, non-cohesive, dry, loose to compact		1.22																			
2		(SM) SILTY SAND, fine to very fine, dark brown, non-cohesive, moist, loose to compact		2.44																			
3		--- 40-50% Fine to coarse, rounded gravel, wet at 3.0 m																					
4		--- Gravel becomes angular at 3.6 m --- Possible bedrock or boulder at 4.0 m																					
4		End of DRILLHOLE.		3.96																			
5		NOTES: Vapour probes installed at 1.5 m and 2.7 m upon borehole completion.																					
6																							
7																							
8																							
9																							
10																							

DRILLHOLE - NO GRAPHICS FOR RECOVERY 13-1324-0204_BH_LOGS.GPJ CALGARY.GDT 3/19/15

DEPTH SCALE

1 : 50



LOGGED: JL

CHECKED: JMB

DATA ENTRY: AM

PROJECT No.: 13-1324-0204.1000

RECORD OF BOREHOLE: VP14-03

SHEET 1 OF 1

LOCATION: See Location Plan

DRILLING DATE: March 14, 2014

DATUM: Local

INCLINATION: -90° AZIMUTH: 0°

DRILL RIG:

DRILLING CONTRACTOR:

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (mm)	FLUSH	COLOUR % RETURN	FR-FRACTURE	F-FAULT	SM-SMOOTH	FL-FLEXURED	BC-BROKEN CORE	COMMENTS/SAMPLE No
									C-CONCH.FRACT.	J-JOINT	R-ROUGH	U-UNDULATING	MB-MECH. BREAK	
									SH-SHEAR	P-POLISHED	ST-STEPPED	W-WAVY	B-BEDDING	
									VN-VEIN	K-SLICKENSIDED	PL-PLANAR	C-CURVED	CH-CHLORITIZED	
RECOVERY		R.Q.D. %	FRACT. INDEX PER 1.5m	DISCONTINUITY DATA		ROCK STRENGTH INDEX	WEATHERING INDEX							
TOTAL CORE %	SOLID CORE %			TYPE AND SURFACE DESCRIPTION										
0		Ground Surface (OL) Organic SILT, trace fine sand, rootlets, dark brown, non-cohesive, moist to wet, loose (TOPSOIL)	[Symbolic Log]	0.00										Hydrated Bentonite Chips
1														
2	Geoprobe Sonic Major Drilling	FILL - (SM) SILTY SAND, fine to very fine, trace gravel, some rootlets, medium brown, non-cohesive, dry, compact	[Symbolic Log]	1.22										Sand Vapour Probe Hydrated Bentonite Chips
3		(SP) SAND and (GP) GRAVEL, fine to coarse, subrounded to angular, trace silt, cobbles present, medium brown to light brown / grey, non-cohesive, dry, loose	[Symbolic Log]	2.13										Sand Vapour Probe Hydrated Bentonite Chips
4		End of DRILLHOLE.		3.96										Sloughing
5		NOTES: Vapour probes installed at 1.8 m and 3.0 m upon borehole completion. Sloughing to 3.4 m.												
6														
7														
8														
9														
10														

DRILLHOLE - NO GRAPHICS FOR RECOVERY 13-1324-0204_BH_LOGS.GPJ CALGARY.GDT 3/19/15

DEPTH SCALE

1 : 50



LOGGED: JL

CHECKED: JMB

DATA ENTRY: AM

PROJECT No.: 13-1324-0204.1000

RECORD OF BOREHOLE: VP14-04

SHEET 1 OF 1

LOCATION: See Location Plan

DRILLING DATE: March 14, 2014

DATUM: Local

INCLINATION: -90° AZIMUTH: 0°

DRILL RIG:

DRILLING CONTRACTOR:

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (mm)	FLUSH	RECOVERY TOTAL CORE % SOLID CORE %	R.Q.D. %	FRACT. INDEX PER 1.5m	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	ROCK STRENGTH INDEX	WEATH- ERING INDEX	COMMENTS/SAMPLE No					
															FR-FRACTURE	F-FAULT	SM-SMOOTH	FL-FLEXURED	BC-BROKEN CORE
															C-CONCH.FRACT.	J-JOINT	R-ROUGH	U-UNDULATING	MB-MECH. BREAK
															SH-SHEAR	P-POLISHED	ST-STEPPED	W-WAVY	B-BEDDING
VN-VEIN	K-SLICKENSIDED	PL-PLANAR	C-CURVED	CH-CHLORITIZED															
0		Ground Surface (OL) Organic SILT, trace fine sand, rootlets, dark brown, non-cohesive, moist, loose (TOPSOIL)	[Symbolic Log: Dotted pattern]	0.00											Sand				
1		FILL - (SM) SILTY SAND, very fine, trace rootlets and wood fragments, dark brown, non-cohesive, moist, loose to compact	[Symbolic Log: Cross-hatch pattern]	0.61											Hydrated Bentonite Chips Sand Vapour Probe				
2	Geoprobe Sonic Major Drilling	--- Trace coarse gravel at 1.8 m	[Symbolic Log: Cross-hatch pattern]																
3		(SP) SAND and (GP) GRAVEL, fine to coarse, angular to subrounded, some silt, cobbles present, light brown / grey, non-cohesive, dry, loose	[Symbolic Log: Sand/Gravel pattern]	2.44											Hydrated Bentonite Chips Sand Vapour Probe				
4		End of DRILLHOLE. NOTES: Vapour probes installed at 1.2 m and 2.4 m upon borehole completion.	[Symbolic Log: Dotted pattern]	3.96											Hydrated Bentonite Chips				
5																			
6																			
7																			
8																			
9																			
10																			

DRILLHOLE - NO GRAPHICS FOR RECOVERY 13-1324-0204_BH_LOGS.GPJ CALGARY.GDT 3/19/15

DEPTH SCALE

1 : 50



LOGGED: JL

CHECKED: JMB

DATA ENTRY: AM

PROJECT No.: 13-1324-0204.1000

RECORD OF BOREHOLE: VP14-05

SHEET 1 OF 1

LOCATION: See Location Plan

DRILLING DATE: March 14, 2014

DATUM: Local

INCLINATION: -90° AZIMUTH: 0°

DRILL RIG:

DRILLING CONTRACTOR:

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (mm)	FLUSH	COLOUR % RETURN	FR-FRACTURE		F-FAULT		SM-SMOOTH		FL-FLEXURED		BC-BROKEN CORE		COMMENTS/SAMPLE No		
									C-CONCH.FRACT. J-JOINT		R-ROUGH		R-ROUGH		U-UNDULATING		MB-MECH. BREAK				
									SH-SHEAR		P-POLISHED		ST-STEPPED		W-WAVY		B-BEDDING				
									VN-VEIN		K-SLICKENSIDED		PL-PLANAR		C-CURVED		CH-CHLORITIZED				
RECOVERY		R.Q.D. %	FRACT. INDEX PER 1.5m	DISCONTINUITY DATA		ROCK STRENGTH INDEX	WEATHERING INDEX														
TOTAL CORE %	SOLID CORE %			DIP w.r.t. CORE AXIS	TYPE AND SURFACE DESCRIPTION																
0		Ground Surface (OL) Organic SILT, trace fine sand, rootlets, dark brown, non-cohesive, moist to wet, loose (TOPSOIL)		0.00																Sand	
0.46		FILL - (SM) SILTY SAND, very fine, some rootlets and wood fragments, medium brown, non-cohesive, dry, loose		0.46																	Hydrated Bentonite Chips
2.13	Geoprobe Sonic Major Drilling	(SP) SAND and (GP) GRAVEL, fine to coarse, subrounded, medium to light brown, non-cohesive, dry, loose		2.13																	Sand Vapour Probe
2.74		(SM) SILTY SAND, very fine, medium brown, non-cohesive, moist, loose		2.74																	Hydrated Bentonite Chips
3.7		--- Some grey mottling, oxidation, cobble present at 3.7 m																			Sand Vapour Probe
4		End of DRILLHOLE.		3.96																	Hydrated Bentonite Chips
5		NOTES: Vapour probes installed at 1.2 m and 2.4 m upon borehole completion.																			
6																					
7																					
8																					
9																					
10																					

DRILLHOLE - NO GRAPHICS FOR RECOVERY 13-1324-0204_BH_LOGS.GPJ CALGARY.GDT 3/19/15

DEPTH SCALE

1 : 50



LOGGED: JL

CHECKED: JMB



APPENDIX C

Summary of Quality Assurance/Quality Control Information



APPENDIX C

Summary of Quality Assurance/Quality Control Information - North Bow Supplementary Subsurface Investigation and Vapour Intrusion Assessment

1.0 QUALITY ASSURANCE/QUALITY CONTROL

To ensure that the sampling and analytical data were interpretable, meaningful and reproducible, Golder staff followed a program-specific QA/QC protocol. This involved adhering to QA/QC measures in both the collection (field program) and analysis (laboratory) of samples. The following discussion provides a summary of the QA/QC measures implemented by Golder during the field program and the results of the QC testing.

1.1 Field Sampling QC Measures

The following general Quality Control measures were used in the collection, preservation and shipment of sample:

- Sampling methods were consistent with established Golder protocols and provincial/federal requirements;
- Field notes were recorded during all stages of the investigation;
- Sample depths were measured in the field and recorded in field notes;
- Soil samples were obtained using clean, dedicated, plastic sampling sleeves;
- To minimize the potential for cross-contamination of samples, all equipment was washed with laboratory grade detergent between each sampling event and rinsed with distilled water. Field staff wore disposable nitrile gloves to minimize the potential for cross-contamination of samples;
- Groundwater samples were collected using dedicated sampling equipment;
- Samples were submitted to the laboratory under chain-of-custody protocols using forms that did not identify the sampling locations, expected concentrations, or duplicate samples; and
- Groundwater and soil samples were stored on ice in coolers prior to submission to the analytical laboratory.

Additional QA/QC measures taken in the field for collection of soil vapour and sub-slab vapour samples included:

- Field instruments were calibrated daily and/or bump-tested;
- New Teflon tubing was used for each sampling location/event to avoid cross contamination;
- The sampling flow rate and vacuum was checked for each probe to check whether there were blockages (see previous discussion regarding probe performance check);
- Tedlar™ bags were used for collecting soil vapour samples for field screening;
- The probes were completed with valves, which were shut when the probe was not being purged or sampled;
- All sampling materials were stored away from potential sources of contamination;
- The SUMMA canister vacuums were measured using a vacuum gauge that was part of the regulator supplied by Maxxam Analytics; and
- Leak testing was conducted prior to collection of each soil vapour and sub-slab vapour sample (see additional discussion below).



APPENDIX C

Summary of Quality Assurance/Quality Control Information - North Bow Supplementary Subsurface Investigation and Vapour Intrusion Assessment

1.2 Soil and Groundwater Field and Laboratory QC Tests

Soil and groundwater field QC test samples were used to assess the reliability of field sampling procedures, and consisted of analysis of field duplicates to evaluate the reproducibility or precision of the sampling methodology, and analysis. The results of field groundwater duplicate analyses are provided as part of Golder's data quality review information provided in Appendix D. No soil duplicates were collected as part of this investigation.

The measure of the reproducibility or precision of the data is quantified by calculating the Relative Percent Difference (RPD) of duplicate sample concentrations. The RPD is calculated as follows:

$$RPD\% = \left(\frac{|S - D|}{\frac{1}{2}(S + D)} \right) \times 100$$

Where: S = original sample concentration

D = duplicate sample concentration

Theoretically, duplicate samples should have identical chemical concentrations (*i.e.*, RPD = 0). However, due to factors such as sample matrix heterogeneity, natural variations or variations in sample collection, handling or analysis, small variations in chemical concentration may occur (*i.e.*, RPD > 0). Measures of precision such as RPD are influenced by how close the analytical value is to the detection limit. Consequently, the use of the RPD should be limited to analytical values that are greater than five times the detection limit (BC MOE 1998). For the purpose of this investigation, RPD values greater than 30% for organic compounds in groundwater duplicates are considered to represent an unacceptable level of precision. However, the reproducibility of duplicate analyses at concentrations near the reportable detection limit (RDL) can be poor, resulting in RPD values of greater than the allowable limits. Therefore, RPDs were not calculated for parameters with concentrations less than approximately five times the RDL.

The RPD quality objectives for the field duplicate analyses were met for all compounds during each quarterly sampling event with the exception of a number of PAHs in the duplicate groundwater sample for MW14-4A during the second and fourth quarterly sampling events. The PAH data for MW14-4A was further reviewed and found to be reliable as either the concentration reported in both the parent sample and duplicate sample were above the AB Tier 1 Guidelines, or no AB Tier 1 Guidelines are available for the compounds in questions. As such, it was determined that the elevated RPDs would not have a material effect on the interpretation of results. Sample non-homogeneity was interpreted to be the root cause of the elevated RPDs (see Appendix D).

Each Maxxam sample analysis batch included at least one method matrix spike, spiked blank, method blank and one laboratory duplicate. Laboratory QC data including matrix spikes, method blanks, and surrogate recoveries were reviewed as part of Golder's soil and groundwater data quality review process. Review of the laboratory QC analyses suggests the laboratory data is accurate, reproducible and can be relied upon for environmental site investigation purposes. Golder's data quality review checklists and summaries are presented in Appendix D.



APPENDIX C

Summary of Quality Assurance/Quality Control Information - North Bow Supplementary Subsurface Investigation and Vapour Intrusion Assessment

1.3 Soil Vapour Field QC Tests

Soil vapour field QC tests and samples were used to assess the reliability of field sampling procedures. The QC program consisted of analysis of duplicate SUMMA canister samples to evaluate the reproducibility or precision of the sampling methodology, collection of trip blank samples, as well as leak testing.

SUMMA canister duplicates were collected using laboratory supplied “Y” splitters and flow regulators. As described earlier, the measure of the reproducibility or precision of the data is quantified by calculating the RPD of duplicate sample concentrations. Where the concentration of a given parameter was less than five times the analytical method detection limit (MDL) or reporting limit (RL), the results are less precise and a RPD was not calculated. For soil vapour duplicate samples, the target RPD is less than 50 percent (%); however, a RPD greater than 50% for soil vapour is not uncommon and may reflect a combination of sampling variability, which could include variability in sampling flow rates between the two samples, variable sorption to sampling materials, analytical variability, and other factors.

The RPD quality objectives for the field duplicate analyses were met for all compounds during each quarterly sampling event with the exception of benzene in the duplicate of Home “B”-IN1A, and ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,2,3-trimethylbenzene and aliphatic and aromatic hydrocarbon (C₈ – C₁₆) in the duplicate of MW10-06 (well) collected during the third quarterly sampling event. Further analysis of the duplicate data indicates that the data for ethylbenzene, 1,2,4-trimethylbenzene, 1,2,3-trimethylbenzene and aliphatic and aromatic hydrocarbon (C₈ – C₁₆) is considered reliable for the purposes of this investigation as the differences in duplicate results are not expected to have a material effect on the interpretation of results. Rational for this conclusion is presented in Appendix D. Results for duplicate analysis for benzene and xylenes indicate that benzene and xylenes data collected during the third quarterly sampling event should be interpreted with caution. As previously discussed, RPDs greater than 50% for soil vapour are not uncommon.

The data quality objective for trip blank samples was less than five times the RDL. The results of trip blank samples collected during each sampling event were evaluated and all compounds were found to meet the data quality objective.

Leak tracer tests were conducted on newly installed soil vapour probes and sub-slab probes prior to the first quarterly sampling event. Leak tracer testing was conducted concurrent with purging and field screening of the probes. A 5 L plastic bucket was used as a shroud. The shroud was placed over the well/probe and valve and filled with a minimum of 30% helium during the well/probe purging. The well/probe was purged and the helium concentration in the Tedlar bag was measured using a Dielectric[®] MGD-2002 helium detector.

To assess the results of the leak test, the percent leakage was calculated, as the helium concentration measured in the soil gas sample divided by the helium concentration beneath the shroud (multiplied by 100). Guidance documents indicate that leakage is of potential significant concern when the leakage exceeds 1 to 10% (ITRC, 2007; Golder, 2008b). The measured leakage of newly installed soil vapour probes ranged from zero to 1.25%. The leak testing results indicate minor leakage for a few samples but are considered within acceptable limits.

Shut-in vacuum tests were also completed on each soil vapour and sub-slab probe prior to SUMMA canister sampling during each quarterly sampling event. Shut-in vacuum tests were completed by connecting the SUMMA canisters to the probe (but keeping the valves on the probe and SUMMA closed) and applying a vacuum to the system using a hand pump. A vacuum gauge was monitored to determine if the system held the



APPENDIX C

Summary of Quality Assurance/Quality Control Information - North Bow Supplementary Subsurface Investigation and Vapour Intrusion Assessment

vacuum. If a vacuum loss was identified, the connections were tightened and the shut-in test redone. The probe was not sampled until the shut-in test was passed.

The vacuums in the SUMMA canisters were measured before and after sampling in the field, and by the laboratory upon receipt by the laboratory. This was completed to evaluate if the canister had leaked during transportation from the Site and to the laboratory. Vacuum measurement completed by the laboratory upon receipt of the samples indicated that a residual vacuum remained in each of the canisters.

1.4 Soil Vapour Laboratory QC Tests

Maxxam Analytics completed the laboratory analysis of vapour samples for this investigation. Maxxam is certified by CALA for the analytical methods used for this program. Internal quality control data provided by Maxxam was reviewed with the goal of determining whether internal laboratory data quality objectives were generally met with respect to the following QC tests:

- Cleaning and certifying of canisters;
- Samples analyzed within holding times;
- Laboratory duplicates or replicates;
- Method blanks, which should indicate concentrations below the detection limits for the specific analyses;
- Analysis of reference samples, including standard reference materials, surrogates, spikes and/or control samples; and
- Reported concentrations should not exceed the instrument calibration range.

As previously discussed, SUMMA canisters used for sub-slab vapour and indoor air sampling were individually cleaned and certified by the laboratory prior to use in the investigation. These results are included in Appendix A. All other canisters were batch cleaned and certified in accordance with U.S. EPA Method TO14A. At the end of the cleaning, evacuation, and pressurization cycles, one canister was selected and was pressurized with Zero Air. This canister was then analyzed via TO14A on a gas chromatograph/mass spectrometer (GC/MS). The canister must have been found to contain <0.2 ppbv concentration of all target analytes in order for the batch to have been considered clean. Each canister also underwent a leak check prior to shipment.

Each Maxxam sample analysis batch included at least one method matrix spike, spiked blank, method blank and one laboratory duplicate. Laboratory QC data including matrix spikes, method blanks, and surrogate recoveries were reviewed as part of Golder's data quality review process. Review of the laboratory QC analyses suggests the laboratory data is accurate, reproducible and can be relied upon for the purposes of this investigation. One exception was the results for naphthalene measured in MW10-06 (well) during the third quarterly sampling event as the naphthalene concentration measured was over the calibration range. Several subsequent dilutions were completed but the results did not match the original data. As such, naphthalene results for this location during the third quarterly event should be interpreted with caution. Naphthalene data collected during other quarterly events is considered reliable. Golder's data quality review checklists and summaries are presented in Appendix D.

From the information provided in the QA/QC analyses from the laboratories, the precision and accuracy of the lab data is generally considered to be acceptable for the purposes of this investigation program.



APPENDIX D

Soil and Groundwater Data Quality Review

GOLDER DATA QUALITY REVIEW CHECKLIST

Site Location: BROADVIEW & 19TH

Sampling Date: November 17, 2014

Golder Project Number: 13-1324-0204

Laboratory: Maxxam - Calgary

Lab Submission Number: B4A4551

Was the Cooler Received at the lab under a sealed and intact custody seal? Yes
 Was proper chain of custody of the samples documented and kept? Yes
 Were sample temperatures acceptable when they reached lab?: Yes
 Were all samples analyzed and extracted within hold times?: Yes
 Has lab warranted all tests were in statistical control in CoA?: Yes
 Was sufficient sample provided for the requested analysis? Yes
 Has lab warranted all samples were analyzed with limited headspace present?: Yes

Are All Laboratory QC Within Acceptance Criteria (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Surrogate Recovery	X			All laboratory QC results are within acceptance criteria.
Method Blank Concentration	X			
Laboratory Duplicate RPD	X			
Matrix Spike Recovery	X			
Blank Spike Recovery	X			

Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Field Blank Concentration	X			Field duplicate samples MW14-4A and MW1 exceed the alert limit for multiple parameters.
Trip Blank Concentration			X	
Field Duplicate RPD		X		All remaining field QC samples are within alert limits.

Is data considered reliable (Yes/No/Suspect)? Yes

If answer is "No" or "Suspect", describe and provide rationale:

Data Reviewed by (Print): Lori Lake

Data Reviewed by (Signature): *Lori Lake*

Date: December 1, 2014

Relative Percent Difference Calculations - Water

Sample Location	Units	Alert Limit	RDL	5X RDL	Are the results >5X RDL	MW14-4A	MW1	RPD
Sample Collection Date						November 17, 2014	November 17, 2014	
Laboratory Sample ID						LD9182	LD9183	
Hydrocarbons								
Benzene	mg/L	>30%	0.00040	0.002	yes	0.02	0.02	0
Toluene	mg/L	>30%	0.00040	0.002	yes	0.0058	0.0057	2
Ethylbenzene	mg/L	>30%	0.00040	0.002	no	0.0018	0.0014	n/c
m & p-Xylene	mg/L	>30%	0.00080	0.004	yes	0.029	0.029	0
o-Xylene	mg/L	>30%	0.00040	0.002	yes	0.063	0.062	2
Xylenes (Total)	mg/L	>30%	0.00080	0.004	yes	0.093	0.091	2
F1 (C ₆ -C ₁₀) - BTEX	mg/L	>30%	0.10	0.5	no	0.14	0.22	n/c
(C6-C10)	mg/L	>30%	0.10	0.5	no	0.27	0.34	n/c
F2 (C ₁₀ -C ₁₆)	mg/L	>30%	0.10	0.5	yes	4.1	4.5	9
Volatile Organics								
Total Trihalomethanes	ug/L	>30%	0.0020	0.01	no	<0.0020	<0.0020	n/c
Bromodichloromethane	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Bromoform	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Bromomethane	ug/L	>30%	0.0020	0.01	no	<0.0020	<0.0020	n/c
Carbon tetrachloride	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Chlorobenzene	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Chlorodibromomethane	ug/L	>30%	0.0010	0.005	no	<0.0010	<0.0010	n/c
Chloroethane	ug/L	>30%	0.0010	0.005	no	<0.0010	<0.0010	n/c
Chloroform	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Chloromethane	ug/L	>30%	0.0020	0.01	no	<0.0020	<0.0020	n/c
1,2-dibromoethane	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
1,2-dichlorobenzene	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
1,3-dichlorobenzene	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
1,4-dichlorobenzene	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
1,1-dichloroethane	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
1,2-dichloroethane	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
1,1-dichloroethene	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
cis-1,2-dichloroethene	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
trans-1,2-dichloroethene	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Dichloromethane	ug/L	>30%	0.0020	0.01	no	<0.0020	<0.0020	n/c
1,2-dichloropropane	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
cis-1,3-dichloropropene	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
trans-1,3-dichloropropene	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Methyl methacrylate	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Methyl-tert-butylether (MTBE)	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Styrene	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
1,1,1,2-tetrachloroethane	ug/L	>30%	0.0020	0.01	no	<0.0020	<0.0020	n/c
1,1,2,2-tetrachloroethane	ug/L	>30%	0.0020	0.01	no	<0.0020	<0.0020	n/c
Tetrachloroethene	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
1,2,3-trichlorobenzene	ug/L	>30%	0.0010	0.005	no	<0.0010	<0.0010	n/c
1,2,4-trichlorobenzene	ug/L	>30%	0.0010	0.005	no	<0.0010	<0.0010	n/c
1,3,5-trichlorobenzene	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
1,1,1-trichloroethane	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
1,1,2-trichloroethane	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Trichloroethene	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Trichlorofluoromethane	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
1,2,4-trimethylbenzene	ug/L	>30%	0.00050	0.0025	yes	0.018	0.026	36
1,3,5-trimethylbenzene	ug/L	>30%	0.00050	0.0025	yes	0.038	0.041	8
Vinyl chloride	ug/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Polycyclic Aromatics								
Acenaphthene	mg/L	>30%	0.010	0.05	yes	5.1	13	87
Acenaphthene	mg/L	>30%	0.0010	0.005	yes	0.15	0.17	13
Acenaphthylene	mg/L	>30%	0.00010	0.0005	yes	0.0058	0.0053	9
Acridine	mg/L	>30%	0.00020	0.001	yes	0.0020	0.0027	30
Anthracene	mg/L	>30%	0.000010	0.00005	yes	0.020	0.028	33
Benzo(a)anthracene	mg/L	>30%	0.0000085	0.0000425	yes	0.0072	0.016	76
Benzo(b&j)fluoranthene	mg/L	>30%	0.0000085	0.0000425	yes	0.0047	0.013	94
Benzo(k)fluoranthene	mg/L	>30%	0.0000085	0.0000425	yes	0.0016	0.0038	81
Benzo(g,h,i)perylene	mg/L	>30%	0.0000085	0.0000425	yes	0.0013	0.0035	92
Benzo(c)phenanthrene	mg/L	>30%	0.000050	0.00025	yes	0.0011	0.0024	74
Benzo(a)pyrene	mg/L	>30%	0.0000075	0.0000375	yes	0.0031	0.0082	90
Benzo[e]pyrene	mg/L	>30%	0.000050	0.00025	yes	0.0025	0.0064	88
Chrysene	mg/L	>30%	0.0000085	0.0000425	yes	0.0040	0.0084	71
Dibenz(a,h)anthracene	mg/L	>30%	0.0000075	0.0000375	yes	0.00042	0.0012	96
Fluoranthene	mg/L	>30%	0.00010	0.0005	yes	0.050	0.099	66
Fluorene	mg/L	>30%	0.00050	0.0025	yes	0.082	0.10	20
Indeno(1,2,3-cd)pyrene	mg/L	>30%	0.0000085	0.0000425	yes	0.0014	0.0041	98
2-Methylnaphthalene	mg/L	>30%	0.0010	0.005	yes	0.21	0.25	17
Naphthalene	mg/L	>30%	0.010	0.05	yes	1.6	1.6	0
Phenanthrene	mg/L	>30%	0.00050	0.0025	yes	0.12	0.20	50
Perylene	mg/L	>30%	0.000050	0.00025	yes	0.00064	0.0019	99
Pyrene	mg/L	>30%	0.000020	0.0001	yes	0.031	0.071	78
Quinoline	mg/L	>30%	0.00020	0.001	yes	0.0026	0.0025	4

Relative Percent Difference Calculations - Field Blank, Trip Blank

Sample Collection Date	Units	RDL	Field Blank November 17, 2014	Alert Limit	Do the results exceed the Alert Limit?
Laboratory Sample ID			LD9178		
Hydrocarbons					
Benzene	mg/L	0.00040	<0.00040	>5X RDL	no
Toluene	mg/L	0.00040	<0.00040	>5X RDL	no
Ethylbenzene	mg/L	0.00040	<0.00040	>5X RDL	no
m & p-Xylene	mg/L	0.00080	<0.00080	>5X RDL	no
o-Xylene	mg/L	0.00040	<0.00040	>5X RDL	no
Xylenes (Total)	mg/L	0.00080	<0.00080	>5X RDL	no
F1 (C ₆ -C ₁₀) - BTEX	mg/L	0.10	<0.10	>5X RDL	no
(C6-C10)	mg/L	0.10	<0.10	>5X RDL	no
F2 (C ₁₀ -C ₁₆)	mg/L	0.10	<0.10	>5X RDL	no
Volatile Organics					
Total Trihalomethanes	ug/L	0.0020	<0.0020	>5X RDL	no
Bromodichloromethane	ug/L	0.00050	<0.00050	>5X RDL	no
Bromoform	ug/L	0.00050	<0.00050	>5X RDL	no
Bromomethane	ug/L	0.0020	<0.0020	>5X RDL	no
Carbon Tetrachloride	ug/L	0.00050	<0.00050	>5X RDL	no
Chlorobenzene	ug/L	0.00050	<0.00050	>5X RDL	no
Chlorodibromomethane	ug/L	0.0010	<0.0010	>5X RDL	no
Chloroethane	ug/L	0.0010	<0.0010	>5X RDL	no
Chloroform	ug/L	0.00050	<0.00050	>5X RDL	no
Chloromethane	ug/L	0.0020	<0.0020	>5X RDL	no
1,2-dibromoethane	ug/L	0.00050	<0.00050	>5X RDL	no
1,2-dichlorobenzene	ug/L	0.00050	<0.00050	>5X RDL	no
1,3-dichlorobenzene	ug/L	0.00050	<0.00050	>5X RDL	no
1,4-dichlorobenzene	ug/L	0.00050	<0.00050	>5X RDL	no
1,1-dichloroethane	ug/L	0.00050	<0.00050	>5X RDL	no
1,2-dichloroethane	ug/L	0.00050	<0.00050	>5X RDL	no
1,1-dichloroethene	ug/L	0.00050	<0.00050	>5X RDL	no
cis-1,2-dichloroethene	ug/L	0.00050	<0.00050	>5X RDL	no
trans-1,2-dichloroethene	ug/L	0.00050	<0.00050	>5X RDL	no
Dichloromethane	ug/L	0.0020	<0.0020	>5X RDL	no
1,2-dichloropropane	ug/L	0.00050	<0.00050	>5X RDL	no
cis-1,3-dichloropropene	ug/L	0.00050	<0.00050	>5X RDL	no
trans-1,3-dichloropropene	ug/L	0.00050	<0.00050	>5X RDL	no
Methyl methacrylate	ug/L	0.00050	<0.00050	>5X RDL	no
Methyl-tert-butylether (MTBE)	ug/L	0.00050	<0.00050	>5X RDL	no
Styrene	ug/L	0.00050	<0.00050	>5X RDL	no
1,1,1,2-tetrachloroethane	ug/L	0.0020	<0.0020	>5X RDL	no
1,1,2,2-tetrachloroethane	ug/L	0.0020	<0.0020	>5X RDL	no
Tetrachloroethene	ug/L	0.00050	<0.00050	>5X RDL	no
1,2,3-trichlorobenzene	ug/L	0.0010	<0.0010	>5X RDL	no
1,2,4-trichlorobenzene	ug/L	0.0010	<0.0010	>5X RDL	no
1,3,5-trichlorobenzene	ug/L	0.00050	<0.00050	>5X RDL	no
1,1,1-trichloroethane	ug/L	0.00050	<0.00050	>5X RDL	no
1,1,2-trichloroethane	ug/L	0.00050	<0.00050	>5X RDL	no
Trichloroethene	ug/L	0.00050	<0.00050	>5X RDL	no
Trichlorofluoromethane	ug/L	0.00050	<0.00050	>5X RDL	no
1,2,4-trimethylbenzene	ug/L	0.00050	<0.00050	>5X RDL	no
1,3,5-trimethylbenzene	ug/L	0.00050	<0.00050	>5X RDL	no
Vinyl chloride	ug/L	0.00050	<0.00050	>5X RDL	no
Polycyclic Aromatics					
Benzo[a]pyrene equivalency	ug/L	0.010	<0.010	>5X RDL	no
Acenaphthene	mg/L	0.00010	<0.00010	>5X RDL	no
Acenaphthylene	mg/L	0.00010	<0.00010	>5X RDL	no
Acridine	mg/L	0.00020	<0.00020	>5X RDL	no
Anthracene	mg/L	0.000010	<0.000010	>5X RDL	no
Benzo(a)anthracene	mg/L	0.0000085	<0.0000085	>5X RDL	no
Benzo(b&j)fluoranthene	mg/L	0.0000085	<0.0000085	>5X RDL	no
Benzo(k)fluoranthene	mg/L	0.0000085	<0.0000085	>5X RDL	no
Benzo(g,h,i)perylene	mg/L	0.0000085	<0.0000085	>5X RDL	no
Benzo(c)phenanthrene	mg/L	0.000050	<0.000050	>5X RDL	no
Benzo(a)pyrene	mg/L	0.0000075	<0.0000075	>5X RDL	no
Benzo[e]pyrene	mg/L	0.000050	<0.000050	>5X RDL	no
Chrysene	mg/L	0.0000085	<0.0000085	>5X RDL	no
Dibenz(a,h)anthracene	mg/L	0.0000075	<0.0000075	>5X RDL	no
Fluoranthene	mg/L	0.000010	<0.000010	>5X RDL	no
Fluorene	mg/L	0.000050	<0.000050	>5X RDL	no
Indeno(1,2,3-cd)pyrene	mg/L	0.0000085	<0.0000085	>5X RDL	no
2-Methylnaphthalene	mg/L	0.00010	<0.00010	>5X RDL	no
Naphthalene	mg/L	0.00010	<0.00010	>5X RDL	no
Phenanthrene	mg/L	0.000050	<0.000050	>5X RDL	no
Perylene	mg/L	0.000050	<0.000050	>5X RDL	no
Pyrene	mg/L	0.000020	<0.000020	>5X RDL	no
Quinoline	mg/L	0.00020	<0.00020	>5X RDL	no

Summary of Quality Control Sample Results

Laboratory Submission Number	Sample Matrix	Laboratory Sample ID Affected	Test Affected	Data Quality Issue	Comments
B4A4551	Water	LD9182 and LD9183	1,2,4-trimethylbenzene, Acenaphthene, Benzo(b&j)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, Benzo(c)phenanthrene, Benzo[e]pyrene, Chrysene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene, and Perylene	Field duplicate samples MW14-4A and MW1 exceed the alert limit for 1,2,4-trimethylbenzene, acenaphthene, benzo(b&j)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, benzo(c)phenanthrene, benzo(e)pyrene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and perylene	There is no applicable guidelines for 1,2,4-trimethylbenzene, acenaphthene, benzo(b&j)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, benzo(c)phenanthrene, benzo[e]pyrene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and perylene therefore indicating that there will not be a material effect on the interpretation of the results of this parameter. Under these circumstances, the data reported can be considered reliable.
B4A4551	Water	LD9182 and LD9183	Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Fluoranthene, Phenanthrene, and Pyrene	Field duplicate samples MW14-4A and MW1 exceed the alert limit for anthracene, benzo(a)anthracene, benzo(a)pyrene, fluoranthene, phenanthrene, and pyrene.	Anthracene, benzo(a)anthracene, benzo(a)pyrene, fluoranthene, phenanthrene, and pyrene concentrations in both the sample and the field duplicate were above the regulatory guidelines, indicating that there will not be a material effect on the interpretation of the results of this parameter. Under these circumstances, the data reported can be considered reliable.
B4A4551	Water	LD9175,	Quinoline	Qualifying ion outside of acceptance criteria, Results are potentially biased high due to possible interferent.	This deviation may represent a potential high bias for this sample. There is no applicable guidelines for quinoline therefore indicating that there will not be a material effect on the interpretation of the results of this parameter. Under these circumstances, the quinoline data reported can be considered reliable.
B4A4551	Water	LD9176, LD9182, LD9183	Quinoline and Benzo(c)phenanthrene	Qualifying ion outside of acceptance criteria, Results are potentially biased high due to possible interferent.	This deviation may represent a potential high bias for this sample. There is no applicable guidelines for quinoline and benzo(c)phenanthrene therefore indicating that there will not be a material effect on the interpretation of the results of this parameter. Under these circumstances, the quinoline and benzo(c)phenanthrene data reported can be considered reliable.
B4A4551	Water	LD9179	Benzo(c)phenanthrene	Qualifying ion outside of acceptance criteria, Results are potentially biased high due to possible interferent.	This deviation may represent a potential high bias for this sample. There is no applicable guidelines for benzo(c)phenanthrene therefore indicating that there will not be a material effect on the interpretation of the results of this parameter. Under these circumstances, the benzo(c)phenanthrene data reported can be considered reliable.

GOLDER DATA QUALITY REVIEW CHECKLIST

Site Location: n/a

Sampling Date: March 6, 7 and 10, 2014

Golder Project Number: 13-1324-0204

Laboratory: Maxxam - Calgary

Lab Submission Number: B419154

Was the Cooler Received at the lab under a sealed and intact custody seal?	<u>Yes</u>
Was proper chain of custody of the samples documented and kept?	<u>Yes</u>
Were sample temperatures acceptable when they reached lab?:	<u>Yes</u>
Were all samples analyzed and extracted within hold times?:	<u>Yes</u>
Has lab warranted all tests were in statistical control in CoA?:	<u>Yes</u>
Was sufficient sample provided for the requested analysis?	<u>Yes</u>
Has lab warranted all samples were analyzed with limited headspace present?:	<u>Yes</u>

Are All Laboratory QC Within Acceptance Criteria (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Surrogate Recovery	X			All laboratory QC results are within acceptance criteria, please see QA/QC appendix.
Method Blank Concentration	X			
Laboratory Duplicate RPD	X			
Matrix Spike Recovery	X			
Blank Spike Recovery	X			

Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Field Blank Concentration			X	No field QC samples were collected.
Trip Blank Concentration			X	
Field Duplicate RPD			X	

Is data considered reliable (Yes/No/Suspect)?: Yes

If answer is "No" or "Suspect", describe and provide rationale:

Data Reviewed by (Print): Anita Colbert

Data Reviewed by (Signature): Anita Colbert

Date: March 21, 2014

Summary of Quality Control Sample Results

Laboratory Submission Number	Sample Matrix	Laboratory Sample ID Affected	Test Affected	Data Quality Issue	Comments
B419154	Soil	IZ3919	Petroleum Hydrocarbons Surrogate	4-Bromofluorobenzene surrogate recovery percentage outside acceptance range of 60-140% for batch 7411505.	1 of 3 surrogates can fall outside of the acceptance range. Under these circumstances, the 4-bromofluorobenzene data reported can be considered reliable.

GOLDER DATA QUALITY REVIEW CHECKLIST

Site Location: n/a

Sampling Date: March 11,12,13 and 14, 2014

Golder Project Number: 13-1324-0204

Laboratory: Maxxam - Calgary

Lab Submission Number: B420658

Was the Cooler Received at the lab under a sealed and intact custody seal?	<u>Yes</u>
Was proper chain of custody of the samples documented and kept?	<u>Yes</u>
Were sample temperatures acceptable when they reached lab?:	<u>Yes</u>
Were all samples analyzed and extracted within hold times?:	<u>Yes</u>
Has lab warranted all tests were in statistical control in CoA?:	<u>Yes</u>
Was sufficient sample provided for the requested analysis?	<u>Yes</u>
Has lab warranted all samples were analyzed with limited headspace present?:	<u>Yes</u>

Are All Laboratory QC Within Acceptance Criteria (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Surrogate Recovery	X			All laboratory QC results are within acceptance criteria.
Method Blank Concentration	X			
Laboratory Duplicate RPD	X			
Matrix Spike Recovery	X			
Blank Spike Recovery	X			

Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Field Blank Concentration			X	No field QC samples were collected.
Trip Blank Concentration			X	
Field Duplicate RPD			X	

Is data considered reliable (Yes/No/Suspect)?: Yes

If answer is "No" or "Suspect", describe and provide rationale:

Data Reviewed by (Print): Anita Colbert

Data Reviewed by (Signature): Anita Colbert

Date: March 24, 2014

Summary of Quality Control Sample Results

Laboratory Submission Number	Sample Matrix	Laboratory Sample ID Affected	Test Affected	Data Quality Issue	Comments
B420658	Soil	n/a	n/a	No data quality issues were identified.	The data are considered reliable.

GOLDER DATA QUALITY REVIEW CHECKLIST

Site Location: Canada Creosote North

Sampling Date: March 18 and 19, 2014

Golder Project Number: 13-1324-0204

Laboratory: Maxxam Calgary

Lab Submission Number: B422343

Was the Cooler Received at the lab under a sealed and intact custody seal? Yes
 Was proper chain of custody of the samples documented and kept? Yes
 Were sample temperatures acceptable when they reached lab?: Yes
 Were all samples analyzed and extracted within hold times?: Yes
 Has lab warranted all tests were in statistical control in CoA?: Yes
 Was sufficient sample provided for the requested analysis? Yes
 Has lab warranted all samples were analyzed with limited headspace present?: Yes

Are All Laboratory QC Within Acceptance Criteria (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Surrogate Recovery	X			Laboratory duplicate RPD exceeds acceptance criteria due to sample non homogeneity. All acceptance remaining laboratory QC samples are within criteria. Please see QA/QC appendix.
Method Blank Concentration	X			
Laboratory Duplicate RPD		X		
Matrix Spike Recovery	X			
Blank Spike Recovery	X			

Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Field Blank Concentration	X			All field QC samples are within alert limits.
Trip Blank Concentration			X	
Field Duplicate RPD	X			

Is data considered reliable (Yes/No/Suspect)? Yes
 If answer is "No" or "Suspect", describe and provide rationale:

Data Reviewed by (Print): Lorena La Osa Gomez

Data Reviewed by (Signature): 

Date: March 28, 2014

Relative Percent Difference Calculations - Water

Sample Location	Units	Alert Limit	RDL	5X RDL	Are the results >5X RDL	MW10-07A	MW1	RPD
Sample Collection Date						March 18, 2014	March 18, 2014	
Laboratory Sample ID						JC1562	JC1563	
Hydrocarbons								
Benzene	mg/L	>30%	0.00040	0.002	yes	0.080	0.080	0
Toluene	mg/L	>30%	0.00040	0.002	yes	0.013	0.013	0
Ethylbenzene	mg/L	>30%	0.00040	0.002	yes	0.17	0.17	0
m & p-Xylene	mg/L	>30%	0.00080	0.004	yes	0.13	0.13	0
o-Xylene	mg/L	>30%	0.00040	0.002	yes	0.15	0.15	0
Xylenes (Total)	mg/L	>30%	0.00080	0.004	yes	0.27	0.27	0
F1 (C ₆ -C ₁₀) - BTEX	mg/L	>30%	0.10	0.5	no	0.24	0.13	n/c
(C6-C10)	mg/L	>30%	0.10	0.5	yes	0.75	0.66	13
F2 (C ₁₀ -C ₁₆)	mg/L	>30%	0.10	0.5	no	<0.10	<0.10	n/c
Volatile Organics								
Total Trihalomethanes	mg/L	>30%	0.0020	0.01	no	<0.0020	<0.0020	n/c
Bromodichloromethane	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Bromoform	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Bromomethane	mg/L	>30%	0.0020	0.01	no	<0.0020	<0.0020	n/c
Carbon Tetrachloride	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Chlorobenzene	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Chlorodibromomethane	mg/L	>30%	0.0010	0.005	no	<0.0010	<0.0010	n/c
Chloroethane	mg/L	>30%	0.0010	0.005	no	<0.0010	<0.0010	n/c
Chloroform	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Chloromethane	mg/L	>30%	0.0020	0.01	no	<0.0020	<0.0020	n/c
1,2-dibromoethane	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
1,2-dichlorobenzene	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
1,3-dichlorobenzene	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
1,4-dichlorobenzene	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
1,1-dichloroethane	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
1,2-dichloroethane	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
1,1-dichloroethene	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
cis-1,2-dichloroethene	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
trans-1,2-dichloroethene	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Dichloromethane	mg/L	>30%	0.0020	0.01	no	<0.0020	<0.0020	n/c
1,2-dichloropropane	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
cis-1,3-dichloropropene	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
trans-1,3-dichloropropene	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Methyl methacrylate	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Methyl-tert-butylether (MTBE)	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Styrene	mg/L	>30%	0.00050	0.0025	no	0.00065	<0.00050	n/c
1,1,1,2-tetrachloroethane	mg/L	>30%	0.0020	0.01	no	<0.0020	<0.0020	n/c
1,1,2,2-tetrachloroethane	mg/L	>30%	0.0020	0.01	no	<0.0020	<0.0020	n/c
Tetrachloroethene	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
1,2,3-trichlorobenzene	mg/L	>30%	0.0010	0.005	no	<0.0010	<0.0010	n/c
1,2,4-trichlorobenzene	mg/L	>30%	0.0010	0.005	no	<0.0010	<0.0010	n/c
1,3,5-trichlorobenzene	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
1,1,1-trichloroethane	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
1,1,2-trichloroethane	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Trichloroethene	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Trichlorofluoromethane	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
1,2,4-trimethylbenzene	mg/L	>30%	0.00050	0.0025	yes	0.10	0.10	0
1,3,5-trimethylbenzene	mg/L	>30%	0.00050	0.0025	yes	0.012	0.013	8
Vinyl chloride	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Polycyclic Aromatics								
Acenaphthene	mg/L	>30%	0.0010	0.005	yes	0.049	0.046	6
Acenaphthylene	mg/L	>30%	0.0010	0.005	no	0.0030	0.0028	n/c
Acridine	mg/L	>30%	0.0020	0.01	no	<0.0020	<0.0020	n/c
Anthracene	mg/L	>30%	0.00010	0.0005	no	0.00033	0.00029	n/c
Benzo(a)anthracene	mg/L	>30%	0.000085	0.000425	no	<0.000085	<0.000085	n/c
Benzo(b&j)fluoranthene	mg/L	>30%	0.000085	0.000425	no	<0.000085	<0.000085	n/c
Benzo(k)fluoranthene	mg/L	>30%	0.000085	0.000425	no	<0.000085	<0.000085	n/c
Benzo(g,h,i)perylene	mg/L	>30%	0.000085	0.000425	no	<0.000085	<0.000085	n/c
Benzo(c)phenanthrene	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Benzo(a)pyrene	mg/L	>30%	0.000075	0.000375	no	<0.000075	<0.000075	n/c
Benzo[e]pyrene	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Chrysene	mg/L	>30%	0.000085	0.000425	no	<0.000085	<0.000085	n/c
Dibenz(a,h)anthracene	mg/L	>30%	0.000075	0.000375	no	<0.000075	<0.000075	n/c
Fluoranthene	mg/L	>30%	0.00010	0.0005	no	0.00015	<0.00010	n/c
Fluorene	mg/L	>30%	0.00050	0.0025	yes	0.013	0.012	8
Indeno(1,2,3-cd)pyrene	mg/L	>30%	0.000085	0.000425	no	<0.000085	<0.000085	n/c
2-Methylnaphthalene	mg/L	>30%	0.0010	0.005	yes	0.11	0.099	11
Naphthalene	mg/L	>30%	0.10	0.5	yes	4.9	4.8	2
Phenanthrene	mg/L	>30%	0.00050	0.0025	yes	0.0037	0.0034	8
Perylene	mg/L	>30%	0.00050	0.0025	no	<0.00050	<0.00050	n/c
Pyrene	mg/L	>30%	0.00020	0.001	no	<0.00020	<0.00020	n/c
Quinoline	mg/L	>30%	0.0020	0.01	no	NC	NC	n/c

Relative Percent Difference Calculations - Field Blank, Trip Blank

Sample Collection Date	Units	RDL	Field Blank March 18, 2014	Alert Limit	Do the results exceed the Alert Limit?
Laboratory Sample ID			JC1565		
Hydrocarbons					
Benzene	mg/L	0.00040	<0.00040	>5X RDL	no
Toluene	mg/L	0.00040	0.00048	>5X RDL	no
Ethylbenzene	mg/L	0.00040	<0.00040	>5X RDL	no
m & p-Xylene	mg/L	0.00080	<0.00080	>5X RDL	no
o-Xylene	mg/L	0.00040	<0.00040	>5X RDL	no
Xylenes (Total)	mg/L	0.00080	<0.00080	>5X RDL	no
F1 (C ₆ -C ₁₀) - BTEX	mg/L	0.10	<0.10	>5X RDL	no
(C6-C10)	mg/L	0.10	<0.10	>5X RDL	no
F2 (C ₁₀ -C ₁₆)	mg/L	0.10	<0.10	>5X RDL	no
Volatile Organics					
Total Trihalomethanes	ug/L	0.0020	<0.0020	>5X RDL	no
Bromodichloromethane	ug/L	0.00050	<0.00050	>5X RDL	no
Bromoform	ug/L	0.00050	<0.00050	>5X RDL	no
Bromomethane	ug/L	0.0020	<0.0020	>5X RDL	no
Carbon Tetrachloride	ug/L	0.00050	<0.00050	>5X RDL	no
Chlorobenzene	ug/L	0.00050	<0.00050	>5X RDL	no
Chlorodibromomethane	ug/L	0.0010	<0.0010	>5X RDL	no
Chloroethane	ug/L	0.0010	<0.0010	>5X RDL	no
Chloroform	ug/L	0.00050	<0.00050	>5X RDL	no
Chloromethane	ug/L	0.0020	<0.0020	>5X RDL	no
1,2-dibromoethane	ug/L	0.00050	<0.00050	>5X RDL	no
1,2-dichlorobenzene	ug/L	0.00050	<0.00050	>5X RDL	no
1,3-dichlorobenzene	ug/L	0.00050	<0.00050	>5X RDL	no
1,4-dichlorobenzene	ug/L	0.00050	<0.00050	>5X RDL	no
1,1-dichloroethane	ug/L	0.00050	<0.00050	>5X RDL	no
1,2-dichloroethane	ug/L	0.00050	<0.00050	>5X RDL	no
1,1-dichloroethene	ug/L	0.00050	<0.00050	>5X RDL	no
cis-1,2-dichloroethene	ug/L	0.00050	<0.00050	>5X RDL	no
trans-1,2-dichloroethene	ug/L	0.00050	<0.00050	>5X RDL	no
Dichloromethane	ug/L	0.0020	<0.0020	>5X RDL	no
1,2-dichloropropane	ug/L	0.00050	<0.00050	>5X RDL	no
cis-1,3-dichloropropene	ug/L	0.00050	<0.00050	>5X RDL	no
trans-1,3-dichloropropene	ug/L	0.00050	<0.00050	>5X RDL	no
Methyl methacrylate	ug/L	0.00050	<0.00050	>5X RDL	no
Methyl-tert-butylether (MTBE)	ug/L	0.00050	<0.00050	>5X RDL	no
Styrene	ug/L	0.00050	<0.00050	>5X RDL	no
1,1,1,2-tetrachloroethane	ug/L	0.0020	<0.0020	>5X RDL	no
1,1,2,2-tetrachloroethane	ug/L	0.0020	<0.0020	>5X RDL	no
Tetrachloroethene	ug/L	0.00050	<0.00050	>5X RDL	no
1,2,3-trichlorobenzene	ug/L	0.0010	<0.0010	>5X RDL	no
1,2,4-trichlorobenzene	ug/L	0.0010	<0.0010	>5X RDL	no
1,3,5-trichlorobenzene	ug/L	0.00050	<0.00050	>5X RDL	no
1,1,1-trichloroethane	ug/L	0.00050	<0.00050	>5X RDL	no
1,1,2-trichloroethane	ug/L	0.00050	<0.00050	>5X RDL	no
Trichloroethene	ug/L	0.00050	<0.00050	>5X RDL	no
Trichlorofluoromethane	ug/L	0.00050	<0.00050	>5X RDL	no
1,2,4-trimethylbenzene	ug/L	0.00050	<0.00050	>5X RDL	no
1,3,5-trimethylbenzene	ug/L	0.00050	<0.00050	>5X RDL	no
Vinyl chloride	ug/L	0.00050	<0.00050	>5X RDL	no
Polycyclic Aromatics					
Acenaphthene	mg/L	0.00010	<0.00010	>5X RDL	no
Acenaphthylene	mg/L	0.00010	<0.00010	>5X RDL	no
Acridine	mg/L	0.00020	<0.00020	>5X RDL	no
Anthracene	mg/L	0.00010	<0.00010	>5X RDL	no
Benzo(a)anthracene	mg/L	0.000085	<0.000085	>5X RDL	no
Benzo(b&j)fluoranthene	mg/L	0.000085	<0.000085	>5X RDL	no
Benzo(k)fluoranthene	mg/L	0.000085	<0.000085	>5X RDL	no
Benzo(g,h,i)perylene	mg/L	0.000085	<0.000085	>5X RDL	no
Benzo(c)phenanthrene	mg/L	0.000050	<0.000050	>5X RDL	no
Benzo(a)pyrene	mg/L	0.000075	<0.000075	>5X RDL	no
Benzo[e]pyrene	mg/L	0.000050	<0.000050	>5X RDL	no
Chrysene	mg/L	0.000085	<0.000085	>5X RDL	no
Dibenz(a,h)anthracene	mg/L	0.000075	<0.000075	>5X RDL	no
Fluoranthene	mg/L	0.000010	<0.000010	>5X RDL	no
Fluorene	mg/L	0.000050	<0.000050	>5X RDL	no
Indeno(1,2,3-cd)pyrene	mg/L	0.000085	<0.000085	>5X RDL	no
2-Methylnaphthalene	mg/L	0.00010	<0.00010	>5X RDL	no
Naphthalene	mg/L	0.00010	<0.00010	>5X RDL	no
Phenanthrene	mg/L	0.000050	<0.000050	>5X RDL	no
Perylene	mg/L	0.000050	<0.000050	>5X RDL	no
Pyrene	mg/L	0.000020	<0.000020	>5X RDL	no
Quinoline	mg/L	0.00020	<0.00020	>5X RDL	no

Summary of Quality Control Sample Results

Laboratory Submission Number	Sample Matrix	Laboratory Sample ID Affected	Test Affected	Data Quality Issue	Comments
B422343	Groundwater	JC1567	D10-Anthracene Surrogate	D10-Anthracene surrogate recovery percentage outside control limits.	1 of 3 surrogates can fall outside of the acceptance range. Under these circumstances, the D10-Anthracene data reported can be considered reliable.
B422343	Groundwater	JC1567	Anthracene, Benzo(a)anthracene, Benzo(b&j)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, Benzo(a)pyrene, Benzo[e]pyrene, Chrysene, Fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Phenanthrene, Perylene and Pyrene	Laboratory duplicate RPD exceeds acceptance criteria for Anthracene, Benzo(a)anthracene, Benzo(b&j)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, Benzo(a)pyrene, Chrysene, Fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Phenanthrene and Pyrene due to the sample being non-homogeneous.	Reanalysis of the data yielded similar results. Sample non-homogeneity is believed to be the root cause. This deviation may represent a potential high bias for this sample. However, Anthracene, Benzo(a)anthracene, Benzo(b&j)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, Benzo(a)pyrene, Chrysene, Fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Phenanthrene and Pyrene concentrations were significantly above the regulatory guidelines in both the sample and the lab duplicate for all parameters, indicating that the deviation will not have a material effect on the interpretation of the results for these parameters. Under these circumstances, the Anthracene, Benzo(a)anthracene, Benzo(b&j)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, Benzo(a)pyrene, Chrysene, Fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Phenanthrene and Pyrene data reported can be considered reliable.
B422344	Groundwater	JC1567	Benzo[e]pyrene and Perylene	Laboratory duplicate RPD exceeds acceptance criteria for Benzo[e]pyrene and Perylene due to the sample being non-homogeneous.	Reanalysis of the data yielded similar results. Sample non-homogeneity is believed to be the root cause. There is no applicable guidelines for Benzo[e]pyrene and Perylene therefore indicating that there will not be a material effect on the interpretation of the results of this parameter. Under these circumstances, the Benzo[e]pyrene and Perylene data reported can be considered reliable.
B422343	Groundwater	VOC Matrix Spike	Vinyl Chloride	Matrix spike sample recovery outside acceptance range of 70-130% for vinyl chloride for batch 7424289.	For multi-parameter tests, 10% of parameters can fall outside of the acceptance range. Under these circumstances, the vinyl chloride data reported can be considered reliable.

GOLDER DATA QUALITY REVIEW CHECKLIST

Site Location: North Bow, AB

Sampling Date: March 19, 20 and 21, 2014

Golder Project Number: 13-1324-0204

Laboratory: Maxxam, Calgary

Lab Submission Number: B422737

Was the Cooler Received at the lab under a sealed and intact custody seal? Yes
 Was proper chain of custody of the samples documented and kept? Yes
 Were sample temperatures acceptable when they reached lab?: Yes
 Were all samples analyzed and extracted within hold times?: Yes
 Has lab warranted all tests were in statistical control in CoA?: Yes
 Was sufficient sample provided for the requested analysis? Yes
 Has lab warranted all samples were analyzed with limited headspace present?: Yes

Are All Laboratory QC Within Acceptance Criteria (Yes, No, Not Applicable)?


	Yes	No	NA	Comments
Surrogate Recovery	X			Matrix spike failure PAH parameters. All remaining laboratory QC are within acceptance criteria. Please see QA/QC appendix.
Method Blank Concentration	X			
Laboratory Duplicate RPD	X			
Matrix Spike Recovery		X		
Blank Spike Recovery	X			

Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Field Blank Concentration			X	No field QC samples were collected.
Trip Blank Concentration			X	
Field Duplicate RPD			X	

Is data considered reliable (Yes/No/Suspect)? Yes
 If answer is "No" or "Suspect", describe and provide rationale:

Data Reviewed by (Print): Sarah Howitt

Data Reviewed by (Signature): 

Date: March 31, 2014

Summary of Quality Control Sample Results

Laboratory Submission Number	Sample Matrix	Laboratory Sample ID Affected	Test Affected	Data Quality Issue	Comments
B422737	Groundwater	n/c	Vinyl Chloride	Matrix spike recovery outside acceptance range of 70-130% for vinyl chloride for batch 7428202.	For multi-parameter tests, 10% of parameters can fall outside of the acceptance range. Under these circumstances, the vinyl chloride data reported can be considered reliable.
B422737	Groundwater	JC4792	<p>Benzo (a) anthracene, benzo (b&j) fluoranthene, benzo (k) fluoranthene, benzo (g,h,i) perylene, benzo (a) pyrene, benzo (e) pyrene, chrysene, dibenzene (a,h) anthracene, indeno (1,2,3-cd) pyrene, perylene</p>	<p>Matrix spike recovery below acceptance criteria for Benzo (a) anthracene, benzo (b&j) fluoranthene, benzo (k) fluoranthene, benzo (g,h,i) perylene, benzo (a) pyrene, benzo (e) pyrene, chrysene, dibenzene (a,h) anthracene, indeno (1,2,3-cd) pyrene, perylene due to matrix interference.</p>	<p>This deviation may represent a potential low bias for this sample. Benzo (a) anthracene, benzo (b&j) fluoranthene, benzo (k) fluoranthene, benzo (g,h,i) perylene, benzo (a) pyrene, benzo (e) pyrene, chrysene, dibenzene (a,h) anthracene, indeno (1,2,3-cd) pyrene, perylene concentrations in the sample were below the regulatory guidelines, indicating that there will not be a material effect on the interpretation of the results of this parameter. Under these circumstances, the Benzo (a) anthracene, benzo (b&j) fluoranthene, benzo (k) fluoranthene, benzo (g,h,i) perylene, benzo (a) pyrene, benzo (e) pyrene, chrysene, dibenzene (a,h) anthracene, indeno (1,2,3-cd) pyrene, perylene data reported can be considered reliable.</p>

GOLDER DATA QUALITY REVIEW CHECKLIST

Site Location: ESRD North Bow

Sampling Date: June 6, 2014

Golder Project Number: 13-1324-0204

Laboratory: Maxxam Calgary

Lab Submission Number: B447865

Was the Cooler Received at the lab under a sealed and intact custody seal?	<u>Yes</u>
Was proper chain of custody of the samples documented and kept?	<u>Yes</u>
Were sample temperatures acceptable when they reached lab?:	<u>Yes</u>
Were all samples analyzed and extracted within hold times?:	<u>Yes</u>
Has lab warranted all tests were in statistical control in CoA?:	<u>Yes</u>
Was sufficient sample provided for the requested analysis?	<u>Yes</u>
Has lab warranted all samples were analyzed with limited headspace present?:	<u>Yes</u>

Are All Laboratory QC Within Acceptance Criteria (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Surrogate Recovery	X			All laboratory QC results are within acceptance criteria, please see QA/QC appendix.
Method Blank Concentration	X			
Laboratory Duplicate RPD	X			
Matrix Spike Recovery	X			
Blank Spike Recovery	X			

Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Field Blank Concentration			X	No field QC samples were collected.
Trip Blank Concentration			X	
Field Duplicate RPD			X	

Is data considered reliable (Yes/No/Suspect)?: Yes

If answer is "No" or "Suspect", describe and provide rationale:

Data Reviewed by (Print): Lorena La Osa

Data Reviewed by (Signature): 

Date: June 18, 2014

Summary of Quality Control Sample Results

Laboratory Submission Number	Sample Matrix	Laboratory Sample ID Affected	Test Affected	Data Quality Issue	Comments
B447865	Groundwater	Matrix Spike	Vinyl Chloride	Matrix spike sample recovery outside acceptance range of 70-130% for vinyl chloride for batch 7522357.	For multi-parameter tests, 10% of parameters can fall outside of the acceptance range. Under these circumstances, the vinyl chloride data reported can be considered reliable.
B447865	Groundwater	Blank Spike	Vinyl Chloride	Blank spike sample recovery outside acceptance range of 70-130% for vinyl chloride for batch 7522357.	For multi-parameter tests, 10% of parameters can fall outside of the acceptance range. Under these circumstances, the vinyl chloride data reported can be considered reliable.

GOLDER DATA QUALITY REVIEW CHECKLIST

Site Location: ESRD North Bow (Q2)

Sampling Date: June 9, 10 and 11, 2014

Golder Project Number: 13-1324-0204-3000

Laboratory: Maxxam Calgary

Lab Submission Number: B448375

Was the Cooler Received at the lab under a sealed and intact custody seal? Yes
 Was proper chain of custody of the samples documented and kept? Yes
 Were sample temperatures acceptable when they reached lab?: Yes
 Were all samples analyzed and extracted within hold times?: Yes
 Has lab warranted all tests were in statistical control in CoA?: Yes
 Was sufficient sample provided for the requested analysis? Yes
 Has lab warranted all samples were analyzed with limited headspace present?: Yes

Are All Laboratory QC Within Acceptance Criteria (Yes, No, Not Applicable)?


	Yes	No	NA	Comments
Surrogate Recovery	X			All laboratory QC results are within acceptance criteria.
Method Blank Concentration	X			
Laboratory Duplicate RPD	X			
Matrix Spike Recovery	X			
Blank Spike Recovery	X			

Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Field Blank Concentration	X			Field duplicate samples MW14-4A and MW1 exceed the alert limit for several PAH parameters.
Trip Blank Concentration			X	
Field Duplicate RPD		X		All remaining field QC are within alert limits.

Is data considered reliable (Yes/No/Suspect)? Yes
 If answer is "No" or "Suspect", describe and provide rationale:

Data Reviewed by (Print): Lorena La Osa

Data Reviewed by (Signature): 

Date: June 23, 2014

Relative Percent Difference Calculations - Water

Sample Location	Units	Alert Limit	RDL	5X RDL	Are the results >5X RDL	MW14-4A	MW1	RPD
Sample Collection Date						June 11, 2014	June 11, 2014	
Laboratory Sample ID						JV1000	JV1003	
Hydrocarbons								
Benzene	mg/L	>30%	0.0004	0.002	yes	0.0041	0.0041	0
Toluene	mg/L	>30%	0.0004	0.002	yes	0.013	0.013	0
Ethylbenzene	mg/L	>30%	0.0004	0.002	yes	0.027	0.028	4
m & p-Xylene	mg/L	>30%	0.0008	0.004	yes	0.088	0.09	2
o-Xylene	mg/L	>30%	0.0004	0.002	yes	0.089	0.091	2
Xylenes (Total)	mg/L	>30%	0.0008	0.004	yes	0.18	0.18	0
F1 (C ₆ -C ₁₀) - BTEX	mg/L	>30%	0.1	0.5	no	0.42	0.47	n/c
(C6-C10)	mg/L	>30%	0.1	0.5	yes	0.65	0.7	7
F2 (C ₁₀ -C ₁₆)	mg/L	>30%	0.1	0.5	yes	5.2	5.1	2
Volatile Organics								
Total Trihalomethanes	mg/L	>30%	0.002	0.01	no	<0.0020	<0.0020	n/c
Bromodichloromethane	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
Bromoform	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
Bromomethane	mg/L	>30%	0.002	0.01	no	<0.0020	<0.0020	n/c
Carbon Tetrachloride	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
Chlorobenzene	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
Chlorodibromomethane	mg/L	>30%	0.001	0.005	no	<0.0010	<0.0010	n/c
Chloroethane	mg/L	>30%	0.001	0.005	no	<0.0010	<0.0010	n/c
Chloroform	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
Chloromethane	mg/L	>30%	0.002	0.01	no	<0.0020	<0.0020	n/c
1,2-dibromoethane	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
1,2-dichlorobenzene	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
1,3-dichlorobenzene	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
1,4-dichlorobenzene	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
1,1-dichloroethane	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
1,2-dichloroethane	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
1,1-dichloroethene	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
cis-1,2-dichloroethene	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
trans-1,2-dichloroethene	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
Dichloromethane	mg/L	>30%	0.002	0.01	no	<0.0020	<0.0020	n/c
1,2-dichloropropane	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
cis-1,3-dichloropropene	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
trans-1,3-dichloropropene	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
Methyl methacrylate	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
Methyl-tert-butylether (MTBE)	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
Styrene	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
1,1,1,2-tetrachloroethane	mg/L	>30%	0.002	0.01	no	<0.0020	<0.0020	n/c
1,1,2,2-tetrachloroethane	mg/L	>30%	0.002	0.01	no	<0.0020	<0.0020	n/c
Tetrachloroethene	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
1,2,3-trichlorobenzene	mg/L	>30%	0.001	0.005	no	<0.0010	<0.0010	n/c
1,2,4-trichlorobenzene	mg/L	>30%	0.0015	0.0075	no	<0.0010	<0.0015	n/c
1,3,5-trichlorobenzene	mg/L	>30%	0.0015	0.0075	no	<0.00050	<0.0015	n/c
1,1,1-trichloroethane	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
1,1,2-trichloroethane	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
Trichloroethene	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
Trichlorofluoromethane	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
1,2,4-trimethylbenzene	mg/L	>30%	0.0005	0.0025	yes	0.083	0.085	2
1,3,5-trimethylbenzene	mg/L	>30%	0.0005	0.0025	yes	0.063	0.066	5
Vinyl chloride	mg/L	>30%	0.0005	0.0025	no	<0.00050	<0.00050	n/c
Polycyclic Aromatics								
Benzo[a]pyrene equivalency	ug/L	>30%	0.01	0.05	yes	12	2.2	138
Acenaphthene	mg/L	>30%	0.01	0.05	yes	0.13	0.11	17
Acenaphthylene	mg/L	>30%	0.0001	0.0005	yes	0.0069	0.0059	16
Acridine	mg/L	>30%	0.0002	0.001	yes	0.0044	0.0017	89
Anthracene	mg/L	>30%	0.00001	0.00005	yes	0.037	0.014	90
Benzo(a)anthracene	mg/L	>30%	0.0000085	0.0000425	yes	0.017	0.0041	122
Benzo(b&j)fluoranthene	mg/L	>30%	0.0000085	0.0000425	yes	0.011	0.002	138
Benzo(k)fluoranthene	mg/L	>30%	0.0000085	0.0000425	yes	0.0036	0.00059	144
Benzo(g,h,i)perylene	mg/L	>30%	0.0000085	0.0000425	yes	0.0027	0.00042	146
Benzo(c)phenanthrene	mg/L	>30%	0.0027	0.0135	no	<0.0027	<0.00065	n/c
Benzo(a)pyrene	mg/L	>30%	0.0000075	0.0000375	yes	0.0071	0.0013	138
Benzo[e]pyrene	mg/L	>30%	0.00005	0.00025	yes	0.0059	0.0011	137
Chrysene	mg/L	>30%	0.0000085	0.0000425	yes	0.0097	0.0024	121
Dibenz(a,h)anthracene	mg/L	>30%	0.0000075	0.0000375	yes	0.00086	0.00014	144
Fluoranthene	mg/L	>30%	0.001	0.005	yes	0.075	0.027	94
Fluorene	mg/L	>30%	0.005	0.025	yes	0.095	0.066	36
Indeno(1,2,3-cd)pyrene	mg/L	>30%	0.0000085	0.0000425	yes	0.0028	0.00043	147
2-Methylnaphthalene	mg/L	>30%	0.01	0.05	yes	0.23	0.19	19
Naphthalene	mg/L	>30%	0.01	0.05	yes	1.7	1.9	11
Phenanthrene	mg/L	>30%	0.005	0.025	yes	0.19	0.091	70
Perylene	mg/L	>30%	0.00005	0.00025	yes	0.0016	0.00029	139
Pyrene	mg/L	>30%	0.002	0.01	yes	0.053	0.018	99
Quinoline	mg/L	>30%	0.0002	0.001	yes	0.0021	0.0023	9

Relative Percent Difference Calculations - Field Blank, Trip Blank

Sample Collection Date	Units	RDL	Field Blank June 11, 2014	Alert Limit	Do the results exceed the Alert Limit?
Laboratory Sample ID			JV1004		
Hydrocarbons					
Benzene	mg/L	0.0004	<0.00040	>5X RDL	no
Toluene	mg/L	0.0004	<0.00040	>5X RDL	no
Ethylbenzene	mg/L	0.0004	<0.00040	>5X RDL	no
m & p-Xylene	mg/L	0.0008	<0.00080	>5X RDL	no
o-Xylene	mg/L	0.0004	<0.00040	>5X RDL	no
Xylenes (Total)	mg/L	0.0008	<0.00080	>5X RDL	no
F1 (C ₆ -C ₁₀) - BTEX	mg/L	0.1	<0.10	>5X RDL	no
(C6-C10)	mg/L	0.1	<0.10	>5X RDL	no
F2 (C ₁₀ -C ₁₆)	mg/L	0.1	<0.10	>5X RDL	no
Volatile Organics					
Total Trihalomethanes	mg/L	0.002	<0.0020	>5X RDL	no
Bromodichloromethane	mg/L	0.0005	<0.00050	>5X RDL	no
Bromoform	mg/L	0.0005	<0.00050	>5X RDL	no
Bromomethane	mg/L	0.002	<0.0020	>5X RDL	no
Carbon Tetrachloride	mg/L	0.0005	<0.00050	>5X RDL	no
Chlorobenzene	mg/L	0.0005	<0.00050	>5X RDL	no
Chlorodibromomethane	mg/L	0.001	<0.0010	>5X RDL	no
Chloroethane	mg/L	0.001	<0.0010	>5X RDL	no
Chloroform	mg/L	0.0005	<0.00050	>5X RDL	no
Chloromethane	mg/L	0.002	<0.0020	>5X RDL	no
1,2-dibromoethane	mg/L	0.0005	<0.00050	>5X RDL	no
1,2-dichlorobenzene	mg/L	0.0005	<0.00050	>5X RDL	no
1,3-dichlorobenzene	mg/L	0.0005	<0.00050	>5X RDL	no
1,4-dichlorobenzene	mg/L	0.0005	<0.00050	>5X RDL	no
1,1-dichloroethane	mg/L	0.0005	<0.00050	>5X RDL	no
1,2-dichloroethane	mg/L	0.0005	<0.00050	>5X RDL	no
1,1-dichloroethene	mg/L	0.0005	<0.00050	>5X RDL	no
cis-1,2-dichloroethene	mg/L	0.0005	<0.00050	>5X RDL	no
trans-1,2-dichloroethene	mg/L	0.0005	<0.00050	>5X RDL	no
Dichloromethane	mg/L	0.002	<0.0020	>5X RDL	no
1,2-dichloropropane	mg/L	0.0005	<0.00050	>5X RDL	no
cis-1,3-dichloropropene	mg/L	0.0005	<0.00050	>5X RDL	no
trans-1,3-dichloropropene	mg/L	0.0005	<0.00050	>5X RDL	no
Methyl methacrylate	mg/L	0.0005	<0.00050	>5X RDL	no
Methyl-tert-butylether (MTBE)	mg/L	0.0005	<0.00050	>5X RDL	no
Styrene	mg/L	0.0005	<0.00050	>5X RDL	no
1,1,1,2-tetrachloroethane	mg/L	0.002	<0.0020	>5X RDL	no
1,1,2,2-tetrachloroethane	mg/L	0.002	<0.0020	>5X RDL	no
Tetrachloroethene	mg/L	0.0005	<0.00050	>5X RDL	no
1,2,3-trichlorobenzene	mg/L	0.001	<0.0010	>5X RDL	no
1,2,4-trichlorobenzene	mg/L	0.001	<0.0010	>5X RDL	no
1,3,5-trichlorobenzene	mg/L	0.0005	<0.00050	>5X RDL	no
1,1,1-trichloroethane	mg/L	0.0005	<0.00050	>5X RDL	no
1,1,2-trichloroethane	mg/L	0.0005	<0.00050	>5X RDL	no
Trichloroethene	mg/L	0.0005	<0.00050	>5X RDL	no
Trichlorofluoromethane	mg/L	0.0005	<0.00050	>5X RDL	no
1,2,4-trimethylbenzene	mg/L	0.0005	<0.00050	>5X RDL	no
1,3,5-trimethylbenzene	mg/L	0.0005	<0.00050	>5X RDL	no
Vinyl chloride	mg/L	0.0005	<0.00050	>5X RDL	no
Polycyclic Aromatics					
Benzo[a]pyrene equivalency	ug/L	0.01	<0.010	>5X RDL	no
Acenaphthene	mg/L	0.0001	<0.00010	>5X RDL	no
Acenaphthylene	mg/L	0.0001	<0.00010	>5X RDL	no
Acridine	mg/L	0.0002	<0.00020	>5X RDL	no
Anthracene	mg/L	0.00001	<0.000010	>5X RDL	no
Benzo(a)anthracene	mg/L	0.0000085	<0.0000085	>5X RDL	no
Benzo(b&j)fluoranthene	mg/L	0.0000085	<0.0000085	>5X RDL	no
Benzo(k)fluoranthene	mg/L	0.0000085	<0.0000085	>5X RDL	no
Benzo(g,h,i)perylene	mg/L	0.0000085	<0.0000085	>5X RDL	no
Benzo(c)phenanthrene	mg/L	0.00005	<0.000050	>5X RDL	no
Benzo(a)pyrene	mg/L	0.0000075	<0.0000075	>5X RDL	no
Benzo[e]pyrene	mg/L	0.00005	<0.000050	>5X RDL	no
Chrysene	mg/L	0.0000085	<0.0000085	>5X RDL	no
Dibenz(a,h)anthracene	mg/L	0.0000075	<0.0000075	>5X RDL	no
Fluoranthene	mg/L	0.00001	<0.000010	>5X RDL	no
Fluorene	mg/L	0.00005	<0.000050	>5X RDL	no
Indeno(1,2,3-cd)pyrene	mg/L	0.0000085	<0.0000085	>5X RDL	no
2-Methylnaphthalene	mg/L	0.0001	<0.00010	>5X RDL	no
Naphthalene	mg/L	0.0001	<0.00010	>5X RDL	no
Phenanthrene	mg/L	0.00005	<0.000050	>5X RDL	no
Perylene	mg/L	0.00005	<0.000050	>5X RDL	no
Pyrene	mg/L	0.00002	<0.000020	>5X RDL	no
Quinoline	mg/L	0.0002	<0.00020	>5X RDL	no

Summary of Quality Control Sample Results

Laboratory Submission Number	Sample Matrix	Laboratory Sample ID Affected	Test Affected	Data Quality Issue	Comments
B448375	Groundwater	B448375	<p align="center">Anthracene, benzo(a)anthracene, benzo(a)pyrene, fluoranthene, fluorene, phenanthrene, and pyrene PAHs</p>	<p>Field duplicate samples MW14-4A and MW1 exceed the alert limit for anthracene (90 %), benzo(a)anthracene (122 %), benzo(a)pyrene (138 %), fluoranthene (94%), fluorene (36%), phenanthrene (70 %) and pyrene (99 %).</p>	<p>Sample non-homogeneity could be the root cause. The concentrations in both the sample and the field duplicates were upper the regulatory guidelines for anthracene, fluoranthene, fluorene, phenanthrene, pyrene, benzo(a)anthracene and benzo(a)pyrene, indicating that there will not be a material effect on the interpretation of the results of these parameters. Under these circumstances, the data reported can be considered reliable.</p>
B448375	Groundwater	B448375	<p align="center">Benzo[a]pyrene equivalency, acridine, benzo(b&j)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, benzo[e]pyrene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and perylene PAHs</p>	<p>Field duplicate samples MW14-4A and MW1 exceed the alert limit for Benzo[a]pyrene equivalency (138 %), acridine (89 %), benzo(b&j)fluoranthene (138 %), benzo(k)fluoranthene (144 %), benzo(g,h,i)perylene (146 %), benzo[e]pyrene (137 %), chrysene (121 %), dibenz(a,h)anthracene (144 %), indeno(1,2,3-cd)pyrene (147 %), and perylene (139 %).</p>	<p>Sample non-homogeneity could be the root cause. There are no applicable guidelines for benzo(a)pyrene equivalency, acridine, benzo(b&j)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, benzo[e]pyrene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene and perylene, which indicate that there will not be a material effect on the interpretation of the results of these parameters. Under these circumstances, the data reported can be considered reliable.</p>

GOLDER DATA QUALITY REVIEW CHECKLIST

Site Location: CAN CREOSOTE

Sampling Date: August 5, 2014

Golder Project Number: 13-1324-0204

Laboratory: Maxxam - Calgary

Lab Submission Number: B466892

Was the Cooler Received at the lab under a sealed and intact custody seal? Yes
 Was proper chain of custody of the samples documented and kept? Yes
 Were sample temperatures acceptable when they reached lab?: Yes
 Were all samples analyzed and extracted within hold times?: Yes
 Has lab warranted all tests were in statistical control in CoA?: Yes
 Was sufficient sample provided for the requested analysis? Yes
 Has lab warranted all samples were analyzed with limited headspace present?: Yes

Are All Laboratory QC Within Acceptance Criteria (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Surrogate Recovery	X			All laboratory QC results are within acceptance criteria, please see QA/QC appendix.
Method Blank Concentration	X			
Laboratory Duplicate RPD	X			
Matrix Spike Recovery	X			
Blank Spike Recovery	X			

Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Field Blank Concentration	X			All field QC samples are within alert limits.
Trip Blank Concentration			X	
Field Duplicate RPD	X			

Is data considered reliable (Yes/No/Suspect)? Yes
 If answer is "No" or "Suspect", describe and provide rationale:

Data Reviewed by (Print): Lori Lake

Data Reviewed by (Signature): *Lori Lake*

Date: August 14, 2014

Relative Percent Difference Calculations - Water

Sample Location	Units	Alert Limit	RDL	5X RDL	Are the results >5X RDL	MW11-6	DUP-1	RPD
Sample Collection Date						August 5, 2014	August 5, 2014	
Laboratory Sample ID						KG5862	KG5863	
Hydrocarbons								
Benzene	mg/L	>30%	0.00040	0.002	yes	0.77	0.76	1
Toluene	mg/L	>30%	0.00040	0.002	yes	1.8	1.8	0
Ethylbenzene	mg/L	>30%	0.00040	0.002	yes	0.51	0.52	2
m & p-Xylene	mg/L	>30%	0.00080	0.004	yes	1.5	1.5	0
o-Xylene	mg/L	>30%	0.00040	0.002	yes	0.7	0.72	3
Xylenes (Total)	mg/L	>30%	0.00080	0.004	yes	2.2	2.2	0
F1 (C ₆ -C ₁₀) - BTEX	mg/L	>30%	0.10	0.5	yes	2.1	2.3	9
(C6-C10)	mg/L	>30%	0.10	0.5	yes	7.3	7.6	4
F2 (C ₁₀ -C ₁₆)	mg/L	>30%	0.10	0.5	yes	24	26	8
Volatile Organics								
Total Trihalomethanes	ug/L	>30%	0.0020	0.01	no	<0.0020	<0.0020	n/c
Bromodichloromethane	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
Bromoform	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
Bromomethane	ug/L	>30%	0.010	0.05	no	<0.010	<0.010	n/c
Carbon Tetrachloride	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
Chlorobenzene	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
Chlorodibromomethane	ug/L	>30%	0.0050	0.025	no	<0.0050	<0.0050	n/c
Chloroethane	ug/L	>30%	0.0050	0.025	no	<0.0050	<0.0050	n/c
Chloroform	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
Chloromethane	ug/L	>30%	0.010	0.05	no	<0.010	<0.010	n/c
1,2-dibromoethane	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
1,2-dichlorobenzene	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
1,3-dichlorobenzene	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
1,4-dichlorobenzene	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
1,1-dichloroethane	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
1,2-dichloroethane	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
1,1-dichloroethene	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
cis-1,2-dichloroethene	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
trans-1,2-dichloroethene	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
Dichloromethane	ug/L	>30%	0.010	0.05	no	<0.010	<0.010	n/c
1,2-dichloropropane	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
cis-1,3-dichloropropene	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
trans-1,3-dichloropropene	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
Methyl methacrylate	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
Methyl-tert-butylether (MTBE)	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
Styrene	ug/L	>30%	0.0025	0.0125	yes	0.21	0.22	5
1,1,1,2-tetrachloroethane	ug/L	>30%	0.010	0.05	no	<0.010	<0.010	n/c
1,1,2,2-tetrachloroethane	ug/L	>30%	0.010	0.05	no	<0.010	<0.010	n/c
Tetrachloroethene	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
1,2,3-trichlorobenzene	ug/L	>30%	0.0050	0.025	no	<0.0050	<0.0050	n/c
1,2,4-trichlorobenzene	ug/L	>30%	0.0050	0.025	no	<0.0050	<0.0050	n/c
1,3,5-trichlorobenzene	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
1,1,1-trichloroethane	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
1,1,2-trichloroethane	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
Trichloroethene	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
Trichlorofluoromethane	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
1,2,4-trimethylbenzene	ug/L	>30%	0.0025	0.0125	yes	0.43	0.39	10
1,3,5-trimethylbenzene	ug/L	>30%	0.0025	0.0125	yes	0.18	0.16	12
Vinyl chloride	ug/L	>30%	0.0025	0.0125	no	<0.0025	<0.0025	n/c
Polycyclic Aromatics								
Acenaphthene	mg/L	>30%	0.10	0.5	no	0.21	0.18	n/c
Acenaphthylene	mg/L	>30%	0.00010	0.0005	yes	0.017	0.016	6
Acridine	mg/L	>30%	0.00020	0.001	yes	0.0092	0.0092	0
Anthracene	mg/L	>30%	0.000010	0.00005	yes	0.016	0.015	6
Benzo(a)anthracene	mg/L	>30%	0.0000085	0.0000425	yes	0.0024	0.0021	13
Benzo(b&j)fluoranthene	mg/L	>30%	0.0000085	0.0000425	yes	0.0019	0.0018	5
Benzo(k)fluoranthene	mg/L	>30%	0.0000085	0.0000425	yes	0.00064	0.00059	8
Benzo(g,h,i)perylene	mg/L	>30%	0.0000085	0.0000425	yes	0.00051	0.00048	6
Benzo(c)phenanthrene	mg/L	>30%	0.00048	0.0024	no	<0.00052	<0.00048	n/c
Benzo(a)pyrene	mg/L	>30%	0.0000075	0.0000375	yes	0.0013	0.0012	8
Benzo[e]pyrene	mg/L	>30%	0.000050	0.00025	yes	0.001	0.00093	7
Chrysene	mg/L	>30%	0.0000085	0.0000425	yes	0.0021	0.0018	15
Dibenz(a,h)anthracene	mg/L	>30%	0.0000075	0.0000375	yes	0.00017	0.00016	6
Fluoranthene	mg/L	>30%	0.000010	0.00005	yes	0.018	0.017	6
Fluorene	mg/L	>30%	0.050	0.25	no	0.1	0.09	n/c
Indeno(1,2,3-cd)pyrene	mg/L	>30%	0.0000085	0.0000425	yes	0.00052	0.00049	6
2-Methylnaphthalene	mg/L	>30%	0.10	0.5	yes	0.78	0.69	12
Naphthalene	mg/L	>30%	0.10	0.5	yes	12	10	18
Phenanthrene	mg/L	>30%	0.050	0.25	no	0.11	0.094	n/c
Perylene	mg/L	>30%	0.000050	0.00025	yes	0.00029	0.00028	4
Pyrene	mg/L	>30%	0.000020	0.0001	yes	0.013	0.012	8
Quinoline	mg/L	>30%	0.00020	0.001	no	NC	NC	n/c

Relative Percent Difference Calculations - Field Blank, Trip Blank

Sample Collection Date	Units	RDL	Field Blank August 5, 2014	Alert Limit	Do the results exceed the Alert Limit?
Laboratory Sample ID			KG5864		
Hydrocarbons					
Benzene	mg/L	0.00040	<0.00040	>5X RDL	no
Toluene	mg/L	0.00040	<0.00040	>5X RDL	no
Ethylbenzene	mg/L	0.00040	<0.00040	>5X RDL	no
m & p-Xylene	mg/L	0.00080	<0.00080	>5X RDL	no
o-Xylene	mg/L	0.00040	<0.00040	>5X RDL	no
Xylenes (Total)	mg/L	0.00080	<0.00080	>5X RDL	no
F1 (C ₆ -C ₁₀) - BTEX	mg/L	0.10	<0.10	>5X RDL	no
(C6-C10)	mg/L	0.10	<0.10	>5X RDL	no
F2 (C ₁₀ -C ₁₆)	mg/L	0.10	<0.10	>5X RDL	no
Volatile Organics					
Total Trihalomethanes	ug/L	0.0020	<0.0020	>5X RDL	no
Bromodichloromethane	ug/L	0.00050	<0.00050	>5X RDL	no
Bromoform	ug/L	0.00050	<0.00050	>5X RDL	no
Bromomethane	ug/L	0.0020	<0.0020	>5X RDL	no
Carbon Tetrachloride	ug/L	0.00050	<0.00050	>5X RDL	no
Chlorobenzene	ug/L	0.00050	<0.00050	>5X RDL	no
Chlorodibromomethane	ug/L	0.0010	<0.0010	>5X RDL	no
Chloroethane	ug/L	0.0010	<0.0010	>5X RDL	no
Chloroform	ug/L	0.00050	<0.00050	>5X RDL	no
Chloromethane	ug/L	0.0020	<0.0020	>5X RDL	no
1,2-dibromoethane	ug/L	0.00050	<0.00050	>5X RDL	no
1,2-dichlorobenzene	ug/L	0.00050	<0.00050	>5X RDL	no
1,3-dichlorobenzene	ug/L	0.00050	<0.00050	>5X RDL	no
1,4-dichlorobenzene	ug/L	0.00050	<0.00050	>5X RDL	no
1,1-dichloroethane	ug/L	0.00050	<0.00050	>5X RDL	no
1,2-dichloroethane	ug/L	0.00050	<0.00050	>5X RDL	no
1,1-dichloroethene	ug/L	0.00050	<0.00050	>5X RDL	no
cis-1,2-dichloroethene	ug/L	0.00050	<0.00050	>5X RDL	no
trans-1,2-dichloroethene	ug/L	0.00050	<0.00050	>5X RDL	no
Dichloromethane	ug/L	0.0020	<0.0020	>5X RDL	no
1,2-dichloropropane	ug/L	0.00050	<0.00050	>5X RDL	no
cis-1,3-dichloropropene	ug/L	0.00050	<0.00050	>5X RDL	no
trans-1,3-dichloropropene	ug/L	0.00050	<0.00050	>5X RDL	no
Methyl methacrylate	ug/L	0.00050	<0.00050	>5X RDL	no
Methyl-tert-butylether (MTBE)	ug/L	0.00050	<0.00050	>5X RDL	no
Styrene	ug/L	0.00050	<0.00050	>5X RDL	no
1,1,1,2-tetrachloroethane	ug/L	0.0020	<0.0020	>5X RDL	no
1,1,2,2-tetrachloroethane	ug/L	0.0020	<0.0020	>5X RDL	no
Tetrachloroethene	ug/L	0.00050	<0.00050	>5X RDL	no
1,2,3-trichlorobenzene	ug/L	0.0010	<0.0010	>5X RDL	no
1,2,4-trichlorobenzene	ug/L	0.0010	<0.0010	>5X RDL	no
1,3,5-trichlorobenzene	ug/L	0.00050	<0.00050	>5X RDL	no
1,1,1-trichloroethane	ug/L	0.00050	<0.00050	>5X RDL	no
1,1,2-trichloroethane	ug/L	0.00050	<0.00050	>5X RDL	no
Trichloroethene	ug/L	0.00050	<0.00050	>5X RDL	no
Trichlorofluoromethane	ug/L	0.00050	<0.00050	>5X RDL	no
1,2,4-trimethylbenzene	ug/L	0.00050	<0.00050	>5X RDL	no
1,3,5-trimethylbenzene	ug/L	0.00050	<0.00050	>5X RDL	no
Vinyl chloride	ug/L	0.00050	<0.00050	>5X RDL	no
Polycyclic Aromatics					
Acenaphthene	mg/L	0.00010	<0.00010	>5X RDL	no
Acenaphthylene	mg/L	0.00010	<0.00010	>5X RDL	no
Acridine	mg/L	0.00020	<0.00020	>5X RDL	no
Anthracene	mg/L	0.00010	<0.00010	>5X RDL	no
Benzo(a)anthracene	mg/L	0.000085	<0.000085	>5X RDL	no
Benzo(b&j)fluoranthene	mg/L	0.000085	<0.000085	>5X RDL	no
Benzo(k)fluoranthene	mg/L	0.000085	<0.000085	>5X RDL	no
Benzo(g,h,i)perylene	mg/L	0.000085	<0.000085	>5X RDL	no
Benzo(c)phenanthrene	mg/L	0.000050	<0.000050	>5X RDL	no
Benzo(a)pyrene	mg/L	0.000075	<0.000075	>5X RDL	no
Benzo[e]pyrene	mg/L	0.000050	<0.000050	>5X RDL	no
Chrysene	mg/L	0.000085	<0.000085	>5X RDL	no
Dibenz(a,h)anthracene	mg/L	0.000075	<0.000075	>5X RDL	no
Fluoranthene	mg/L	0.000010	<0.000010	>5X RDL	no
Fluorene	mg/L	0.000050	<0.000050	>5X RDL	no
Indeno(1,2,3-cd)pyrene	mg/L	0.000085	<0.000085	>5X RDL	no
2-Methylnaphthalene	mg/L	0.00010	<0.00010	>5X RDL	no
Naphthalene	mg/L	0.00010	<0.00010	>5X RDL	no
Phenanthrene	mg/L	0.000050	<0.000050	>5X RDL	no
Perylene	mg/L	0.000050	<0.000050	>5X RDL	no
Pyrene	mg/L	0.000020	<0.000020	>5X RDL	no
Quinoline	mg/L	0.00020	<0.00020	>5X RDL	no

Summary of Quality Control Sample Results

Laboratory Submission Number	Sample Matrix	Laboratory Sample ID Affected	Test Affected	Data Quality Issue	Comments
B466892	Groundwater	Matrix Spike	Chloroethane, Chloromethane, and Trichlorofluoromethane	Matrix spike sample recovery outside acceptance range of 70-130% for chloroethane, chloromethane, and trichlorofluoromethane for batch 7592792.	For multi-parameter tests, 10% of parameters can fall outside of the acceptance range. Under these circumstances, the chloroethane, chloromethane, and trichlorofluoromethane data reported can be considered reliable.
B466892	Groundwater	Spiked Blank	Chloroethane, Chloromethane, and Trichlorofluoromethane	Spiked blank sample recovery outside acceptance range of 70-130% for chloroethane, chloromethane, and trichlorofluoromethane for batch 7592792.	For multi-parameter tests, 10% of parameters can fall outside of the acceptance range. Under these circumstances, the chloroethane, chloromethane, and trichlorofluoromethane data reported can be considered reliable.
B466892	Groundwater	Spiked Blank	Chloromethane, and Trichlorofluoromethane	Spiked blank sample recovery outside acceptance range of 70-130% for chloromethane, and trichlorofluoromethane for batch 7591211.	For multi-parameter tests, 10% of parameters can fall outside of the acceptance range. Under these circumstances, the chloromethane, and trichlorofluoromethane data reported can be considered reliable.

GOLDER DATA QUALITY REVIEW CHECKLIST

Site Location: CAN CREOSOTE

Sampling Date: August 6, 2014

Golder Project Number: 13-1324-0204

Laboratory: Maxxam Calgary

Lab Submission Number: B467370

Was the Cooler Received at the lab under a sealed and intact custody seal? Yes
 Was proper chain of custody of the samples documented and kept? Yes
 Were sample temperatures acceptable when they reached lab?: Yes
 Were all samples analyzed and extracted within hold times?: Yes
 Has lab warranted all tests were in statistical control in CoA?: Yes
 Was sufficient sample provided for the requested analysis? Yes
 Has lab warranted all samples were analyzed with limited headspace present?: Yes

Are All Laboratory QC Within Acceptance Criteria (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Surrogate Recovery	X			All laboratory QC results are within acceptance criteria, please see QA/QC appendix.
Method Blank Concentration	X			
Laboratory Duplicate RPD	X			
Matrix Spike Recovery	X			
Blank Spike Recovery	X			

Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Field Blank Concentration			X	No field QC samples were collected.
Trip Blank Concentration			X	
Field Duplicate RPD			X	

Is data considered reliable (Yes/No/Suspect)? Yes
 If answer is "No" or "Suspect", describe and provide rationale:

Data Reviewed by (Print): Lori Lake

Data Reviewed by (Signature): *Lori Lake*

Date: August 14, 2014

Summary of Quality Control Sample Results

Laboratory Submission Number	Sample Matrix	Laboratory Sample ID Affected	Test Affected	Data Quality Issue	Comments
B467370	Groundwater	Matrix Spike	Chloroethane, Chloromethane, and Trichlorofluoromethane	Matrix spike sample recovery outside acceptance range of 70-130% for chloroethane, chloromethane, and trichlorofluoromethane for batch 7592792.	For multi-parameter tests, 10% of parameters can fall outside of the acceptance range. Under these circumstances, the chloroethane, chloromethane, and trichlorofluoromethane data reported can be considered reliable.
B467370	Groundwater	Spiked Blank	Chloroethane, Chloromethane, and Trichlorofluoromethane	Spiked blank sample recovery outside acceptance range of 70-130% for chloroethane, chloromethane, and trichlorofluoromethane for batch 7592792.	For multi-parameter tests, 10% of parameters can fall outside of the acceptance range. Under these circumstances, the chloroethane, chloromethane, and trichlorofluoromethane data reported can be considered reliable.



APPENDIX E

Vapour Data Quality Review

GOLDER DATA QUALITY REVIEW CHECKLIST

Site Location: Canada Creosote North

Sampling Date: August 6, 12, 13, 14 and 15, 2014

Golder Project Number: 13-1324-0204

Laboratory: Maxxam - Mississauga

Lab Submission Number: B4F0085

Was the Cooler Received at the lab under a sealed and intact custody seal? n/a
 Was proper chain of custody of the samples documented and kept? Yes
 Were sample temperatures acceptable when they reached lab?: Yes
 Were all samples analyzed and extracted within hold times?: Yes
 Has lab warranted all tests were in statistical control in CoA?: Yes
 Was sufficient sample provided for the requested analysis? Yes
 Has lab warranted all samples were analyzed with limited headspace present?: Yes

Are All Laboratory QC Within Acceptance Criteria (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Surrogate Recovery			X	All laboratory QC results are within acceptance criteria. Please see QA/QC appendix.
Method Blank Concentration	X			
Laboratory Duplicate RPD	X			
Matrix Spike Recovery	X			
Blank Spike Recovery	X			

Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Field Blank Concentration			X	Field duplicate samples exceeded the alert limits for multiple parameters. All remaining field
Trip Blank Concentration	X			
Field Duplicate RPD		X		QC samples are within alert limits.

Is data considered reliable (Yes/No/Suspect)? Suspect

If answer is "No" or "Suspect", describe and provide rationale:

Please see QA/QC section

Data Reviewed by (Print): Lori Lake

Data Reviewed by (Signature): *Lori Lake*

Date: March 4, 2015

Relative Percent Difference Calculations - Soil Vapour

Sample Location	Units	Alert Limit	RDL	5X RDL	Are the results >5X RDL	Home "C" SS1A / 1393	Home "C" -SS1B / 2404	RPD
Sample Collection Date						August 13, 2014	August 13, 2014	
Laboratory Sample ID						XE7618	XE7619	
Volatile Organic Hydrocarbons								
1,3-Butadiene	ppbv	>50%	0.50	2.5	no	<0.50	<0.50	n/c
Chloroform	ppbv	>50%	0.15	0.75	no	<0.15	<0.15	n/c
Carbon Tetrachloride	ppbv	>50%	0.30	1.5	no	<0.30	<0.30	n/c
Benzene	ppbv	>50%	0.18	0.9	no	0.52	0.56	n/c
Trichloroethylene	ppbv	>50%	0.30	1.5	no	<0.30	<0.30	n/c
Bromodichloromethane	ppbv	>50%	0.20	1	no	<0.20	<0.20	n/c
Hexachlorobutadiene	ppbv	>50%	0.50	2.5	no	<0.50	<0.50	n/c
Toluene	ppbv	>50%	0.20	1	no	1.75	1.53	13
Ethylbenzene	ppbv	>50%	0.20	1	no	<0.20	<0.20	n/c
1,2,4-Trimethylbenzene	ppbv	>50%	0.50	2.5	no	<0.50	<0.50	n/c
Naphthalene	ppbv	>50%	0.20	1	no	0.25	0.26	n/c
Xylene (Total)	ppbv	>50%	0.32	1.6	no	<0.32	<0.32	n/c
1,2,3-Trimethylbenzene	ppbv	>50%	0.50	2.5	no	<0.50	<0.50	n/c
1,1,1,2-Tetrachloroethane	ppbv	>50%	0.10	0.5	no	<0.10	<0.10	n/c
Aliphatic >C5-C6	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aliphatic >C6-C8	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aliphatic >C8-C10	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aliphatic >C10-C12	ug/m3	>50%	5.0	25	no	60.8	59.7	2
Aliphatic >C12-C16	ug/m3	>50%	5.0	25	no	119	124	4
Aromatic >C7-C8 (TEX Excluded)	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aromatic >C8-C10	ug/m3	>50%	5.0	25	no	37.1	39.3	6
Aromatic >C10-C12	ug/m3	>50%	5.0	25	no	10.2	10.7	n/c
Aromatic >C12-C16	ug/m3	>50%	5.0	25	no	17.8	18.8	n/c
Calculated Parameters								
1,3-Butadiene	ug/m3	>50%	1.1	5.5	no	<1.1	<1.1	n/c
Chloroform	ug/m3	>50%	0.73	3.65	no	<0.73	<0.73	n/c
Carbon Tetrachloride	ug/m3	>50%	1.9	9.5	no	<1.9	<1.9	n/c
Bromodichloromethane	ug/m3	>50%	1.3	6.5	no	<1.3	<1.3	n/c
Trichloroethylene	ug/m3	>50%	1.6	8	no	<1.6	<1.6	n/c
Benzene	ug/m3	>50%	0.58	2.9	no	1.67	1.8	n/c
Toluene	ug/m3	>50%	0.75	3.75	no	6.58	5.77	13
Ethylbenzene	ug/m3	>50%	0.87	4.35	no	<0.87	<0.87	n/c
1,2,4-Trimethylbenzene	ug/m3	>50%	2.5	12.5	no	<2.5	<2.5	n/c
Hexachlorobutadiene	ug/m3	>50%	5.3	26.5	no	<5.3	<5.3	n/c
Naphthalene	ug/m3	>50%	1.0	5	no	1.3	1.3	n/c
Xylene (Total)	ug/m3	>50%	1.4	7	no	<1.4	<1.4	n/c
1,2,3-Trimethylbenzene	ug/m3	>50%	2.5	12.5	no	<2.5	<2.5	n/c
1,1,1,2-Tetrachloroethane	ug/m3	>50%	0.69	3.45	no	<0.69	<0.69	n/c

Relative Percent Difference Calculations - Soil Vapour

Sample Location	Units	Alert Limit	RDL	5X RDL	Are the results >5X RDL	Home "B"-IN1A / 248	Home "B"-IN1B / 14255	RPD
Sample Collection Date						August 13, 2014	August 13, 2014	
Laboratory Sample ID						XE7631	XE7632	
Volatile Organic Hydrocarbons								
1,3-Butadiene	ppbv	>50%	0.050	0.25	no	<0.050	<0.050	n/c
Chloroform	ppbv	>50%	0.050	0.25	no	0.41	0.41	0
Carbon Tetrachloride	ppbv	>50%	0.050	0.25	no	0.11	0.098	n/c
Benzene	ppbv	>50%	0.050	0.25	no	0.42	0.99	81
Trichloroethylene	ppbv	>50%	0.050	0.25	no	<0.050	<0.050	n/c
Bromodichloromethane	ppbv	>50%	0.040	0.2	no	<0.040	<0.040	n/c
Hexachlorobutadiene	ppbv	>50%	0.040	0.2	no	<0.040	<0.040	n/c
Toluene	ppbv	>50%	0.20	1	no	2.65	4.10	43
Ethylbenzene	ppbv	>50%	0.20	1	no	0.24	0.29	n/c
1,2,4-Trimethylbenzene	ppbv	>50%	0.50	2.5	no	<0.50	<0.50	n/c
Naphthalene	ppbv	>50%	0.050	0.25	no	0.137	0.197	n/c
Xylene (Total)	ppbv	>50%	0.32	1.6	no	0.96	1.41	n/c
1,2,3-Trimethylbenzene	ppbv	>50%	0.50	2.5	no	<0.50	<0.50	n/c
1,1,1,2-Tetrachloroethane	ppbv	>50%	0.10	0.5	no	<0.10	<0.10	n/c
Aliphatic >C5-C6	ug/m3	>50%	5.0	25	no	<5.0	6.9	n/c
Aliphatic >C6-C8	ug/m3	>50%	5.0	25	no	11.7	23.4	n/c
Aliphatic >C8-C10	ug/m3	>50%	5.0	25	no	18.6	18	n/c
Aliphatic >C10-C12	ug/m3	>50%	5.0	25	no	11.4	9.7	n/c
Aliphatic >C12-C16	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aromatic >C7-C8 (TEX Excluded)	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aromatic >C8-C10	ug/m3	>50%	5.0	25	no	9.8	7.8	n/c
Aromatic >C10-C12	ug/m3	>50%	5.0	25	no	11.2	6.0	n/c
Aromatic >C12-C16	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Calculated Parameters								
1,3-Butadiene	ug/m3	>50%	0.11	0.55	no	<0.11	<0.11	n/c
Chloroform	ug/m3	>50%	0.24	1.2	no	2.02	2.02	0
Carbon Tetrachloride	ug/m3	>50%	0.31	1.55	no	0.66	0.62	n/c
Bromodichloromethane	ug/m3	>50%	0.27	1.35	no	<0.27	<0.27	n/c
Trichloroethylene	ug/m3	>50%	0.27	1.35	no	<0.27	<0.27	n/c
Benzene	ug/m3	>50%	0.16	0.8	no	1.33	3.17	82
Toluene	ug/m3	>50%	0.75	3.75	no	9.96	15.4	43
Ethylbenzene	ug/m3	>50%	0.87	4.35	no	1.04	1.27	n/c
1,2,4-Trimethylbenzene	ug/m3	>50%	2.5	12.5	no	<2.5	<2.5	n/c
Hexachlorobutadiene	ug/m3	>50%	0.43	2.15	no	<0.43	<0.43	n/c
Naphthalene	ug/m3	>50%	0.26	1.3	no	0.72	1.03	n/c
Xylene (Total)	ug/m3	>50%	1.4	7	no	4.2	6.1	n/c
1,2,3-Trimethylbenzene	ug/m3	>50%	2.5	12.5	no	<2.5	<2.5	n/c
1,1,1,2-Tetrachloroethane	ug/m3	>50%	0.69	3.45	no	<0.69	<0.69	n/c

Relative Percent Difference Calculations - Soil Vapour

Sample Location	Units	Alert Limit	RDL	5X RDL	Are the results >5X RDL	MW10-06A / 1922	MW10-06B / 2066	RPD
Sample Collection Date						August 15, 2014	August 15, 2014	
Laboratory Sample ID						XE7638	XE7639	
Volatile Organic Hydrocarbons								
1,3-Butadiene	ppbv	>50%	2.9	14.5	no	<26	<2.9	n/c
Chloroform	ppbv	>50%	0.87	4.35	no	25.2	1.84	n/c
Carbon Tetrachloride	ppbv	>50%	1.7	8.5	no	<16	<1.7	n/c
Benzene	ppbv	>50%	1.0	5	no	<9.4	<1.0	n/c
Trichloroethylene	ppbv	>50%	1.7	8.5	no	<16	<1.7	n/c
Bromodichloromethane	ppbv	>50%	1.2	6	no	<10	<1.2	n/c
Hexachlorobutadiene	ppbv	>50%	2.9	14.5	no	<26	<2.9	n/c
Toluene	ppbv	>50%	1.2	6	no	<10	8.7	n/c
Ethylbenzene	ppbv	>50%	1.2	6	no	424	52.6	156
1,2,4-Trimethylbenzene	ppbv	>50%	2.9	14.5	no	4630	575	156
Naphthalene	ppbv	>50%	12	60	no	4700	4120	13
Xylene (Total)	ppbv	>50%	2.3	11.5	no	3170	404	155
1,2,3-Trimethylbenzene	ppbv	>50%	12	60	no	4180	156	186
1,1,1,2-Tetrachloroethane	ppbv	>50%	0.58	2.9	no	<5.2	<0.58	n/c
Aliphatic >C5-C6	ug/m3	>50%	29	145	no	<260	<29	n/c
Aliphatic >C6-C8	ug/m3	>50%	29	145	no	546	123	n/c
Aliphatic >C8-C10	ug/m3	>50%	29	145	no	8160	1070	154
Aliphatic >C10-C12	ug/m3	>50%	29	145	no	20000	3600	139
Aliphatic >C12-C16	ug/m3	>50%	29	145	no	2700	639	123
Aromatic >C7-C8 (TEX Excluded)	ug/m3	>50%	29	145	no	<260	<29	n/c
Aromatic >C8-C10	ug/m3	>50%	29	145	no	52400	7370	151
Aromatic >C10-C12	ug/m3	>50%	120	600	no	53300	15100	112
Aromatic >C12-C16	ug/m3	>50%	29	145	no	687	159	125
Calculated Parameters								
1,3-Butadiene	ug/m3	>50%	6.4	32	no	<58	<6.4	n/c
Chloroform	ug/m3	>50%	4.2	21	no	123	9.0	n/c
Carbon Tetrachloride	ug/m3	>50%	11	55	no	<98	<11	n/c
Bromodichloromethane	ug/m3	>50%	7.8	39	no	<70	<7.8	n/c
Trichloroethylene	ug/m3	>50%	9.4	47	no	<84	<9.4	n/c
Benzene	ug/m3	>50%	3.3	16.5	no	<30	<3.3	n/c
Toluene	ug/m3	>50%	4.4	22	no	<39	32.7	n/c
Ethylbenzene	ug/m3	>50%	5.0	25	no	1840	228	156
1,2,4-Trimethylbenzene	ug/m3	>50%	14	70	no	22800	2830	156
Hexachlorobutadiene	ug/m3	>50%	31	155	no	<280	<31	n/c
Naphthalene	ug/m3	>50%	60	300	no	24700	21600	13
Xylene (Total)	ug/m3	>50%	10	50	no	13800	1760	155
1,2,3-Trimethylbenzene	ug/m3	>50%	57	285	no	20500	768	186
1,1,1,2-Tetrachloroethane	ug/m3	>50%	4.0	20	no	<36	<4.0	n/c

Relative Percent Difference Calculations - Field Blank, Trip Blank

Parameter	Units	RDL	Trip Blank	Alert Limit	Do the results exceed the Alert Limit?
Sample Collection Date			August 12, 2014		
Laboratory ID			XE7616		
Volatile Organic Hydrocarbons					
1,3-Butadiene	ppbv	0.50	<0.50	>5X RDL	no
Chloroform	ppbv	0.15	<0.15	>5X RDL	no
Carbon Tetrachloride	ppbv	0.30	<0.30	>5X RDL	no
Benzene	ppbv	0.18	<0.18	>5X RDL	no
Trichloroethylene	ppbv	0.30	<0.30	>5X RDL	no
Bromodichloromethane	ppbv	0.20	<0.20	>5X RDL	no
Hexachlorobutadiene	ppbv	0.50	<0.50	>5X RDL	no
Toluene	ppbv	0.20	<0.20	>5X RDL	no
Ethylbenzene	ppbv	0.20	<0.20	>5X RDL	no
1,2,4-Trimethylbenzene	ppbv	0.50	<0.50	>5X RDL	no
Naphthalene	ppbv	0.50	<0.50	>5X RDL	no
Xylene (Total)	ppbv	0.32	<0.32	>5X RDL	no
1,2,3-Trimethylbenzene	ppbv	0.50	<0.50	>5X RDL	no
1,1,1,2-Tetrachloroethane	ppbv	0.10	<0.10	>5X RDL	no
Aliphatic >C5-C6	ug/m3	5.0	<5.0	>5X RDL	no
Aliphatic >C6-C8	ug/m3	5.0	<5.0	>5X RDL	no
Aliphatic >C8-C10	ug/m3	5.0	<5.0	>5X RDL	no
Aliphatic >C10-C12	ug/m3	5.0	<5.0	>5X RDL	no
Aliphatic >C12-C16	ug/m3	5.0	<5.0	>5X RDL	no
Aromatic >C7-C8 (TEX Excluded)	ug/m3	5.0	<5.0	>5X RDL	no
Aromatic >C8-C10	ug/m3	5.0	<5.0	>5X RDL	no
Aromatic >C10-C12	ug/m3	5.0	<5.0	>5X RDL	no
Aromatic >C12-C16	ug/m3	5.0	<5.0	>5X RDL	no
Calculated Parameters					
1,3-Butadiene	ug/m3	1.1	<1.1	>5X RDL	no
Chloroform	ug/m3	0.73	<0.73	>5X RDL	no
Carbon Tetrachloride	ug/m3	1.9	<1.9	>5X RDL	no
Bromodichloromethane	ug/m3	1.3	<1.3	>5X RDL	no
Trichloroethylene	ug/m3	1.6	<1.6	>5X RDL	no
Benzene	ug/m3	0.58	<0.58	>5X RDL	no
Toluene	ug/m3	0.75	<0.75	>5X RDL	no
Ethylbenzene	ug/m3	0.87	<0.87	>5X RDL	no
p+m-Xylene	ug/m3	0.87	<0.87	>5X RDL	no
o-Xylene	ug/m3	0.87	<0.87	>5X RDL	no
1,2,4-Trimethylbenzene	ug/m3	2.5	<2.5	>5X RDL	no
Hexachlorobutadiene	ug/m3	5.3	<5.3	>5X RDL	no
Naphthalene	ug/m3	2.6	<2.6	>5X RDL	no
Xylene (Total)	ug/m3	1.4	<1.4	>5X RDL	no
1,2,3-Trimethylbenzene	ug/m3	2.5	<2.5	>5X RDL	no
1,1,1,2-Tetrachloroethane	ug/m3	0.69	<0.69	>5X RDL	no

Summary of Quality Control Sample Results

Laboratory Submission Number	Sample Matrix	Laboratory Sample ID Affected	Test Affected	Data Quality Issue	Comments
B4F0085	Air	XE7639	Naphthalene	Naphthalene is over the calibration range. Several subsequent dilutions were done for naphthalene but the results did not match the original data.	Naphthalene is over the calibration range and data for this compound should be considered an estimate only. Under these circumstances this data should be considered suspect.
B4F0085	Air	Spiked Blank	Hexachlorobutadiene	Hexachlorobutadiene percent accuracy outside of acceptance criteria for all worksheets associated with the Site.	For multi-parameter tests, 10% of parameters can fall outside of the acceptance range. Under these circumstances, the hexachlorobutadiene data reported can be considered reliable.
B4F0085	Air	XE7631 and XE7632	Benzene	Field duplicate samples Home "B"-IN1A / 248 and Home "B"-IN1B / 14255 exceed the alert limit for benzene (82%).	The benzene concentration observed in the sample met the regulatory guideline, while the field duplicate result exceeded the guideline. Thus, this benzene data for this sample pair should be considered suspect.
B4F0085	Air	XE7638 and XE7639	Aliphatic >C8-C10, >C10-C12 and >C12-16	Field duplicate samples MW10-06A / 1922 and MW10-06B / 2066 exceed the alert limit for aliphatic >C8-C10, >C10-C12 and >C12-16 (154%, 139% and 123%, respectively).	Aliphatic >C8-C10, >C10-C12 and >C12-16 concentrations in both the sample and the field duplicate were below the regulatory guidelines, indicating that there will not be a material effect on the interpretation of the results of this parameter. Under these circumstances, the aliphatic >C8-C10, >C10-C12 and >C12-16 data reported can be considered reliable.
B4F0085	Air	XE7638 and XE7639	Aromatic >C8-C10, >C10-C12 and >C12-16	Field duplicate samples MW10-06A / 1922 and MW10-06B / 2066 exceed the alert limit for aromatic >C8-C10, >C10-C12 and >C12-16 (151%, 112% and 125%, respectively).	Aromatic >C8-C10, >C10-C12 and >C12-16 concentrations in both the sample and the field duplicate were above the regulatory guidelines, indicating that there will not be a material effect on the interpretation of the results of this parameter. Under these circumstances, the aromatic >C8-C10, >C10-C12 and >C12-16 data reported can be considered reliable.
B4F0085	Air	XE7638 and XE7639	Ethylbenzene	Field duplicate samples MW10-06A / 1922 and MW10-06B / 2066 exceed the alert limit for ethylbenzene(156%).	Ethylbenzene concentrations in both the sample and the field duplicate were below the regulatory guidelines, indicating that there will not be a material effect on the interpretation of the results of this parameter. Under these circumstances, the ethylbenzene data reported can be considered reliable.
B4F0085	Air	XE7638 and XE7639	1,2,4-Trimethylbenzene and 1,2,3-Trimethylbenzene	Field duplicate samples MW10-06A / 1922 and MW10-06B / 2066 exceed the alert limit for 1,2,4-trimethylbenzene and 1,2,3-trimethylbenzene (156%, and 155%, respectively).	1,2,4-Trimethylbenzene and 1,2,3-trimethylbenzene concentrations in both the sample and the field duplicate were above the regulatory guidelines, indicating that there will not be a material effect on the interpretation of the results of this parameter. Under these circumstances, the 1,2,4-trimethylbenzene and 1,2,3-trimethylbenzene data reported can be considered reliable.
B4F0085	Air	XE7638 and XE7639	Xylene	Field duplicate samples MW10-06A / 1922 and MW10-06B / 2066 exceed the alert limit for xylene (186%).	The xylene concentration observed in the sample exceeded the regulatory guideline, while the field duplicate result met the guideline. Thus, this xylene data for this sample pair should be considered suspect.

GOLDER DATA QUALITY REVIEW CHECKLIST

Site Location: Canada Creosote North

Sampling Date: June 27, 2015

Golder Project Number: 13-1324-0204

Laboratory: Maxxam - Mississauga

Lab Submission Number: B414656

Was the Cooler Received at the lab under a sealed and intact custody seal? n/a
 Was proper chain of custody of the samples documented and kept? Yes
 Were sample temperatures acceptable when they reached lab?: Yes
 Were all samples analyzed and extracted within hold times?: Yes
 Has lab warranted all tests were in statistical control in CoA?: Yes
 Was sufficient sample provided for the requested analysis? Yes
 Has lab warranted all samples were analyzed with limited headspace present?: Yes

Are All Laboratory QC Within Acceptance Criteria (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Surrogate Recovery			X	Spiked blank sample recovery outside acceptance range for hexachlorobutadiene. All remaining laboratory QC are within acceptance criteria.
Method Blank Concentration	X			
Laboratory Duplicate RPD	X			
Matrix Spike Recovery	X			
Blank Spike Recovery		X		

Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Field Blank Concentration			X	All field QC samples are within alert limits.
Trip Blank Concentration	X			
Field Duplicate RPD	X			

Is data considered reliable (Yes/No/Suspect)? Yes
 If answer is "No" or "Suspect", describe and provide rationale:

Data Reviewed by (Print): Lori Lake

Data Reviewed by (Signature): *Lori Lake*

Date: March 3, 2015

Relative Percent Difference Calculations - Soil Vapour

Sample Location	Units	Alert Limit	RDL	5X RDL	Are the results >5X RDL	Home "C" - SS1A/2529	Home "C" - SS1B/2525	RPD
Sample Collection Date						November 13, 2014	November 13, 2014	
Laboratory Sample ID						YM0856	YM0858	
Volatile Organic Hydrocarbons								
1,3-Butadiene	ppbv	>50%	0.050	0.25	no	<0.050	<0.050	n/c
Chloroform	ppbv	>50%	0.050	0.25	no	0.064	0.060	n/c
Carbon Tetrachloride	ppbv	>50%	0.050	0.25	no	<0.050	<0.050	n/c
Benzene	ppbv	>50%	0.050	0.25	no	0.32	0.43	29
Trichloroethylene	ppbv	>50%	0.050	0.25	no	<0.050	<0.050	n/c
Bromodichloromethane	ppbv	>50%	0.040	0.2	no	<0.040	<0.040	n/c
Hexachlorobutadiene	ppbv	>50%	0.040	0.2	no	<0.040	<0.040	n/c
Toluene	ppbv	>50%	0.20	1	no	0.66	0.76	n/c
Ethylbenzene	ppbv	>50%	0.20	1	no	<0.20	<0.20	n/c
p+m-Xylene	ppbv	>50%	0.20	1	no	<0.20	<0.20	n/c
o-Xylene	ppbv	>50%	0.20	1	no	<0.20	<0.20	n/c
1,2,4-Trimethylbenzene	ppbv	>50%	0.50	2.5	no	<0.50	<0.50	n/c
Naphthalene	ppbv	>50%	0.050	0.25	no	0.547	0.497	10
Total Xylenes	ppbv	>50%	0.32	1.6	no	<0.32	<0.32	n/c
1,2,3-Trimethylbenzene	ppbv	>50%	0.50	2.5	no	<0.50	<0.50	n/c
1,1,1,2-Tetrachloroethane	ppbv	>50%	0.10	0.5	no	<0.10	<0.10	n/c
Aliphatic >C5-C6	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aliphatic >C6-C8	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aliphatic >C8-C10	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aliphatic >C10-C12	ug/m3	>50%	5.0	25	no	20.7	21.3	n/c
Aliphatic >C12-C16	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aromatic >C7-C8 (TEX Excluded)	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aromatic >C8-C10	ug/m3	>50%	5.0	25	no	28.0	26.7	5
Aromatic >C10-C12	ug/m3	>50%	5.0	25	no	8.8	8.9	n/c
Aromatic >C12-C16	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Calculated Parameters								
1,3-Butadiene	ug/m3	>50%	0.11	0.55	no	<0.11	<0.11	n/c
Chloroform	ug/m3	>50%	0.24	1.2	no	0.31	0.29	n/c
Carbon Tetrachloride	ug/m3	>50%	0.31	1.55	no	<0.31	<0.31	n/c
Bromodichloromethane	ug/m3	>50%	0.27	1.35	no	<0.27	<0.27	n/c
Trichloroethylene	ug/m3	>50%	0.27	1.35	no	<0.27	<0.27	n/c
Benzene	ug/m3	>50%	0.16	0.8	no	1.04	1.36	27
Toluene	ug/m3	>50%	0.75	3.75	no	2.5	2.85	n/c
Ethylbenzene	ug/m3	>50%	0.87	4.35	no	<0.87	<0.87	n/c
p+m-Xylene	ug/m3	>50%	0.87	4.35	no	<0.87	<0.87	n/c
o-Xylene	ug/m3	>50%	0.87	4.35	no	<0.87	<0.87	n/c
1,2,4-Trimethylbenzene	ug/m3	>50%	2.5	12.5	no	<2.5	<2.5	n/c
Hexachlorobutadiene	ug/m3	>50%	0.43	2.15	no	<0.43	<0.43	n/c
Naphthalene	ug/m3	>50%	0.26	1.3	no	2.87	2.61	9
Xylene (Total)	ug/m3	>50%	1.4	7	no	<1.4	<1.4	n/c
1,2,3-Trimethylbenzene	ug/m3	>50%	2.5	12.5	no	<2.5	<2.5	n/c
1,1,1,2-Tetrachloroethane	ug/m3	>50%	0.69	3.45	no	<0.69	<0.69	n/c

Relative Percent Difference Calculations - Soil Vapour

Sample Location	Units	Alert Limit	RDL	5X RDL	Are the results >5X RDL	Home "C" - IN1A/17190	Home "C" -IN1B/248	RPD
Sample Collection Date						November 11, 2014	November 11, 2014	
Laboratory Sample ID						YM8778	YM8779	
Volatile Organic Hydrocarbons								
1,3-Butadiene	ppbv	>50%	0.050	0.25	no	<0.050	<0.050	n/c
Chloroform	ppbv	>50%	0.050	0.25	no	0.054	0.055	n/c
Carbon Tetrachloride	ppbv	>50%	0.050	0.25	no	0.11	0.11	n/c
Benzene	ppbv	>50%	0.050	0.25	no	0.42	0.18	n/c
Trichloroethylene	ppbv	>50%	0.050	0.25	no	<0.050	<0.050	n/c
Bromodichloromethane	ppbv	>50%	0.040	0.2	no	<0.040	<0.040	n/c
Hexachlorobutadiene	ppbv	>50%	0.040	0.2	no	<0.040	<0.040	n/c
Toluene	ppbv	>50%	0.20	1	no	0.92	0.77	n/c
Ethylbenzene	ppbv	>50%	0.20	1	no	<0.20	<0.20	n/c
p+m-Xylene	ppbv	>50%	0.20	1	no	0.43	0.36	n/c
o-Xylene	ppbv	>50%	0.20	1	no	<0.20	<0.20	n/c
1,2,4-Trimethylbenzene	ppbv	>50%	0.50	2.5	no	<0.50	<0.50	n/c
Naphthalene	ppbv	>50%	0.050	0.25	no	0.072	<0.050	n/c
Total Xylenes	ppbv	>50%	0.32	1.6	no	0.43	0.36	n/c
1,2,3-Trimethylbenzene	ppbv	>50%	0.50	2.5	no	<0.50	<0.50	n/c
1,1,1,2-Tetrachloroethane	ppbv	>50%	0.10	0.5	no	<0.10	<0.10	n/c
Aliphatic >C5-C6	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aliphatic >C6-C8	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aliphatic >C8-C10	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aliphatic >C10-C12	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aliphatic >C12-C16	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aromatic >C7-C8 (TEX Excluded)	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aromatic >C8-C10	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aromatic >C10-C12	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aromatic >C12-C16	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Calculated Parameters								
1,3-Butadiene	ug/m3	>50%	0.11	0.55	no	<0.11	<0.11	n/c
Chloroform	ug/m3	>50%	0.24	1.2	no	0.26	0.27	n/c
Carbon Tetrachloride	ug/m3	>50%	0.31	1.55	no	0.70	0.69	n/c
Bromodichloromethane	ug/m3	>50%	0.27	1.35	no	<0.27	<0.27	n/c
Trichloroethylene	ug/m3	>50%	0.27	1.35	no	<0.27	<0.27	n/c
Benzene	ug/m3	>50%	0.16	0.8	no	1.34	0.59	n/c
Toluene	ug/m3	>50%	0.75	3.75	no	3.45	2.89	n/c
Ethylbenzene	ug/m3	>50%	0.87	4.35	no	<0.87	<0.87	n/c
p+m-Xylene	ug/m3	>50%	0.87	4.35	no	1.88	1.58	n/c
o-Xylene	ug/m3	>50%	0.87	4.35	no	<0.87	<0.87	n/c
1,2,4-Trimethylbenzene	ug/m3	>50%	2.5	12.5	no	<2.5	<2.5	n/c
Hexachlorobutadiene	ug/m3	>50%	0.43	2.15	no	<0.43	<0.43	n/c
Naphthalene	ug/m3	>50%	0.26	1.3	no	0.38	<0.26	n/c
Xylene (Total)	ug/m3	>50%	1.4	7	no	1.9	1.6	n/c
1,2,3-Trimethylbenzene	ug/m3	>50%	2.5	12.5	no	<2.5	<2.5	n/c
1,1,1,2-Tetrachloroethane	ug/m3	>50%	0.69	3.45	no	<0.69	<0.69	n/c

Relative Percent Difference Calculations - Soil Vapour

Sample Location	Units	Alert Limit	RDL	5X RDL	Are the results >5X RDL	Are the results >5X RDL	MW10-06A/1313	MW10-06B/1787	RPD
Sample Collection Date							2014/11/13	2014/11/13	
Laboratory Sample ID							YM8771	YM8772	
Volatile Organic Hydrocarbons									
1,3-Butadiene	ppbv	>50%	22	110	no	no	<22	<22	n/c
Chloroform	ppbv	>50%	6.6	33	no	no	12.3	11	n/c
Carbon Tetrachloride	ppbv	>50%	13	65	no	no	<13	<13	n/c
Benzene	ppbv	>50%	8.8	44	no	no	<8.8	<8.8	n/c
Trichloroethylene	ppbv	>50%	13	65	no	no	<13	<13	n/c
Bromodichloromethane	ppbv	>50%	7.9	39.5	no	no	<7.9	<7.9	n/c
Hexachlorobutadiene	ppbv	>50%	8.8	44	yes	no	398	384	4
Toluene	ppbv	>50%	8.8	44	yes	no	1600	1530	4
Ethylbenzene	ppbv	>50%	8.8	44	yes	no	3600	3400	6
p+m-Xylene	ppbv	>50%	8.8	44	yes	no	1310	1240	5
o-Xylene	ppbv	>50%	22	110	yes	no	1560	1490	5
1,2,4-Trimethylbenzene	ppbv	>50%	22	110	no	no	<22	<22	n/c
Naphthalene	ppbv	>50%	22	110	yes	no	658	589	11
Total Xylenes	ppbv	>50%	14	70	yes	no	4910	4640	6
1,2,3-Trimethylbenzene	ppbv	>50%	22	110	yes	no	316	304	4
1,1,1,2-Tetrachloroethane	ppbv	>50%	4.4	22	no	no	<4.4	<4.4	n/c
Aliphatic >C5-C6	ug/m3	>50%	220	1100	no	no	<220	<220	n/c
Aliphatic >C6-C8	ug/m3	>50%	220	1100	yes	no	5170	4840	7
Aliphatic >C8-C10	ug/m3	>50%	220	1100	yes	no	19800	18600	6
Aliphatic >C10-C12	ug/m3	>50%	220	1100	yes	no	9980	9700	3
Aliphatic >C12-C16	ug/m3	>50%	220	1100	no	no	<220	<220	n/c
Aromatic >C7-C8 (TEX Excluded)	ug/m3	>50%	220	1100	no	no	<220	<220	n/c
Aromatic >C8-C10	ug/m3	>50%	220	1100	yes	no	29400.0	28500	3
Aromatic >C10-C12	ug/m3	>50%	220	1100	yes	no	18500	17600	5
Aromatic >C12-C16	ug/m3	>50%	220	1100	no	no	<220	<220	n/c
Calculated Parameters									
1,3-Butadiene	ug/m3	>50%	49	245	no	no	<49	<49	n/c
Chloroform	ug/m3	>50%	32	160	no	no	60	54	n/c
Carbon Tetrachloride	ug/m3	>50%	83	415	no	no	<83	<83	n/c
Bromodichloromethane	ug/m3	>50%	59	295	no	no	<59	<59	n/c
Trichloroethylene	ug/m3	>50%	71	355	no	no	<71	<71	n/c
Benzene	ug/m3	>50%	25	125	no	no	<25	<25	n/c
Toluene	ug/m3	>50%	33	165	yes	no	1500	1440	4
Ethylbenzene	ug/m3	>50%	38	190	yes	no	6940	6630	5
p+m-Xylene	ug/m3	>50%	38	190	yes	no	15600	14800	5
o-Xylene	ug/m3	>50%	38	190	yes	no	5670	5370	5
1,2,4-Trimethylbenzene	ug/m3	>50%	110	550	yes	no	7650	7330	4
Hexachlorobutadiene	ug/m3	>50%	230	1150	no	no	<230	<230	n/c
Naphthalene	ug/m3	>50%	120	600	yes	no	3450	3090	11
Xylene (Total)	ug/m3	>50%	62	310	yes	no	21300	20100	6
1,2,3-Trimethylbenzene	ug/m3	>50%	110	550	yes	no	1560	1490	5
1,1,1,2-Tetrachloroethane	ug/m3	>50%	30	150	no	no	<30	<30	n/c

Relative Percent Difference Calculations - Field Blank, Trip Blank

Parameter	Units	RDL	Trip Blank	Alert Limit	Do the results exceed the Alert Limit?
Sample Collection Date			November 13, 2014		
Laboratory ID			YM8788		
Volatile Organic Hydrocarbons					
1,3-Butadiene	ppbv	0.050	<0.050	>5X RDL	no
Chloroform	ppbv	0.050	<0.050	>5X RDL	no
Carbon Tetrachloride	ppbv	0.050	<0.050	>5X RDL	no
Benzene	ppbv	0.050	<0.050	>5X RDL	no
Trichloroethylene	ppbv	0.050	<0.050	>5X RDL	no
Bromodichloromethane	ppbv	0.040	<0.040	>5X RDL	no
Hexachlorobutadiene	ppbv	0.040	<0.040	>5X RDL	no
Toluene	ppbv	0.20	<0.20	>5X RDL	no
Ethylbenzene	ppbv	0.20	<0.20	>5X RDL	no
p+m-Xylene	ppbv	0.20	<0.20	>5X RDL	no
o-Xylene	ppbv	0.20	<0.20	>5X RDL	no
1,2,4-Trimethylbenzene	ppbv	0.50	<0.50	>5X RDL	no
Naphthalene	ppbv	0.050	<0.050	>5X RDL	no
Total Xylenes	ppbv	0.32	<0.32	>5X RDL	no
1,2,3-Trimethylbenzene	ppbv	0.50	<0.50	>5X RDL	no
1,1,1,2-Tetrachloroethane	ppbv	0.10	<0.10	>5X RDL	no
Aliphatic >C5-C6	ug/m3	5.0	<5.0	>5X RDL	no
Aliphatic >C6-C8	ug/m3	5.0	<5.0	>5X RDL	no
Aliphatic >C8-C10	ug/m3	5.0	<5.0	>5X RDL	no
Aliphatic >C10-C12	ug/m3	5.0	<5.0	>5X RDL	no
Aliphatic >C12-C16	ug/m3	5.0	<5.0	>5X RDL	no
Aromatic >C7-C8 (TEX Excluded)	ug/m3	5.0	<5.0	>5X RDL	no
Aromatic >C8-C10	ug/m3	5.0	<5.0	>5X RDL	no
Aromatic >C10-C12	ug/m3	5.0	<5.0	>5X RDL	no
Aromatic >C12-C16	ug/m3	5.0	<5.0	>5X RDL	no
Calculated Parameters					
1,3-Butadiene	ug/m3	0.11	<0.11	>5X RDL	no
Chloroform	ug/m3	0.24	<0.24	>5X RDL	no
Carbon Tetrachloride	ug/m3	0.31	<0.31	>5X RDL	no
Bromodichloromethane	ug/m3	0.27	<0.27	>5X RDL	no
Trichloroethylene	ug/m3	0.27	<0.27	>5X RDL	no
Benzene	ug/m3	0.16	<0.16	>5X RDL	no
Toluene	ug/m3	0.75	<0.75	>5X RDL	no
Ethylbenzene	ug/m3	0.87	<0.87	>5X RDL	no
p+m-Xylene	ug/m3	0.87	<0.87	>5X RDL	no
o-Xylene	ug/m3	0.87	<0.87	>5X RDL	no
1,2,4-Trimethylbenzene	ug/m3	2.5	<2.5	>5X RDL	no
Hexachlorobutadiene	ug/m3	0.43	<0.43	>5X RDL	no
Naphthalene	ug/m3	0.26	<0.26	>5X RDL	no
Xylene (Total)	ug/m3	1.4	<1.4	>5X RDL	no
1,2,3-Trimethylbenzene	ug/m3	2.5	<2.5	>5X RDL	no
1,1,1,2-Tetrachloroethane	ug/m3	0.69	<0.69	>5X RDL	no

Summary of Quality Control Sample Results

Laboratory Submission Number	Sample Matrix	Laboratory Sample ID Affected	Test Affected	Data Quality Issue	Comments
B4L6141	Air	Spiked Blank	Hexachlorobutadiene	Spiked blank sample recovery outside acceptance range for hexachlorobutadiene.	Hexachlorobutadiene exceeded 140% recovery in the reference standard. The continuing calibration standard was acceptable and were no positives found for this compound, therefore there should be no effect on the data. Under these circumstances, the hexachlorobutadiene data reported can be considered reliable.

GOLDER DATA QUALITY REVIEW CHECKLIST

Site Location: Canada Creosote North

Sampling Date: January 27, 2014

Golder Project Number: 13-1324-0204

Laboratory: Maxxam - Mississauga

Lab Submission Number: B414656

Was the Cooler Received at the lab under a sealed and intact custody seal? n/a
 Was proper chain of custody of the samples documented and kept? Yes
 Were sample temperatures acceptable when they reached lab?: Yes
 Were all samples analyzed and extracted within hold times?: Yes
 Has lab warranted all tests were in statistical control in CoA?: Yes
 Was sufficient sample provided for the requested analysis? Yes
 Has lab warranted all samples were analyzed with limited headspace present?: Yes

Are All Laboratory QC Within Acceptance Criteria (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Surrogate Recovery			X	All laboratory QC results are within acceptance criteria.
Method Blank Concentration	X			
Laboratory Duplicate RPD	X			
Matrix Spike Recovery			X	
Blank Spike Recovery	X			

Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Field Blank Concentration			X	All field QC samples are within alert limits.
Trip Blank Concentration	X			
Field Duplicate RPD	X			

Is data considered reliable (Yes/No/Suspect)? Yes
 If answer is "No" or "Suspect", describe and provide rationale:

Data Reviewed by (Print): Lori Lake

Data Reviewed by (Signature): *Lori Lake*

Date: March 3, 2015

Relative Percent Difference Calculations - Soil Vapour

Sample Location	Units	Alert Limit	RDL	5X RDL	Are the results >5X RDL	Home "A"-SS1 / 2396	Home "A" -SS1B / 3018	RPD
Sample Collection Date						January 27, 2014	January 27, 2014	
Laboratory Sample ID						US2836	US2837	
Volatile Organic Hydrocarbons								
1,3-Butadiene	ppbv	>50%	0.15	0.75	no	<0.15	<0.15	n/c
Chloroform	ppbv	>50%	0.050	0.25	no	<0.050	<0.050	n/c
Carbon Tetrachloride	ppbv	>50%	0.050	0.25	no	<0.050	<0.050	n/c
Bromodichloromethane	ppbv	>50%	0.040	0.2	no	<0.040	<0.040	n/c
Hexachlorobutadiene	ppbv	>50%	0.040	0.2	no	<0.040	<0.040	n/c
Trichloroethylene	ppbv	>50%	0.30	1.5	no	<0.30	<0.30	n/c
Benzene	ppbv	>50%	0.18	0.9	no	0.34	0.36	n/c
Toluene	ppbv	>50%	0.20	1	no	1.37	1.44	5
Ethylbenzene	ppbv	>50%	0.20	1	no	0.33	0.35	n/c
p+m-Xylene	ppbv	>50%	0.37	1.85	no	1.57	1.7	n/c
o-Xylene	ppbv	>50%	0.20	1	no	0.58	0.63	n/c
1,2,4-Trimethylbenzene	ppbv	>50%	0.50	2.5	no	1.55	1.59	n/c
Naphthalene	ppbv	>50%	0.050	0.25	no	0.633	0.669	6
Xylene (Total)	ppbv	>50%	0.60	3	no	2.16	2.33	n/c
1,2,3-Trimethylbenzene	ppbv	>50%	0.50	2.5	no	<0.50	<0.50	n/c
1,1,1,2-Tetrachloroethane	ppbv	>50%	0.10	0.5	no	<0.10	<0.10	n/c
Aliphatic >C5-C6	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aliphatic >C6-C8	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aliphatic >C8-C10	ug/m3	>50%	5.0	25	no	28.1	34	19
Aliphatic >C10-C12	ug/m3	>50%	5.0	25	no	193	214	10
Aliphatic >C12-C16	ug/m3	>50%	5.0	25	no	298	223	29
Aromatic >C7-C8 (TEX Excluded)	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aromatic >C8-C10	ug/m3	>50%	5.0	25	no	49.2	52	6
Aromatic >C10-C12	ug/m3	>50%	5.0	25	no	32.9	33.2	1
Aromatic >C12-C16	ug/m3	>50%	5.0	25	no	31	15.9	n/c
Calculated Parameters								
1,3-Butadiene	ug/m3	>50%	0.33	1.65	no	<0.33	<0.33	n/c
Chloroform	ug/m3	>50%	0.24	1.2	no	<0.24	<0.24	n/c
Carbon Tetrachloride	ug/m3	>50%	0.31	1.55	no	<0.31	<0.31	n/c
Bromodichloromethane	ug/m3	>50%	0.27	1.35	no	<0.27	<0.27	n/c
Trichloroethylene	ug/m3	>50%	1.6	8	no	<1.6	<1.6	n/c
Benzene	ug/m3	>50%	0.58	2.9	no	1.08	1.14	n/c
Toluene	ug/m3	>50%	0.75	3.75	no	5.15	5.4	5
Ethylbenzene	ug/m3	>50%	0.87	4.35	no	1.44	1.53	n/c
p+m-Xylene	ug/m3	>50%	1.6	8	no	6.8	7.4	n/c
o-Xylene	ug/m3	>50%	0.87	4.35	no	2.54	2.74	n/c
1,2,4-Trimethylbenzene	ug/m3	>50%	2.5	12.5	no	7.6	7.8	n/c
Hexachlorobutadiene	ug/m3	>50%	0.43	2.15	no	<0.43	<0.43	n/c
Naphthalene	ug/m3	>50%	0.26	1.3	no	3.32	3.51	6
Xylene (Total)	ug/m3	>50%	2.6	13	no	9.4	10.1	n/c
1,2,3-Trimethylbenzene	ug/m3	>50%	2.5	12.5	no	<2.5	<2.5	n/c
1,1,1,2-Tetrachloroethane	ug/m3	>50%	0.69	3.45	no	<0.69	<0.69	n/c

Relative Percent Difference Calculations - Field Blank, Trip Blank

Parameter	Units	RDL	Trip Blank	Alert Limit	Do the results exceed the Alert Limit?
Sample Collection Date			June 27, 2014		
Laboratory ID			US2838		
Volatile Organic Hydrocarbons					
1,3-Butadiene	ppbv	0.15	<0.15	>5X RDL	no
Chloroform	ppbv	0.050	<0.050	>5X RDL	no
Carbon Tetrachloride	ppbv	0.050	<0.050	>5X RDL	no
Bromodichloromethane	ppbv	0.040	<0.040	>5X RDL	no
Hexachlorobutadiene	ppbv	0.040	<0.040	>5X RDL	no
Trichloroethylene	ppbv	0.30	<0.30	>5X RDL	no
Benzene	ppbv	0.18	<0.18	>5X RDL	no
Toluene	ppbv	0.20	<0.20	>5X RDL	no
Ethylbenzene	ppbv	0.20	<0.20	>5X RDL	no
p+m-Xylene	ppbv	0.37	<0.37	>5X RDL	no
o-Xylene	ppbv	0.20	<0.20	>5X RDL	no
1,2,4-Trimethylbenzene	ppbv	0.50	<0.50	>5X RDL	no
Naphthalene	ppbv	0.050	<0.050	>5X RDL	no
Xylene (Total)	ppbv	0.60	<0.60	>5X RDL	no
1,2,3-Trimethylbenzene	ppbv	0.50	<0.50	>5X RDL	no
1,1,1,2-Tetrachloroethane	ppbv	0.10	<0.10	>5X RDL	no
Aliphatic >C5-C6	ug/m3	5.0	<5.0	>5X RDL	no
Aliphatic >C6-C8	ug/m3	5.0	<5.0	>5X RDL	no
Aliphatic >C8-C10	ug/m3	5.0	<5.0	>5X RDL	no
Aliphatic >C10-C12	ug/m3	5.0	<5.0	>5X RDL	no
Aliphatic >C12-C16	ug/m3	5.0	<5.0	>5X RDL	no
Aromatic >C7-C8 (TEX Excluded)	ug/m3	5.0	<5.0	>5X RDL	no
Aromatic >C8-C10	ug/m3	5.0	<5.0	>5X RDL	no
Aromatic >C10-C12	ug/m3	5.0	<5.0	>5X RDL	no
Aromatic >C12-C16	ug/m3	5.0	<5.0	>5X RDL	no
Calculated Parameters					
1,3-Butadiene	ug/m3	0.33	<0.33	>5X RDL	no
Chloroform	ug/m3	0.24	<0.24	>5X RDL	no
Carbon Tetrachloride	ug/m3	0.31	<0.31	>5X RDL	no
Bromodichloromethane	ug/m3	0.27	<0.27	>5X RDL	no
Trichloroethylene	ug/m3	1.6	<1.6	>5X RDL	no
Benzene	ug/m3	0.58	<0.58	>5X RDL	no
Toluene	ug/m3	0.75	<0.75	>5X RDL	no
Ethylbenzene	ug/m3	0.87	<0.87	>5X RDL	no
p+m-Xylene	ug/m3	1.6	<1.6	>5X RDL	no
o-Xylene	ug/m3	0.87	<0.87	>5X RDL	no
1,2,4-Trimethylbenzene	ug/m3	2.5	<2.5	>5X RDL	no
Hexachlorobutadiene	ug/m3	0.43	<0.43	>5X RDL	no
Naphthalene	ug/m3	0.26	<0.26	>5X RDL	no
Xylene (Total)	ug/m3	2.6	<2.6	>5X RDL	no
1,2,3-Trimethylbenzene	ug/m3	2.5	<2.5	>5X RDL	no
1,1,1,2-Tetrachloroethane	ug/m3	0.69	<0.69	>5X RDL	no

Summary of Quality Control Sample Results

Laboratory Submission Number	Sample Matrix	Laboratory Sample ID Affected	Test Affected	Data Quality Issue	Comments
B414656	Air	US2834 and US2835	D5-chlorobenzene	Recovery for D5-chlorobenzene exceeded +/- 40% criteria due to matrix interference.	Sample was also run in SCAN. SCAN results showed D5-chlorobenzene co-eluted with siloxanes. No analytes that use d5-chlorobenzene in their calculation were detected above DL. Under these circumstances, the D5-chlorobenzene data reported can be considered reliable.

GOLDER DATA QUALITY REVIEW CHECKLIST

Site Location: Canada Creosote North

Sampling Date: January 24, 2014

Golder Project Number: 13-1324-0204

Laboratory: Maxxam - Mississauga

Lab Submission Number: B414671

Was the Cooler Received at the lab under a sealed and intact custody seal?	<u>n/a</u>
Was proper chain of custody of the samples documented and kept?	<u>Yes</u>
Were sample temperatures acceptable when they reached lab?:	<u>Yes</u>
Were all samples analyzed and extracted within hold times?:	<u>Yes</u>
Has lab warranted all tests were in statistical control in CoA?:	<u>Yes</u>
Was sufficient sample provided for the requested analysis?:	<u>Yes</u>
Has lab warranted all samples were analyzed with limited headspace present?:	<u>Yes</u>

Are All Laboratory QC Within Acceptance Criteria (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Surrogate Recovery			X	All laboratory QC results are within acceptance criteria.
Method Blank Concentration	X			
Laboratory Duplicate RPD	X			
Matrix Spike Recovery			X	
Blank Spike Recovery	X			

Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Field Blank Concentration			X	No field QC samples were collected.
Trip Blank Concentration			X	
Field Duplicate RPD			X	

Is data considered reliable (Yes/No/Suspect)?: Yes
 If answer is "No" or "Suspect", describe and provide rationale:

Data Reviewed by (Print): Lori Lake

Data Reviewed by (Signature): *Lori Lake*

Date: March 3, 2015

Summary of Quality Control Sample Results

Laboratory Submission Number	Sample Matrix	Laboratory Sample ID Affected	Test Affected	Data Quality Issue	Comments
B414671	Air	n/a	n/a	No data quality issues were identified.	The data are considered reliable.

GOLDER DATA QUALITY REVIEW CHECKLIST

Site Location: Canada Creosote North

Sampling Date: February 11 and 13, 2014

Golder Project Number: 13-1324-0204

Laboratory: Maxxam - Mississauga

Lab Submission Number: B424887

Was the Cooler Received at the lab under a sealed and intact custody seal? n/a
 Was proper chain of custody of the samples documented and kept? Yes
 Were sample temperatures acceptable when they reached lab?: Yes
 Were all samples analyzed and extracted within hold times?: Yes
 Has lab warranted all tests were in statistical control in CoA?: Yes
 Was sufficient sample provided for the requested analysis? Yes
 Has lab warranted all samples were analyzed with limited headspace present?: Yes

Are All Laboratory QC Within Acceptance Criteria (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Surrogate Recovery			X	All laboratory QC results are within acceptance criteria.
Method Blank Concentration	X			
Laboratory Duplicate RPD	X			
Matrix Spike Recovery			X	
Blank Spike Recovery	X			

Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Field Blank Concentration			X	No field QC samples were collected.
Trip Blank Concentration			X	
Field Duplicate RPD			X	

Is data considered reliable (Yes/No/Suspect)? Yes
 If answer is "No" or "Suspect", describe and provide rationale:

Data Reviewed by (Print): Lori Lake

Data Reviewed by (Signature): 

Date: March 3, 2015

Summary of Quality Control Sample Results

Laboratory Submission Number	Sample Matrix	Laboratory Sample ID Affected	Test Affected	Data Quality Issue	Comments
B424887	Air	n/a	n/a	No data quality issues were identified.	The data are considered reliable.

GOLDER DATA QUALITY REVIEW CHECKLIST

Site Location: Canada Creosote North

Sampling Date: March 11, 12 and 13, 2014

Golder Project Number: 13-1324-0204

Laboratory: Maxxam - Mississauga

Lab Submission Number: B440446

Was the Cooler Received at the lab under a sealed and intact custody seal? n/a
 Was proper chain of custody of the samples documented and kept? Yes
 Were sample temperatures acceptable when they reached lab?: Yes
 Were all samples analyzed and extracted within hold times?: Yes
 Has lab warranted all tests were in statistical control in CoA?: Yes
 Was sufficient sample provided for the requested analysis? Yes
 Has lab warranted all samples were analyzed with limited headspace present?: Yes

Are All Laboratory QC Within Acceptance Criteria (Yes, No, Not Applicable)?


	Yes	No	NA	Comments
Surrogate Recovery			X	Spike blank sample recovery outside acceptance range for hexachlorobutadiene. All remaining laboratory QC are within acceptance criteria.
Method Blank Concentration	X			
Laboratory Duplicate RPD	X			
Matrix Spike Recovery			X	
Blank Spike Recovery		X		

Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Field Blank Concentration			X	All field QC samples are within alert limits.
Trip Blank Concentration			X	
Field Duplicate RPD	X			

Is data considered reliable (Yes/No/Suspect)? Yes
 If answer is "No" or "Suspect", describe and provide rationale:

Data Reviewed by (Print): Lori Lake

Data Reviewed by (Signature): 

Date: March 3, 2015

Relative Percent Difference Calculations - Soil Vapour

Sample Location Sample Collection Date Laboratory Sample ID	Units	Alert Limit	RDL	5X RDL	Are the results >5X RDL	Home "B"-1N1 / 14926	Home "B"-1N1B / 14249	RPD
						March 12, 2014	March 12, 2014	
						VE7600	VE7601	
Volatile Organic Hydrocarbons								
1,3-Butadiene	ppbv	>50%	0.15	0.75	no	<0.15	<0.15	n/c
Chloroform	ppbv	>50%	0.050	0.25	no	0.72	0.7	3
Carbon Tetrachloride	ppbv	>50%	0.050	0.25	no	0.12	0.12	n/c
Bromodichloromethane	ppbv	>50%	0.040	0.2	no	<0.040	<0.040	n/c
Hexachlorobutadiene	ppbv	>50%	0.040	0.2	no	<0.040	<0.040	n/c
Trichloroethylene	ppbv	>50%	0.30	1.5	no	<0.30	<0.30	n/c
Benzene	ppbv	>50%	0.18	0.9	no	0.43	0.43	n/c
Toluene	ppbv	>50%	0.20	1	no	0.81	0.79	n/c
Ethylbenzene	ppbv	>50%	0.20	1	no	<0.20	<0.20	n/c
p+m-Xylene	ppbv	>50%	0.37	1.85	no	<0.37	<0.37	n/c
o-Xylene	ppbv	>50%	0.20	1	no	<0.20	<0.20	n/c
1,2,4-Trimethylbenzene	ppbv	>50%	0.50	2.5	no	<0.50	<0.50	n/c
Naphthalene	ppbv	>50%	0.050	0.25	no	0.079	0.078	n/c
Xylene (Total)	ppbv	>50%	0.60	3	no	<0.60	<0.60	n/c
1,2,3-Trimethylbenzene	ppbv	>50%	0.50	2.5	no	<0.50	<0.50	n/c
1,1,1,2-Tetrachloroethane	ppbv	>50%	0.10	0.5	no	<0.10	<0.10	n/c
Aliphatic >C5-C6	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aliphatic >C6-C8	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aliphatic >C8-C10	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aliphatic >C10-C12	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aliphatic >C12-C16	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aromatic >C7-C8 (TEX Excluded)	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aromatic >C8-C10	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aromatic >C10-C12	ug/m3	>50%	5.0	25	no	8.3	8.4	n/c
Aromatic >C12-C16	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Calculated Parameters								
1,3-Butadiene	ug/m3	>50%	0.33	1.65	no	<0.33	<0.33	n/c
Chloroform	ug/m3	>50%	0.24	1.2	no	3.54	3.42	3
Carbon Tetrachloride	ug/m3	>50%	0.31	1.55	no	0.75	0.78	n/c
Bromodichloromethane	ug/m3	>50%	0.27	1.35	no	<0.27	<0.27	n/c
Trichloroethylene	ug/m3	>50%	1.6	8	no	<1.6	<1.6	n/c
Benzene	ug/m3	>50%	0.58	2.9	no	1.39	1.36	n/c
Toluene	ug/m3	>50%	0.75	3.75	no	3.05	2.97	n/c
Ethylbenzene	ug/m3	>50%	0.87	4.35	no	<0.87	<0.87	n/c
p+m-Xylene	ug/m3	>50%	1.6	8	no	<1.6	<1.6	n/c
o-Xylene	ug/m3	>50%	0.87	4.35	no	<0.87	<0.87	n/c
1,2,4-Trimethylbenzene	ug/m3	>50%	2.5	12.5	no	<2.5	<2.5	n/c
Hexachlorobutadiene	ug/m3	>50%	0.43	2.15	no	<0.43	<0.43	n/c
Naphthalene	ug/m3	>50%	0.26	1.3	no	0.42	0.41	n/c
Xylene (Total)	ug/m3	>50%	2.6	13	no	<2.6	<2.6	n/c
1,2,3-Trimethylbenzene	ug/m3	>50%	2.5	12.5	no	<2.5	<2.5	n/c
1,1,1,2-Tetrachloroethane	ug/m3	>50%	0.69	3.45	no	<0.69	<0.69	n/c

Summary of Quality Control Sample Results

Laboratory Submission Number	Sample Matrix	Laboratory Sample ID Affected	Test Affected	Data Quality Issue	Comments
B440446	Air	Spiked Blank	Hexachlorobutadiene	Spike blank sample recovery outside acceptance range for hexachlorobutadiene.	The sample in question was from another sample from the worksheet and not a sample associated with this job. The sample failure is only associated with the sample which was spiked and therefore has no material effect on these results. All remaining laboratory QC are within acceptance criteria and the data is considered to be reliable.

GOLDER DATA QUALITY REVIEW CHECKLIST

Site Location: Canada Creosote North

Sampling Date: March 17, 18, 19 and 20, 2014

Golder Project Number: 13-1324-0204

Laboratory: Maxxam - Mississauga

Lab Submission Number: B445591

Was the Cooler Received at the lab under a sealed and intact custody seal? No
 Was proper chain of custody of the samples documented and kept? Yes
 Were sample temperatures acceptable when they reached lab?: Yes
 Were all samples analyzed and extracted within hold times?: Yes
 Has lab warranted all tests were in statistical control in CoA?: Yes
 Was sufficient sample provided for the requested analysis? Yes
 Has lab warranted all samples were analyzed with limited headspace present?: Yes

Are All Laboratory QC Within Acceptance Criteria (Yes, No, Not Applicable)?


	Yes	No	NA	Comments
Surrogate Recovery			X	All laboratory QC results are within acceptance criteria.
Method Blank Concentration	X			
Laboratory Duplicate RPD	X			
Matrix Spike Recovery	X			
Blank Spike Recovery	X			

Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Field Blank Concentration			X	All field QC samples are within alert limits.
Trip Blank Concentration			X	
Field Duplicate RPD	X			

Is data considered reliable (Yes/No/Suspect)? Yes
 If answer is "No" or "Suspect", describe and provide rationale:

Data Reviewed by (Print): Lori Lake

Data Reviewed by (Signature): 

Date: March 3, 2015

Relative Percent Difference Calculations - Soil Vapour

Sample Location Sample Collection Date Laboratory Sample ID	Units	Alert Limit	RDL	5X RDL	Are the results >5X RDL	MW10-06 WELL A / 1029	MW10-06 WELL B / 1386	RPD
						2014/03/20	2014/03/20	
						VH1152	VH1153	
Volatile Organic Hydrocarbons								
1,3-Butadiene	ppbv	>50%	0.500	2.5	no	<0.500	<18.0	n/c
Chloroform	ppbv	>50%	0.150	0.75	no	<0.150	10.5	n/c
Carbon Tetrachloride	ppbv	>50%	0.300	1.5	no	<0.300	<10.8	n/c
Bromodichloromethane	ppbv	>50%	0.200	1	no	<0.200	<7.20	n/c
Hexachlorobutadiene	ppbv	>50%	0.300	1.5	no	<0.300	<10.8	n/c
Trichloroethylene	ppbv	>50%	0.180	0.9	no	0.209	<6.48	n/c
Benzene	ppbv	>50%	0.200	1	no	<0.200	214	n/c
Toluene	ppbv	>50%	0.200	1	no	<0.200	1540	n/c
Ethylbenzene	ppbv	>50%	0.370	1.85	no	<0.370	3790	n/c
p+m-Xylene	ppbv	>50%	0.200	1	no	<0.200	1460	n/c
o-Xylene	ppbv	>50%	0.500	2.5	no	<0.500	1510	n/c
1,2,4-Trimethylbenzene	ppbv	>50%	0.500	2.5	no	<0.500	<18.0	n/c
Naphthalene	ppbv	>50%	2.00	10	no	<2.00	401	n/c
Xylene (Total)	ppbv	>50%	0.600	3	no	<0.600	5250	n/c
1,2,3-Trimethylbenzene	ppbv	>50%	0.500	2.5	no	<0.500	284	n/c
1,1,1,2-Tetrachloroethane	ppbv	>50%	0.500	2.5	no	<0.500	<18.0	n/c
Aliphatic >C5-C6	ug/m3	>50%	5.0	25	no	<5.0	<180	n/c
Aliphatic >C6-C8	ug/m3	>50%	5.0	25	no	<5.0	1400	n/c
Aliphatic >C8-C10	ug/m3	>50%	5.0	25	no	<5.0	18500	n/c
Aliphatic >C10-C12	ug/m3	>50%	5.0	25	no	<5.0	10200	n/c
Aliphatic >C12-C16	ug/m3	>50%	5.0	25	no	<5.0	<180	n/c
Aromatic >C7-C8 (TEX Excluded)	ug/m3	>50%	5.0	25	no	<5.0	<180	n/c
Aromatic >C8-C10	ug/m3	>50%	5.0	25	no	<5.0	35700	n/c
Aromatic >C10-C12	ug/m3	>50%	5.0	25	no	<5.0	22300	n/c
Aromatic >C12-C16	ug/m3	>50%	5.0	25	no	<5.0	<180	n/c
Calculated Parameters								
1,3-Butadiene	ug/m3	>50%	1.11	5.55	no	<1.11	<39.8	n/c
Chloroform	ug/m3	>50%	0.732	3.66	no	<0.732	51.4	n/c
Carbon Tetrachloride	ug/m3	>50%	1.89	9.45	no	<1.89	<68.0	n/c
Bromodichloromethane	ug/m3	>50%	1.34	6.7	no	<1.34	<48.2	n/c
Trichloroethylene	ug/m3	>50%	1.61	8.05	no	<1.61	<58.0	n/c
Benzene	ug/m3	>50%	0.575	2.875	no	0.668	<20.7	n/c
Toluene	ug/m3	>50%	0.753	3.765	no	<0.753	806	n/c
Ethylbenzene	ug/m3	>50%	0.869	4.345	no	<0.869	6670	n/c
p+m-Xylene	ug/m3	>50%	1.61	8.05	no	<1.61	16500	n/c
o-Xylene	ug/m3	>50%	0.869	4.345	no	<0.869	6330	n/c
1,2,4-Trimethylbenzene	ug/m3	>50%	2.46	12.3	no	<2.46	7420	n/c
Hexachlorobutadiene	ug/m3	>50%	5.33	26.65	no	<5.33	<192	n/c
Naphthalene	ug/m3	>50%	10.5	52.5	no	<10.5	2100	n/c
Xylene (Total)	ug/m3	>50%	2.61	13.05	no	<2.61	22800	n/c
1,2,3-Trimethylbenzene	ug/m3	>50%	2.46	12.3	no	<2.46	1400	n/c
1,1,1,2-Tetrachloroethane	ug/m3	>50%	3.43	17.15	no	<3.43	<124	n/c

Summary of Quality Control Sample Results

Laboratory Submission Number	Sample Matrix	Laboratory Sample ID Affected	Test Affected	Data Quality Issue	Comments
B445591	Air	n/a	n/a	No data quality issues were identified.	The data are considered reliable.

GOLDER DATA QUALITY REVIEW CHECKLIST

Site Location: Canada Creosote North

Sampling Date: June 2, 3 and 4, 2014

Golder Project Number: 13-1324-0204

Laboratory: Maxxam - Mississauga

Lab Submission Number: B494746

Was the Cooler Received at the lab under a sealed and intact custody seal?	<u>n/a</u>
Was proper chain of custody of the samples documented and kept?	<u>Yes</u>
Were sample temperatures acceptable when they reached lab?:	<u>Yes</u>
Were all samples analyzed and extracted within hold times?:	<u>Yes</u>
Has lab warranted all tests were in statistical control in CoA?:	<u>Yes</u>
Was sufficient sample provided for the requested analysis?:	<u>Yes</u>
Has lab warranted all samples were analyzed with limited headspace present?:	<u>Yes</u>

Are All Laboratory QC Within Acceptance Criteria (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Surrogate Recovery			X	Spiked blank sample recovery outside acceptance
Method Blank Concentration	X			range for naphthalene. All remaining
Laboratory Duplicate RPD	X			laboratory QC results are within acceptance
Matrix Spike Recovery			X	criteria.
Blank Spike Recovery		X		

Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Field Blank Concentration			X	All field QC samples are within
Trip Blank Concentration			X	alert limits.
Field Duplicate RPD	X			

Is data considered reliable (Yes/No/Suspect)?: Yes

If answer is "No" or "Suspect", describe and provide rationale:

Data Reviewed by (Print): Lori Lake

Data Reviewed by (Signature): 

Date: March 3, 2015

Relative Percent Difference Calculations - Soil Vapour

Sample Location	Units	Alert Limit	RDL	5X RDL	Are the results >5X RDL	Home "C"-SS1A /	Home "C"-SS1B /	RPD
Sample Collection Date						June 4, 2014	June 4, 2014	
Laboratory Sample ID						WE6599	WE6600	
Volatile Organic Hydrocarbons								
1,3-Butadiene	ppbv	>50%	0.50	2.5	no	<0.50	<0.50	n/c
Chloroform	ppbv	>50%	0.15	0.75	no	<0.15	<0.15	n/c
Carbon Tetrachloride	ppbv	>50%	0.080	0.4	no	0.09	<0.080	n/c
Benzene	ppbv	>50%	0.20	1	no	<0.20	0.99	n/c
Trichloroethylene	ppbv	>50%	0.30	1.5	no	<0.30	<0.30	n/c
Bromodichloromethane	ppbv	>50%	0.20	1	no	<0.20	<0.20	n/c
Hexachlorobutadiene	ppbv	>50%	0.50	2.5	no	<0.50	<0.50	n/c
Toluene	ppbv	>50%	0.20	1	no	2.99	3.72	22
Ethylbenzene	ppbv	>50%	0.20	1	no	<0.20	<0.20	n/c
p+m-Xylene	ppbv	>50%	0.20	1	no	0.45	0.34	n/c
o-Xylene	ppbv	>50%	0.20	1	no	<0.20	<0.20	n/c
1,2,4-Trimethylbenzene	ppbv	>50%	0.20	1	no	<0.20	<0.20	n/c
Naphthalene	ppbv	>50%	0.20	1	no	0.25	0.26	n/c
Xylene (Total)	ppbv	>50%	0.32	1.6	no	0.45	0.34	n/c
1,2,3-Trimethylbenzene	ppbv	>50%	0.50	2.5	no	<0.50	<0.50	n/c
1,1,1,2-Tetrachloroethane	ppbv	>50%	0.10	0.5	no	<0.10	<0.10	n/c
Aliphatic >C5-C6	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aliphatic >C6-C8	ug/m3	>50%	5.0	25	no	10.7	<5.0	n/c
Aliphatic >C8-C10	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aliphatic >C10-C12	ug/m3	>50%	5.0	25	no	8.2	66.6	n/c
Aliphatic >C12-C16	ug/m3	>50%	5.0	25	no	10.4	82.3	n/c
Aromatic >C7-C8 (TEX Excluded)	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aromatic >C8-C10	ug/m3	>50%	5.0	25	no	<5.0	87	n/c
Aromatic >C10-C12	ug/m3	>50%	5.0	25	no	5.4	16.8	n/c
Aromatic >C12-C16	ug/m3	>50%	5.0	25	no	<5.0	15.5	n/c
Calculated Parameters								
1,3-Butadiene	ug/m3	>50%	1.1	5.5	no	<1.1	<1.1	n/c
Chloroform	ug/m3	>50%	0.73	3.65	no	<0.73	<0.73	n/c
Carbon Tetrachloride	ug/m3	>50%	0.50	2.5	no	0.57	<0.50	n/c
Bromodichloromethane	ug/m3	>50%	1.3	6.5	no	<1.3	<1.3	n/c
Trichloroethylene	ug/m3	>50%	1.6	8	no	<1.6	<1.6	n/c
Benzene	ug/m3	>50%	0.64	3.2	no	<0.64	3.17	n/c
Toluene	ug/m3	>50%	0.75	3.75	no	11.3	14	21
Ethylbenzene	ug/m3	>50%	0.87	4.35	no	<0.87	<0.87	n/c
p+m-Xylene	ug/m3	>50%	0.87	4.35	no	1.95	1.48	n/c
o-Xylene	ug/m3	>50%	0.87	4.35	no	<0.87	<0.87	n/c
1,2,4-Trimethylbenzene	ug/m3	>50%	0.98	4.9	no	<0.98	<0.98	n/c
Hexachlorobutadiene	ug/m3	>50%	5.3	26.5	no	<5.3	<5.3	n/c
Naphthalene	ug/m3	>50%	1.0	5	no	1.3	1.4	n/c
Xylene (Total)	ug/m3	>50%	1.4	7	no	2	1.5	n/c
1,2,3-Trimethylbenzene	ug/m3	>50%	2.5	12.5	no	<2.5	<2.5	n/c
1,1,1,2-Tetrachloroethane	ug/m3	>50%	0.69	3.45	no	<0.69	<0.69	n/c

Relative Percent Difference Calculations - Soil Vapour

Sample Location	Units	Alert Limit	RDL	5X RDL	Are the results >5X RDL	Home "C"-IN1A / 2785	Home "C"-IN1B / 2615	RPD
Sample Collection Date						June 4, 2014	June 4, 2014	
Laboratory Sample ID						WE6597	WE6598	
Volatile Organic Hydrocarbons								
1,3-Butadiene	ppbv	>50%	0.050	0.25	no	<0.050	<0.050	n/c
Chloroform	ppbv	>50%	0.050	0.25	no	<0.050	0.18	n/c
Carbon Tetrachloride	ppbv	>50%	0.050	0.25	no	0.12	0.11	n/c
Benzene	ppbv	>50%	0.050	0.25	no	0.34	0.33	3
Trichloroethylene	ppbv	>50%	0.050	0.25	no	<0.050	<0.050	n/c
Bromodichloromethane	ppbv	>50%	0.040	0.2	no	<0.040	<0.040	n/c
Hexachlorobutadiene	ppbv	>50%	0.040	0.2	no	<0.040	<0.040	n/c
Toluene	ppbv	>50%	0.20	1	no	3.43	3.41	1
Ethylbenzene	ppbv	>50%	0.20	1	no	0.22	0.22	n/c
p+m-Xylene	ppbv	>50%	0.20	1	no	0.72	0.72	n/c
o-Xylene	ppbv	>50%	0.20	1	no	0.22	0.22	n/c
1,2,4-Trimethylbenzene	ppbv	>50%	0.20	1	no	<0.20	<0.20	n/c
Naphthalene	ppbv	>50%	0.050	0.25	no	0.084	0.092	n/c
Xylene (Total)	ppbv	>50%	0.32	1.6	no	0.93	0.94	n/c
1,2,3-Trimethylbenzene	ppbv	>50%	0.50	2.5	no	<0.50	<0.50	n/c
1,1,1,2-Tetrachloroethane	ppbv	>50%	0.10	0.5	no	<0.10	<0.10	n/c
Aliphatic >C5-C6	ug/m3	>50%	5.0	25	no	7.2	7	n/c
Aliphatic >C6-C8	ug/m3	>50%	5.0	25	no	13.0	13.2	n/c
Aliphatic >C8-C10	ug/m3	>50%	5.0	25	no	<5.0	9.3	n/c
Aliphatic >C10-C12	ug/m3	>50%	5.0	25	no	5.4	6.7	n/c
Aliphatic >C12-C16	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aromatic >C7-C8 (TEX Excluded)	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aromatic >C8-C10	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aromatic >C10-C12	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Aromatic >C12-C16	ug/m3	>50%	5.0	25	no	<5.0	<5.0	n/c
Calculated Parameters								
1,3-Butadiene	ug/m3	>50%	0.11	0.55	no	<0.11	<0.11	n/c
Chloroform	ug/m3	>50%	0.24	1.2	no	<0.24	0.86	n/c
Carbon Tetrachloride	ug/m3	>50%	0.31	1.55	no	0.73	0.69	n/c
Bromodichloromethane	ug/m3	>50%	0.27	1.35	no	<0.27	<0.27	n/c
Trichloroethylene	ug/m3	>50%	0.27	1.35	no	<0.27	<0.27	n/c
Benzene	ug/m3	>50%	0.16	0.8	no	1.09	1.06	3
Toluene	ug/m3	>50%	0.75	3.75	no	12.9	12.8	1
Ethylbenzene	ug/m3	>50%	0.87	4.35	no	0.94	0.94	n/c
p+m-Xylene	ug/m3	>50%	0.87	4.35	no	3.11	3.14	n/c
o-Xylene	ug/m3	>50%	0.87	4.35	no	0.94	0.95	n/c
1,2,4-Trimethylbenzene	ug/m3	>50%	0.98	4.9	no	<0.98	<0.98	n/c
Hexachlorobutadiene	ug/m3	>50%	0.43	2.15	no	<0.43	<0.43	n/c
Naphthalene	ug/m3	>50%	0.26	1.3	no	0.44	0.48	n/c
Xylene (Total)	ug/m3	>50%	1.4	7	no	4.1	4.1	n/c
1,2,3-Trimethylbenzene	ug/m3	>50%	2.5	12.5	no	<2.5	<2.5	n/c
1,1,1,2-Tetrachloroethane	ug/m3	>50%	0.69	3.45	no	<0.69	<0.69	n/c

Relative Percent Difference Calculations - Soil Vapour

Sample Location	Units	Alert Limit	RDL	5X RDL	Are the results >5X RDL	Are the results >5X RDL	MW10-06 WELL A / 0422	MW10-06 WELL B / 2562	RPD
Sample Collection Date							June 3, 2014	June 3, 2014	
Laboratory Sample ID							WE6589	WE6590	
Volatile Organic Hydrocarbons									
1,3-Butadiene	ppbv	>50%	25	125	no	no	<25	<25	n/c
Chloroform	ppbv	>50%	7.5	37.5	no	no	13.2	13.5	n/c
Carbon Tetrachloride	ppbv	>50%	15	75	no	no	<15	<15	n/c
Benzene	ppbv	>50%	10	50	no	no	<10	<10	n/c
Trichloroethylene	ppbv	>50%	15	75	no	no	<15	<15	n/c
Bromodichloromethane	ppbv	>50%	10	50	no	no	<10	<10	n/c
Hexachlorobutadiene	ppbv	>50%	25	125	no	no	<25	<25	n/c
Toluene	ppbv	>50%	27	135	no	no	<27	<31	n/c
Ethylbenzene	ppbv	>50%	10	50	yes	no	410	423	3
p+m-Xylene	ppbv	>50%	10	50	yes	no	1660	1700	2
o-Xylene	ppbv	>50%	10	50	yes	no	1100	1120	2
1,2,4-Trimethylbenzene	ppbv	>50%	10	50	yes	no	2490	2430	2
Naphthalene	ppbv	>50%	25	125	yes	no	1950	1650	17
Xylene (Total)	ppbv	>50%	16	80	yes	no	2750	2820	3
1,2,3-Trimethylbenzene	ppbv	>50%	25	125	yes	no	538	523	3
1,1,1,2-Tetrachloroethane	ppbv	>50%	250	1250	no	no	<5.0	<5.0	n/c
Aliphatic >C5-C6	ug/m3	>50%	250	1250	no	no	<250	<250	n/c
Aliphatic >C6-C8	ug/m3	>50%	250	1250	no	no	<250	<250	n/c
Aliphatic >C8-C10	ug/m3	>50%	250	1250	yes	no	7220	7460	3
Aliphatic >C10-C12	ug/m3	>50%	250	1250	yes	no	15000	14300	5
Aliphatic >C12-C16	ug/m3	>50%	250	1250	yes	no	1850	1510	20
Aromatic >C7-C8 (TEX Excluded)	ug/m3	>50%	250	1250	no	no	<250	<250	n/c
Aromatic >C8-C10	ug/m3	>50%	250	1250	yes	no	35300	35200	0
Aromatic >C10-C12	ug/m3	>50%	250	1250	yes	no	40700	37500	8
Aromatic >C12-C16	ug/m3	>50%	250	1250	no	no	481	422	n/c
Calculated Parameters									
1,3-Butadiene	ug/m3	>50%	55	275	no	no	<55	<55	n/c
Chloroform	ug/m3	>50%	37	185	no	no	64	66	n/c
Carbon Tetrachloride	ug/m3	>50%	94	470	no	no	<94	<94	n/c
Bromodichloromethane	ug/m3	>50%	67	335	no	no	<67	<67	n/c
Trichloroethylene	ug/m3	>50%	81	405	no	no	<81	<81	n/c
Benzene	ug/m3	>50%	32	160	no	no	<32	<32	n/c
Toluene	ug/m3	>50%	120	600	no	no	<100	<120	n/c
Ethylbenzene	ug/m3	>50%	43	215	yes	no	1780	1840	3
p+m-Xylene	ug/m3	>50%	43	215	yes	no	7200	7370	2
o-Xylene	ug/m3	>50%	43	215	yes	no	4760	4860	2
1,2,4-Trimethylbenzene	ug/m3	>50%	49	245	yes	no	12200	12000	2
Hexachlorobutadiene	ug/m3	>50%	270	1350	no	no	<270	<270	n/c
Naphthalene	ug/m3	>50%	130	650	yes	no	10200	8640	17
Xylene (Total)	ug/m3	>50%	70	350	yes	no	12000	12200	2
1,2,3-Trimethylbenzene	ug/m3	>50%	120	600	yes	no	2650	2570	3
1,1,1,2-Tetrachloroethane	ug/m3	>50%	34	170	no	no	<34	<34	n/c

Summary of Quality Control Sample Results

Laboratory Submission Number	Sample Matrix	Laboratory Sample ID Affected	Test Affected	Data Quality Issue	Comments
B494746	Air	Spiked Blank	Naphthalene	Spiked blank sample recovery outside acceptance range for naphthalene.	Naphthalene was less than 60% recovery in the reference standard. There were no positives found for this compound therefore the data should not be affected. All remaining laboratory QC are within acceptance criteria and the data is considered to be reliable.

GOLDER DATA QUALITY REVIEW CHECKLIST

Site Location: Canada Creosote North

Sampling Date: June 4, 5 and 10, 2014

Golder Project Number: 13-1324-0204

Laboratory: Maxxam - Mississauga

Lab Submission Number: B498675

Was the Cooler Received at the lab under a sealed and intact custody seal?	<u>n/a</u>
Was proper chain of custody of the samples documented and kept?	<u>Yes</u>
Were sample temperatures acceptable when they reached lab?:	<u>Yes</u>
Were all samples analyzed and extracted within hold times?:	<u>Yes</u>
Has lab warranted all tests were in statistical control in CoA?:	<u>Yes</u>
Was sufficient sample provided for the requested analysis?:	<u>Yes</u>
Has lab warranted all samples were analyzed with limited headspace present?:	<u>Yes</u>

Are All Laboratory QC Within Acceptance Criteria (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Surrogate Recovery			X	All laboratory QC results are within acceptance criteria.
Method Blank Concentration	X			
Laboratory Duplicate RPD	X			
Matrix Spike Recovery			X	
Blank Spike Recovery	X			

Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?

	Yes	No	NA	Comments
Field Blank Concentration			X	All field QC samples are within alert limits.
Trip Blank Concentration	X			
Field Duplicate RPD			X	

Is data considered reliable (Yes/No/Suspect)? Yes
 If answer is "No" or "Suspect", describe and provide rationale:

Data Reviewed by (Print): Lori Lake

Data Reviewed by (Signature): *Lori Lake*

Date: March 3, 2015

Relative Percent Difference Calculations - Field Blank, Trip Blank

Parameter	Units	RDL	Trip Blank	Alert Limit	Do the results exceed the Alert Limit?
Sample Collection Date			June 4, 2014		
Laboratory ID			WG4978		
Volatile Organic Hydrocarbons					
1,3-Butadiene	ppbv	0.050	<0.050	>5X RDL	no
Chloroform	ppbv	0.050	<0.050	>5X RDL	no
Carbon Tetrachloride	ppbv	0.050	<0.050	>5X RDL	no
Bromodichloromethane	ppbv	0.050	<0.050	>5X RDL	no
Hexachlorobutadiene	ppbv	0.050	<0.050	>5X RDL	no
Trichloroethylene	ppbv	0.040	<0.040	>5X RDL	no
Benzene	ppbv	0.040	<0.040	>5X RDL	no
Toluene	ppbv	0.20	<0.20	>5X RDL	no
Ethylbenzene	ppbv	0.20	<0.20	>5X RDL	no
p+m-Xylene	ppbv	0.20	<0.20	>5X RDL	no
o-Xylene	ppbv	0.20	<0.20	>5X RDL	no
1,2,4-Trimethylbenzene	ppbv	0.50	<0.50	>5X RDL	no
Naphthalene	ppbv	0.50	<0.50	>5X RDL	no
Xylene (Total)	ppbv	0.40	<0.40	>5X RDL	no
1,2,3-Trimethylbenzene	ppbv	0.50	<0.50	>5X RDL	no
1,1,1,2-Tetrachloroethane	ppbv	0.10	<0.10	>5X RDL	no
Aliphatic >C5-C6	ug/m3	5.0	<5.0	>5X RDL	no
Aliphatic >C6-C8	ug/m3	5.0	<5.0	>5X RDL	no
Aliphatic >C8-C10	ug/m3	5.0	<5.0	>5X RDL	no
Aliphatic >C10-C12	ug/m3	5.0	<5.0	>5X RDL	no
Aliphatic >C12-C16	ug/m3	5.0	<5.0	>5X RDL	no
Aromatic >C7-C8 (TEX Excluded)	ug/m3	5.0	<5.0	>5X RDL	no
Aromatic >C8-C10	ug/m3	5.0	<5.0	>5X RDL	no
Aromatic >C10-C12	ug/m3	5.0	<5.0	>5X RDL	no
Aromatic >C12-C16	ug/m3	5.0	<5.0	>5X RDL	no
Calculated Parameters					
1,3-Butadiene	ug/m3	0.11	<0.11	>5X RDL	no
Chloroform	ug/m3	0.24	<0.24	>5X RDL	no
Carbon Tetrachloride	ug/m3	0.31	<0.31	>5X RDL	no
Bromodichloromethane	ug/m3	0.27	<0.27	>5X RDL	no
Trichloroethylene	ug/m3	0.27	<0.27	>5X RDL	no
Benzene	ug/m3	0.16	<0.16	>5X RDL	no
Toluene	ug/m3	0.75	<0.75	>5X RDL	no
Ethylbenzene	ug/m3	0.87	<0.87	>5X RDL	no
p+m-Xylene	ug/m3	0.87	<0.87	>5X RDL	no
o-Xylene	ug/m3	0.87	<0.87	>5X RDL	no
1,2,4-Trimethylbenzene	ug/m3	2.5	<2.5	>5X RDL	no
Hexachlorobutadiene	ug/m3	0.43	<0.43	>5X RDL	no
Naphthalene	ug/m3	2.6	<2.6	>5X RDL	no
Xylene (Total)	ug/m3	1.7	<1.7	>5X RDL	no
1,2,3-Trimethylbenzene	ug/m3	2.5	<2.5	>5X RDL	no
1,1,1,2-Tetrachloroethane	ug/m3	0.69	<0.69	>5X RDL	no

Summary of Quality Control Sample Results

Laboratory Submission Number	Sample Matrix	Laboratory Sample ID Affected	Test Affected	Data Quality Issue	Comments
B498675	Air	n/a	n/a	No data quality issues were identified.	The data are considered reliable.



APPENDIX F

Laboratory Analytical Reports

Your Project #: 13-1324-0204
Site Location: Q4, BROADVIEW & 19TH
Your C.O.C. #: A109691

Attention: Julie Burghardt

GOLDER ASSOCIATES LTD.
CALGARY - NATIONAL CONTRACT
102, 2535 - 3rd Avenue SE
CALGARY, AB
CANADA T2A 7W5

Report Date: 2014/11/23
Report #: R1688338
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B4A4551

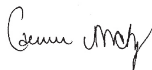
Received: 2014/11/17, 16:40

Sample Matrix: Water
Samples Received: 9

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
BTEX/F1 in Water by HS GC/MS/FID	9	N/A	2014/11/19	AB SOP-00039	CCME CWS/EPA 8260C m
CCME Hydrocarbons in Water (F2; C10-C16)	5	2014/11/19	2014/11/20	AB SOP-00040 AB SOP-00037	CCME PHC-CWS
CCME Hydrocarbons in Water (F2; C10-C16)	4	2014/11/19	2014/11/21	AB SOP-00040 AB SOP-00037	CCME PHC-CWS
Benzo[a]pyrene Equivalency (1)	3	N/A	2014/11/20	AB SOP-00003	Auto Calc
Benzo[a]pyrene Equivalency (1)	6	N/A	2014/11/21	AB SOP-00003	Auto Calc
PAH in Water by GC/MS	7	2014/11/19	2014/11/19	AB SOP-00037 / AB SOP-00003	EPA 8270D m
PAH in Water by GC/MS	2	2014/11/19	2014/11/20	AB SOP-00037 / AB SOP-00003	EPA 8270D m
Total Trihalomethanes Calculation	8	N/A	2014/11/20	CAL SOP-00104	Auto Calc
Total Trihalomethanes Calculation	1	N/A	2014/11/21	CAL SOP-00104	Auto Calc
VOCs in Water by HS GC/MS (Std List)	8	N/A	2014/11/19	AB SOP-00056	EPA 8260C / 5021A m
VOCs in Water by HS GC/MS (Std List)	1	N/A	2014/11/20	AB SOP-00056	EPA 8260C / 5021A m

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

(1) 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  Carmen McKay
25 Nov 2014 10:10:22 -07:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Wendy Sears, Project manager
Email: WSears@maxxam.ca
Phone# (403)735-2277

Maxxam 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.

Maxxam Job #: B4A4551
Report Date: 2014/11/23

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: Q4, BROADVIEW & 19TH
Sampler Initials: JL

AT1 BTEX AND F1-F2 (WATER)

Maxxam ID		LD9175	LD9176	LD9177	LD9178	LD9179	LD9180		
Sampling Date		2014/11/17 09:45	2014/11/17 10:00	2014/11/17 10:30	2014/11/17 10:50	2014/11/17 11:25	2014/11/17 12:45		
COC Number		A109691	A109691	A109691	A109691	A109691	A109691		
	Units	MW14-6A	MW14-6B	MW14-2	FIELD BLANK	MW11-01A	MW14-1A	RDL	QC Batch
Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	mg/L	0.48	4.4	<0.10	<0.10	0.59	0.36	0.10	7723661
Volatiles									
Benzene	mg/L	0.00064	<0.00040	<0.00040	<0.00040	0.034	<0.00040	0.00040	7724007
Toluene	mg/L	<0.00040	<0.00040	<0.00040	<0.00040	0.0052	<0.00040	0.00040	7724007
Ethylbenzene	mg/L	<0.00040	<0.00040	<0.00040	<0.00040	0.025	<0.00040	0.00040	7724007
m & p-Xylene	mg/L	<0.00080	<0.00080	<0.00080	<0.00080	0.024	<0.00080	0.00080	7724007
o-Xylene	mg/L	0.00050	<0.00040	<0.00040	<0.00040	0.019	<0.00040	0.00040	7724007
Xylenes (Total)	mg/L	<0.00080	<0.00080	<0.00080	<0.00080	0.043	<0.00080	0.00080	7724007
F1 (C6-C10) - BTEX	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7724007
(C6-C10)	mg/L	<0.10	<0.10	<0.10	<0.10	0.11	<0.10	0.10	7724007
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	109	111	109	108	111	112	N/A	7724007
4-Bromofluorobenzene (sur.)	%	106	105	107	106	105	107	N/A	7724007
D4-1,2-Dichloroethane (sur.)	%	102	101	101	100	100	98	N/A	7724007
O-TERPHENYL (sur.)	%	102	103	104	115	101	99	N/A	7723661
RDL = Reportable Detection Limit N/A = Not Applicable									

Maxxam Job #: B4A4551
Report Date: 2014/11/23

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: Q4, BROADVIEW & 19TH
Sampler Initials: JL

AT1 BTEX AND F1-F2 (WATER)

Maxxam ID		LD9181	LD9182	LD9183		
Sampling Date		2014/11/17 13:15	2014/11/17 14:00	2014/11/17 14:15		
COC Number		A109691	A109691	A109691		
	Units	MW14-8	MW14-4A	MW1	RDL	QC Batch
Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	4.1	4.5	0.10	7723661
Volatiles						
Benzene	mg/L	<0.00040	0.020	0.020	0.00040	7724007
Toluene	mg/L	<0.00040	0.0058	0.0057	0.00040	7724007
Ethylbenzene	mg/L	<0.00040	0.0018	0.0014	0.00040	7724007
m & p-Xylene	mg/L	<0.00080	0.029	0.029	0.00080	7724007
o-Xylene	mg/L	<0.00040	0.063	0.062	0.00040	7724007
Xylenes (Total)	mg/L	<0.00080	0.093	0.091	0.00080	7724007
F1 (C6-C10) - BTEX	mg/L	<0.10	0.14	0.22	0.10	7724007
(C6-C10)	mg/L	<0.10	0.27	0.34	0.10	7724007
Surrogate Recovery (%)						
1,4-Difluorobenzene (sur.)	%	112	109	110	N/A	7724007
4-Bromofluorobenzene (sur.)	%	107	104	103	N/A	7724007
D4-1,2-Dichloroethane (sur.)	%	100	101	100	N/A	7724007
O-TERPHENYL (sur.)	%	103	99	104	N/A	7723661
RDL = Reportable Detection Limit N/A = Not Applicable						

Maxxam Job #: B4A4551
Report Date: 2014/11/23

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: Q4, BROADVIEW & 19TH
Sampler Initials: JL

SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		LD9175		LD9176		LD9177	LD9178		
Sampling Date		2014/11/17 09:45		2014/11/17 10:00		2014/11/17 10:30	2014/11/17 10:50		
COC Number		A109691		A109691		A109691	A109691		
	Units	MW14-6A	RDL	MW14-6B	RDL	MW14-2	FIELD BLANK	RDL	QC Batch

Polycyclic Aromatics									
Benzo[a]pyrene equivalency	ug/L	0.044	0.010	78	0.010	0.010	<0.010	0.010	7723153
Acenaphthene	mg/L	0.020	0.00010	0.26 (1)	0.0010	<0.00010	<0.00010	0.00010	7723662
Acenaphthylene	mg/L	0.00034	0.00010	0.0047	0.0010	<0.00010	<0.00010	0.00010	7723662
Acridine	mg/L	<0.00020	0.00020	0.010	0.00020	<0.00020	<0.00020	0.00020	7723662
Anthracene	mg/L	0.0014	0.000010	0.21 (1)	0.00010	<0.000010	<0.000010	0.000010	7723662
Benzo(a)anthracene	mg/L	0.000087	0.0000085	0.11 (1)	0.000085	<0.0000085	<0.0000085	0.0000085	7723662
Benzo(b&j)fluoranthene	mg/L	0.000041	0.0000085	0.076 (1)	0.000085	0.000011	<0.0000085	0.0000085	7723662
Benzo(k)fluoranthene	mg/L	0.000012	0.0000085	0.021	0.0000085	<0.0000085	<0.0000085	0.0000085	7723662
Benzo(g,h,i)perylene	mg/L	<0.0000085	0.0000085	0.017	0.0000085	<0.0000085	<0.0000085	0.0000085	7723662
Benzo(c)phenanthrene	mg/L	<0.000050	0.000050	0.015 (2)	0.000050	<0.000050	<0.000050	0.000050	7723662
Benzo(a)pyrene	mg/L	0.000025	0.0000075	0.048	0.000075	<0.0000075	<0.0000075	0.0000075	7723662
Benzo[e]pyrene	mg/L	<0.000050	0.000050	0.033	0.000050	<0.000050	<0.000050	0.000050	7723662
Chrysene	mg/L	0.000049	0.0000085	0.062	0.000085	<0.0000085	<0.0000085	0.0000085	7723662
Dibenz(a,h)anthracene	mg/L	<0.0000075	0.0000075	0.0065	0.0000075	<0.0000075	<0.0000075	0.0000075	7723662
Fluoranthene	mg/L	0.0014	0.000010	0.63 (1)	0.0010	0.000038	<0.000010	0.000010	7723662
Fluorene	mg/L	0.010	0.000050	0.27 (1)	0.00050	<0.000050	<0.000050	0.000050	7723662
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	0.0000085	0.020	0.0000085	<0.0000085	<0.0000085	0.0000085	7723662
2-Methylnaphthalene	mg/L	0.029	0.00010	0.21 (1)	0.0010	<0.00010	<0.00010	0.00010	7723662
Naphthalene	mg/L	0.18 (1)	0.0010	0.094 (1)	0.0010	<0.00010	<0.00010	0.00010	7723662
Phenanthrene	mg/L	0.010	0.000050	1.2 (1)	0.0050	<0.000050	<0.000050	0.000050	7723662
Perylene	mg/L	<0.000050	0.000050	0.011	0.000050	<0.000050	<0.000050	0.000050	7723662
Pyrene	mg/L	0.0010	0.000020	0.36 (1)	0.00020	0.000045	<0.000020	0.000020	7723662
Quinoline	mg/L	0.00021 (2)	0.00020	0.0011 (2)	0.00020	<0.00020	<0.00020	0.00020	7723662

Surrogate Recovery (%)									
D10-ANTHRACENE (sur.)	%	106	N/A	101	N/A	103	113	N/A	7723662
D12-BENZO(A)PYRENE (sur.)	%	114	N/A	107	N/A	107	119	N/A	7723662
D8-ACENAPHTHYLENE (sur.)	%	71	N/A	60	N/A	74	83	N/A	7723662
TERPHENYL-D14 (sur.)	%	111	N/A	106	N/A	101	115	N/A	7723662

RDL = Reportable Detection Limit

N/A = Not Applicable

(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

(2) Qualifying ion outside of acceptance criteria, Results are potentially biased high due to possible interferent.

Maxxam Job #: B4A4551
Report Date: 2014/11/23

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: Q4, BROADVIEW & 19TH
Sampler Initials: JL

SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		LD9179	LD9180		LD9181		LD9182		
Sampling Date		2014/11/17 11:25	2014/11/17 12:45		2014/11/17 13:15		2014/11/17 14:00		
COC Number		A109691	A109691		A109691		A109691		
	Units	MW11-01A	MW14-1A	RDL	MW14-8	RDL	MW14-4A	RDL	QC Batch

Polycyclic Aromatics									
Benzo[a]pyrene equivalency	ug/L	1.3	0.010	0.010	0.29	0.010	5.1	0.010	7723153
Acenaphthene	mg/L	0.0041	0.0064	0.00010	<0.00010	0.00010	0.15 (1)	0.0010	7723662
Acenaphthylene	mg/L	0.00019	0.00021	0.00010	<0.00010	0.00010	0.0058	0.00010	7723662
Acridine	mg/L	0.00044	<0.00020	0.00020	<0.00020	0.00020	0.0020	0.00020	7723662
Anthracene	mg/L	0.00092	0.00058	0.000010	0.000062	0.000010	0.020	0.000010	7723662
Benzo(a)anthracene	mg/L	0.0011	0.0000085	0.0000085	0.00021	0.0000085	0.0072	0.0000085	7723662
Benzo(b&j)fluoranthene	mg/L	0.0012	<0.0000085	0.0000085	0.00034	0.0000085	0.0047	0.0000085	7723662
Benzo(k)fluoranthene	mg/L	0.00040	<0.0000085	0.0000085	0.00010	0.0000085	0.0016	0.0000085	7723662
Benzo(g,h,i)perylene	mg/L	0.00038	<0.0000085	0.0000085	0.00018	0.0000085	0.0013	0.0000085	7723662
Benzo(c)phenanthrene	mg/L	0.00015 (2)	<0.000050	0.000050	<0.000050	0.000050	0.0011 (2)	0.000050	7723662
Benzo(a)pyrene	mg/L	0.00082	<0.0000075	0.0000075	0.00017	0.0000075	0.0031	0.0000075	7723662
Benzo[e]pyrene	mg/L	0.00069	<0.000050	0.000050	0.00026	0.000050	0.0025	0.000050	7723662
Chrysene	mg/L	0.00075	<0.0000085	0.0000085	0.00028	0.0000085	0.0040	0.0000085	7723662
Dibenz(a,h)anthracene	mg/L	0.00011	<0.0000075	0.0000075	0.000038	0.0000075	0.00042	0.0000075	7723662
Fluoranthene	mg/L	0.0025	0.00097	0.000010	0.00070	0.000010	0.050 (1)	0.00010	7723662
Fluorene	mg/L	0.0025	0.0033	0.000050	0.000062	0.000050	0.082 (1)	0.00050	7723662
Indeno(1,2,3-cd)pyrene	mg/L	0.00040	<0.0000085	0.0000085	0.00014	0.0000085	0.0014	0.0000085	7723662
2-Methylnaphthalene	mg/L	0.0061	0.0070	0.00010	0.00016	0.00010	0.21 (1)	0.0010	7723662
Naphthalene	mg/L	0.25 (1)	0.19 (1)	0.0010	0.00040	0.00010	1.6 (1)	0.010	7723662
Phenanthrene	mg/L	0.0047	0.0036	0.000050	0.00036	0.000050	0.12 (1)	0.00050	7723662
Perylene	mg/L	0.00017	<0.000050	0.000050	0.000056	0.000050	0.00064	0.000050	7723662
Pyrene	mg/L	0.0020	0.0011	0.000020	0.00073	0.000020	0.031	0.000020	7723662
Quinoline	mg/L	<0.00020	<0.00020	0.00020	<0.00020	0.00020	0.0026 (2)	0.00020	7723662

Surrogate Recovery (%)									
D10-ANTHRACENE (sur.)	%	107	111	N/A	106	N/A	118	N/A	7723662
D12-BENZO(A)PYRENE (sur.)	%	115	115	N/A	115	N/A	130	N/A	7723662
D8-ACENAPHTHYLENE (sur.)	%	72	75	N/A	71	N/A	76	N/A	7723662
TERPHENYL-D14 (sur.)	%	111	112	N/A	112	N/A	129	N/A	7723662

RDL = Reportable Detection Limit

N/A = Not Applicable

(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

(2) Qualifying ion outside of acceptance criteria, Results are potentially biased high due to possible interferent.

Maxxam Job #: B4A4551
Report Date: 2014/11/23

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: Q4, BROADVIEW & 19TH
Sampler Initials: JL

SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		LD9183		
Sampling Date		2014/11/17 14:15		
COC Number		A109691		
	Units	MW1	RDL	QC Batch
Polycyclic Aromatics				
Benzo[a]pyrene equivalency	ug/L	13	0.010	7723153
Acenaphthene	mg/L	0.17 (1)	0.0010	7723662
Acenaphthylene	mg/L	0.0053	0.00010	7723662
Acridine	mg/L	0.0027	0.00020	7723662
Anthracene	mg/L	0.028	0.000010	7723662
Benzo(a)anthracene	mg/L	0.016	0.0000085	7723662
Benzo(b&j)fluoranthene	mg/L	0.013	0.0000085	7723662
Benzo(k)fluoranthene	mg/L	0.0038	0.0000085	7723662
Benzo(g,h,i)perylene	mg/L	0.0035	0.0000085	7723662
Benzo(c)phenanthrene	mg/L	0.0024 (2)	0.000050	7723662
Benzo(a)pyrene	mg/L	0.0082	0.0000075	7723662
Benzo[e]pyrene	mg/L	0.0064	0.000050	7723662
Chrysene	mg/L	0.0084	0.0000085	7723662
Dibenz(a,h)anthracene	mg/L	0.0012	0.0000075	7723662
Fluoranthene	mg/L	0.099 (1)	0.00010	7723662
Fluorene	mg/L	0.10 (1)	0.00050	7723662
Indeno(1,2,3-cd)pyrene	mg/L	0.0041	0.0000085	7723662
2-Methylnaphthalene	mg/L	0.25 (1)	0.0010	7723662
Naphthalene	mg/L	1.6 (1)	0.010	7723662
Phenanthrene	mg/L	0.20 (1)	0.00050	7723662
Perylene	mg/L	0.0019	0.000050	7723662
Pyrene	mg/L	0.071 (1)	0.00020	7723662
Quinoline	mg/L	0.0025 (2)	0.00020	7723662
Surrogate Recovery (%)				
D10-ANTHRACENE (sur.)	%	104	N/A	7723662
D12-BENZO(A)PYRENE (sur.)	%	114	N/A	7723662
D8-ACENAPHTHYLENE (sur.)	%	68	N/A	7723662
TERPHENYL-D14 (sur.)	%	111	N/A	7723662
RDL = Reportable Detection Limit N/A = Not Applicable (1) Detection limits raised due to dilution to bring analyte within the calibrated range. (2) Qualifying ion outside of acceptance criteria, Results are potentially biased high due to possible interferent.				

Maxxam Job #: B4A4551
Report Date: 2014/11/23

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: Q4, BROADVIEW & 19TH
Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		LD9175	LD9176	LD9177	LD9178	LD9179		
Sampling Date		2014/11/17 09:45	2014/11/17 10:00	2014/11/17 10:30	2014/11/17 10:50	2014/11/17 11:25		
COC Number		A109691	A109691	A109691	A109691	A109691		
	Units	MW14-6A	MW14-6B	MW14-2	FIELD BLANK	MW11-01A	RDL	QC Batch
Volatiles								
Total Trihalomethanes	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7723154
Bromodichloromethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
Bromoform	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
Bromomethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7724353
Carbon tetrachloride	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
Chlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
Chlorodibromomethane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	7724353
Chloroethane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	7724353
Chloroform	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
Chloromethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7724353
1,2-dibromoethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
1,2-dichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
1,3-dichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
1,4-dichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
1,1-dichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
1,2-dichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
1,1-dichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
cis-1,2-dichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
trans-1,2-dichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
Dichloromethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7724353
1,2-dichloropropane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
cis-1,3-dichloropropene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
trans-1,3-dichloropropene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
Methyl methacrylate	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
Methyl-tert-butylether (MTBE)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
Styrene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
1,1,1,2-tetrachloroethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7724353
1,1,2,2-tetrachloroethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7724353
Tetrachloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
1,2,3-trichlorobenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	7724353
1,2,4-trichlorobenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	7724353
1,3,5-trichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
1,1,1-trichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
1,1,2-trichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
RDL = Reportable Detection Limit								

Maxxam Job #: B4A4551
Report Date: 2014/11/23

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: Q4, BROADVIEW & 19TH
Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		LD9175	LD9176	LD9177	LD9178	LD9179		
Sampling Date		2014/11/17 09:45	2014/11/17 10:00	2014/11/17 10:30	2014/11/17 10:50	2014/11/17 11:25		
COC Number		A109691	A109691	A109691	A109691	A109691		
	Units	MW14-6A	MW14-6B	MW14-2	FIELD BLANK	MW11-01A	RDL	QC Batch
Trichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
Trichlorofluoromethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
1,2,4-trimethylbenzene	mg/L	0.0023	<0.00050	<0.00050	<0.00050	0.013	0.00050	7724353
1,3,5-trimethylbenzene	mg/L	0.0011	<0.00050	<0.00050	<0.00050	0.0018	0.00050	7724353
Vinyl chloride	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
Surrogate Recovery (%)								
1,4-Difluorobenzene (sur.)	%	100	100	100	100	100	N/A	7724353
4-Bromofluorobenzene (sur.)	%	102	103	101	101	99	N/A	7724353
D4-1,2-Dichloroethane (sur.)	%	100	98	101	101	98	N/A	7724353
RDL = Reportable Detection Limit N/A = Not Applicable								

Maxxam Job #: B4A4551
Report Date: 2014/11/23

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: Q4, BROADVIEW & 19TH
Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		LD9180	LD9181	LD9182	LD9183		
Sampling Date		2014/11/17 12:45	2014/11/17 13:15	2014/11/17 14:00	2014/11/17 14:15		
COC Number		A109691	A109691	A109691	A109691		
	Units	MW14-1A	MW14-8	MW14-4A	MW1	RDL	QC Batch
Volatiles							
Total Trihalomethanes	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7723154
Bromodichloromethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
Bromoform	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
Bromomethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7724353
Carbon tetrachloride	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
Chlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
Chlorodibromomethane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	7724353
Chloroethane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	7724353
Chloroform	mg/L	0.0019	<0.00050	<0.00050	<0.00050	0.00050	7724353
Chloromethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7724353
1,2-dibromoethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
1,2-dichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
1,3-dichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
1,4-dichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
1,1-dichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
1,2-dichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
1,1-dichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
cis-1,2-dichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
trans-1,2-dichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
Dichloromethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7724353
1,2-dichloropropane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
cis-1,3-dichloropropene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
trans-1,3-dichloropropene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
Methyl methacrylate	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
Methyl-tert-butylether (MTBE)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
Styrene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
1,1,1,2-tetrachloroethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7724353
1,1,2,2-tetrachloroethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7724353
Tetrachloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
1,2,3-trichlorobenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	7724353
1,2,4-trichlorobenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	7724353
1,3,5-trichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
1,1,1-trichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
1,1,2-trichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
RDL = Reportable Detection Limit							

Maxxam Job #: B4A4551
Report Date: 2014/11/23

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: Q4, BROADVIEW & 19TH
Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		LD9180	LD9181	LD9182	LD9183		
Sampling Date		2014/11/17 12:45	2014/11/17 13:15	2014/11/17 14:00	2014/11/17 14:15		
COC Number		A109691	A109691	A109691	A109691		
	Units	MW14-1A	MW14-8	MW14-4A	MW1	RDL	QC Batch
Trichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
Trichlorofluoromethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
1,2,4-trimethylbenzene	mg/L	<0.00050	<0.00050	0.018	0.026	0.00050	7724353
1,3,5-trimethylbenzene	mg/L	<0.00050	<0.00050	0.038	0.041	0.00050	7724353
Vinyl chloride	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7724353
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	100	100	100	100	N/A	7724353
4-Bromofluorobenzene (sur.)	%	101	102	95	100	N/A	7724353
D4-1,2-Dichloroethane (sur.)	%	103	103	103	96	N/A	7724353
RDL = Reportable Detection Limit N/A = Not Applicable							

Maxxam Job #: B4A4551
Report Date: 2014/11/23

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: Q4, BROADVIEW & 19TH
Sampler Initials: JL

GENERAL COMMENTS

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

Package 1	5.3°C
Package 2	5.0°C

Results relate only to the items tested.

Maxxam Job #: B4A4551
Report Date: 2014/11/23

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: Q4, BROADVIEW & 19TH
Sampler Initials: JL

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
7723661	MWB	Matrix Spike	O-TERPHENYL (sur.)	2014/11/20		109	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2014/11/20		105	%	50 - 130
7723661	MWB	Spiked Blank	O-TERPHENYL (sur.)	2014/11/20		101	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2014/11/20		97	%	70 - 130
7723661	MWB	Method Blank	O-TERPHENYL (sur.)	2014/11/20		102	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2014/11/20	<0.10		mg/L	
7723661	MWB	RPD	F2 (C10-C16 Hydrocarbons)	2014/11/20	NC		%	40
7723662	VP4	Matrix Spike	D10-ANTHRACENE (sur.)	2014/11/19		114	%	50 - 130
			D12-BENZO(A)PYRENE (sur.)	2014/11/19		117	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2014/11/19		83	%	50 - 130
			TERPHENYL-D14 (sur.)	2014/11/19		115	%	50 - 130
			Acenaphthene	2014/11/19		108	%	50 - 130
			Acenaphthylene	2014/11/19		87	%	50 - 130
			Acridine	2014/11/19		93	%	50 - 130
			Anthracene	2014/11/19		99	%	50 - 130
			Benzo(a)anthracene	2014/11/19		102	%	50 - 130
			Benzo(b&j)fluoranthene	2014/11/19		97	%	50 - 130
			Benzo(k)fluoranthene	2014/11/19		103	%	50 - 130
			Benzo(g,h,i)perylene	2014/11/19		96	%	50 - 130
			Benzo(c)phenanthrene	2014/11/19		100	%	50 - 130
			Benzo(a)pyrene	2014/11/19		100	%	50 - 130
			Benzo[e]pyrene	2014/11/19		103	%	50 - 130
			Chrysene	2014/11/19		102	%	50 - 130
			Dibenz(a,h)anthracene	2014/11/19		93	%	50 - 130
			Fluoranthene	2014/11/19		109	%	50 - 130
			Fluorene	2014/11/19		100	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2014/11/19		99	%	50 - 130
			2-Methylnaphthalene	2014/11/19		104	%	50 - 130
			Naphthalene	2014/11/19		100	%	50 - 130
			Phenanthrene	2014/11/19		105	%	50 - 130
			Perylene	2014/11/19		98	%	50 - 130
			Pyrene	2014/11/19		114	%	50 - 130
			Quinoline	2014/11/19		96	%	50 - 130
7723662	VP4	Spiked Blank	D10-ANTHRACENE (sur.)	2014/11/19		106	%	50 - 130
			D12-BENZO(A)PYRENE (sur.)	2014/11/19		112	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2014/11/19		78	%	50 - 130
			TERPHENYL-D14 (sur.)	2014/11/19		106	%	50 - 130
			Acenaphthene	2014/11/19		87	%	50 - 130
			Acenaphthylene	2014/11/19		94	%	50 - 130
			Acridine	2014/11/19		89	%	50 - 130
			Anthracene	2014/11/19		94	%	50 - 130
			Benzo(a)anthracene	2014/11/19		103	%	50 - 130
			Benzo(b&j)fluoranthene	2014/11/19		99	%	50 - 130
			Benzo(k)fluoranthene	2014/11/19		100	%	50 - 130
			Benzo(g,h,i)perylene	2014/11/19		105	%	50 - 130
			Benzo(c)phenanthrene	2014/11/19		98	%	50 - 130
			Benzo(a)pyrene	2014/11/19		104	%	50 - 130
			Benzo[e]pyrene	2014/11/19		107	%	50 - 130
			Chrysene	2014/11/19		104	%	50 - 130
			Dibenz(a,h)anthracene	2014/11/19		103	%	50 - 130
			Fluoranthene	2014/11/19		104	%	50 - 130
			Fluorene	2014/11/19		94	%	50 - 130

Maxxam Job #: B4A4551
Report Date: 2014/11/23

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: Q4, BROADVIEW & 19TH
Sampler Initials: JL

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	2014/11/19		108	%	50 - 130
			2-Methylnaphthalene	2014/11/19		94	%	50 - 130
			Naphthalene	2014/11/19		91	%	50 - 130
			Phenanthrene	2014/11/19		98	%	50 - 130
			Perylene	2014/11/19		102	%	50 - 130
			Pyrene	2014/11/19		109	%	50 - 130
			Quinoline	2014/11/19		96	%	50 - 130
7723662	VP4	Method Blank	D10-ANTHRACENE (sur.)	2014/11/19		113	%	50 - 130
			D12-BENZO(A)PYRENE (sur.)	2014/11/19		119	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2014/11/19		81	%	50 - 130
			TERPHENYL-D14 (sur.)	2014/11/19		114	%	50 - 130
			Acenaphthene	2014/11/19	<0.00010		mg/L	
			Acenaphthylene	2014/11/19	<0.00010		mg/L	
			Acridine	2014/11/19	<0.00020		mg/L	
			Anthracene	2014/11/19	<0.000010		mg/L	
			Benzo(a)anthracene	2014/11/19	<0.0000085		mg/L	
			Benzo(b&j)fluoranthene	2014/11/19	<0.0000085		mg/L	
			Benzo(k)fluoranthene	2014/11/19	<0.0000085		mg/L	
			Benzo(g,h,i)perylene	2014/11/19	<0.0000085		mg/L	
			Benzo(c)phenanthrene	2014/11/19	<0.000050		mg/L	
			Benzo(a)pyrene	2014/11/19	<0.0000075		mg/L	
			Benzo[e]pyrene	2014/11/19	<0.000050		mg/L	
			Chrysene	2014/11/19	<0.0000085		mg/L	
			Dibenz(a,h)anthracene	2014/11/19	<0.0000075		mg/L	
			Fluoranthene	2014/11/19	<0.000010		mg/L	
			Fluorene	2014/11/19	<0.000050		mg/L	
			Indeno(1,2,3-cd)pyrene	2014/11/19	<0.0000085		mg/L	
			2-Methylnaphthalene	2014/11/19	<0.00010		mg/L	
			Naphthalene	2014/11/19	<0.00010		mg/L	
			Phenanthrene	2014/11/19	<0.000050		mg/L	
			Perylene	2014/11/19	<0.000050		mg/L	
			Pyrene	2014/11/19	<0.000020		mg/L	
			Quinoline	2014/11/19	<0.00020		mg/L	
7723662	VP4	RPD	Acenaphthene	2014/11/19	NC		%	40
			Acenaphthylene	2014/11/19	NC		%	40
			Acridine	2014/11/19	NC		%	40
			Anthracene	2014/11/19	NC		%	40
			Benzo(a)anthracene	2014/11/19	NC		%	40
			Benzo(b&j)fluoranthene	2014/11/19	NC		%	40
			Benzo(k)fluoranthene	2014/11/19	NC		%	40
			Benzo(g,h,i)perylene	2014/11/19	NC		%	40
			Benzo(c)phenanthrene	2014/11/19	NC		%	40
			Benzo(a)pyrene	2014/11/19	NC		%	40
			Benzo[e]pyrene	2014/11/19	NC		%	40
			Chrysene	2014/11/19	NC		%	40
			Dibenz(a,h)anthracene	2014/11/19	NC		%	40
			Fluoranthene	2014/11/19	NC		%	40
			Fluorene	2014/11/19	NC		%	40
			Indeno(1,2,3-cd)pyrene	2014/11/19	NC		%	40
			2-Methylnaphthalene	2014/11/19	NC		%	40
			Naphthalene	2014/11/19	NC		%	40
			Phenanthrene	2014/11/19	NC		%	40

Maxxam Job #: B4A4551
Report Date: 2014/11/23

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: Q4, BROADVIEW & 19TH
Sampler Initials: JL

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
7724007	ABG	Matrix Spike	Perylene	2014/11/19	NC		%	40
			Pyrene	2014/11/19	NC		%	40
			Quinoline	2014/11/19	NC		%	40
			1,4-Difluorobenzene (sur.)	2014/11/19		108	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/11/19		106	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2014/11/19		105	%	70 - 130
			Benzene	2014/11/19		93	%	70 - 130
			Toluene	2014/11/19		89	%	70 - 130
			Ethylbenzene	2014/11/19		94	%	70 - 130
			m & p-Xylene	2014/11/19		90	%	70 - 130
7724007	ABG	Spiked Blank	o-Xylene	2014/11/19		92	%	70 - 130
			(C6-C10)	2014/11/19		87	%	70 - 130
			1,4-Difluorobenzene (sur.)	2014/11/19		106	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/11/19		106	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2014/11/19		105	%	70 - 130
			Benzene	2014/11/19		99	%	70 - 130
			Toluene	2014/11/19		94	%	70 - 130
			Ethylbenzene	2014/11/19		98	%	70 - 130
			m & p-Xylene	2014/11/19		95	%	70 - 130
			o-Xylene	2014/11/19		97	%	70 - 130
7724007	ABG	Method Blank	(C6-C10)	2014/11/19		110	%	70 - 130
			1,4-Difluorobenzene (sur.)	2014/11/19		113	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/11/19		107	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2014/11/19		100	%	70 - 130
			Benzene	2014/11/19	<0.00040		mg/L	
			Toluene	2014/11/19	<0.00040		mg/L	
			Ethylbenzene	2014/11/19	<0.00040		mg/L	
			m & p-Xylene	2014/11/19	<0.00080		mg/L	
			o-Xylene	2014/11/19	<0.00040		mg/L	
			Xylenes (Total)	2014/11/19	<0.00080		mg/L	
7724007	ABG	RPD	F1 (C6-C10) - BTEX	2014/11/19	<0.10		mg/L	
			(C6-C10)	2014/11/19	<0.10		mg/L	
			Benzene	2014/11/19	NC		%	40
			Toluene	2014/11/19	NC		%	40
			Ethylbenzene	2014/11/19	NC		%	40
			m & p-Xylene	2014/11/19	NC		%	40
			o-Xylene	2014/11/19	NC		%	40
			Xylenes (Total)	2014/11/19	NC		%	40
			F1 (C6-C10) - BTEX	2014/11/19	NC		%	40
			(C6-C10)	2014/11/19	NC		%	40
7724353	SLZ	Matrix Spike	1,4-Difluorobenzene (sur.)	2014/11/19		100	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/11/19		97	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2014/11/19		99	%	70 - 130
			Bromodichloromethane	2014/11/19		100	%	70 - 130
			Bromoform	2014/11/19		95	%	70 - 130
			Bromomethane	2014/11/19		116	%	70 - 130
			Carbon tetrachloride	2014/11/19		108	%	70 - 130
			Chlorobenzene	2014/11/19		99	%	70 - 130
			Chlorodibromomethane	2014/11/19		98	%	70 - 130
			Chloroethane	2014/11/19		113	%	70 - 130
			Chloroform	2014/11/19		98	%	70 - 130
			Chloromethane	2014/11/19		86	%	70 - 130

Maxxam Job #: B4A4551
Report Date: 2014/11/23

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: Q4, BROADVIEW & 19TH
Sampler Initials: JL

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			1,2-dibromoethane	2014/11/19		104	%	70 - 130
			1,2-dichlorobenzene	2014/11/19		95	%	70 - 130
			1,3-dichlorobenzene	2014/11/19		97	%	70 - 130
			1,4-dichlorobenzene	2014/11/19		95	%	70 - 130
			1,1-dichloroethane	2014/11/19		107	%	70 - 130
			1,2-dichloroethane	2014/11/19		103	%	70 - 130
			1,1-dichloroethene	2014/11/19		112	%	70 - 130
			cis-1,2-dichloroethene	2014/11/19		109	%	70 - 130
			trans-1,2-dichloroethene	2014/11/19		111	%	70 - 130
			Dichloromethane	2014/11/19		98	%	70 - 130
			1,2-dichloropropane	2014/11/19		106	%	70 - 130
			cis-1,3-dichloropropene	2014/11/19		108	%	70 - 130
			trans-1,3-dichloropropene	2014/11/19		107	%	70 - 130
			Methyl methacrylate	2014/11/19		111	%	70 - 130
			Methyl-tert-butylether (MTBE)	2014/11/19		108	%	70 - 130
			Styrene	2014/11/19		106	%	70 - 130
			1,1,1,2-tetrachloroethane	2014/11/19		99	%	70 - 130
			1,1,2,2-tetrachloroethane	2014/11/19		99	%	70 - 130
			Tetrachloroethene	2014/11/19		99	%	70 - 130
			1,2,3-trichlorobenzene	2014/11/19		94	%	70 - 130
			1,2,4-trichlorobenzene	2014/11/19		96	%	70 - 130
			1,3,5-trichlorobenzene	2014/11/19		96	%	70 - 130
			1,1,1-trichloroethane	2014/11/19		106	%	70 - 130
			1,1,2-trichloroethane	2014/11/19		102	%	70 - 130
			Trichloroethene	2014/11/19		103	%	70 - 130
			Trichlorofluoromethane	2014/11/19		109	%	70 - 130
			1,2,4-trimethylbenzene	2014/11/19		104	%	70 - 130
			1,3,5-trimethylbenzene	2014/11/19		103	%	70 - 130
			Vinyl chloride	2014/11/19		116	%	70 - 130
7724353	SLZ	Spiked Blank	1,4-Difluorobenzene (sur.)	2014/11/19		100	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/11/19		96	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2014/11/19		98	%	70 - 130
			Bromodichloromethane	2014/11/19		96	%	70 - 130
			Bromoform	2014/11/19		92	%	70 - 130
			Bromomethane	2014/11/19		113	%	70 - 130
			Carbon tetrachloride	2014/11/19		106	%	70 - 130
			Chlorobenzene	2014/11/19		95	%	70 - 130
			Chlorodibromomethane	2014/11/19		95	%	70 - 130
			Chloroethane	2014/11/19		111	%	70 - 130
			Chloroform	2014/11/19		96	%	70 - 130
			Chloromethane	2014/11/19		97	%	70 - 130
			1,2-dibromoethane	2014/11/19		99	%	70 - 130
			1,2-dichlorobenzene	2014/11/19		94	%	70 - 130
			1,3-dichlorobenzene	2014/11/19		95	%	70 - 130
			1,4-dichlorobenzene	2014/11/19		95	%	70 - 130
			1,1-dichloroethane	2014/11/19		104	%	70 - 130
			1,2-dichloroethane	2014/11/19		97	%	70 - 130
			1,1-dichloroethene	2014/11/19		110	%	70 - 130
			cis-1,2-dichloroethene	2014/11/19		106	%	70 - 130
			trans-1,2-dichloroethene	2014/11/19		108	%	70 - 130
			Dichloromethane	2014/11/19		95	%	70 - 130
			1,2-dichloropropane	2014/11/19		101	%	70 - 130

Maxxam Job #: B4A4551
Report Date: 2014/11/23

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: Q4, BROADVIEW & 19TH
Sampler Initials: JL

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			cis-1,3-dichloropropene	2014/11/19		101	%	70 - 130
			trans-1,3-dichloropropene	2014/11/19		99	%	70 - 130
			Methyl methacrylate	2014/11/19		108	%	70 - 130
			Methyl-tert-butylether (MTBE)	2014/11/19		104	%	70 - 130
			Styrene	2014/11/19		103	%	70 - 130
			1,1,1,2-tetrachloroethane	2014/11/19		97	%	70 - 130
			1,1,2,2-tetrachloroethane	2014/11/19		95	%	70 - 130
			Tetrachloroethene	2014/11/19		98	%	70 - 130
			1,2,3-trichlorobenzene	2014/11/19		90	%	70 - 130
			1,2,4-trichlorobenzene	2014/11/19		93	%	70 - 130
			1,3,5-trichlorobenzene	2014/11/19		96	%	70 - 130
			1,1,1-trichloroethane	2014/11/19		104	%	70 - 130
			1,1,2-trichloroethane	2014/11/19		96	%	70 - 130
			Trichloroethene	2014/11/19		100	%	70 - 130
			Trichlorofluoromethane	2014/11/19		108	%	70 - 130
			1,2,4-trimethylbenzene	2014/11/19		104	%	70 - 130
			1,3,5-trimethylbenzene	2014/11/19		103	%	70 - 130
			Vinyl chloride	2014/11/19		114	%	70 - 130
7724353	SLZ	Method Blank	1,4-Difluorobenzene (sur.)	2014/11/19		100	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/11/19		100	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2014/11/19		102	%	70 - 130
			Bromodichloromethane	2014/11/19	<0.00050		mg/L	
			Bromoform	2014/11/19	<0.00050		mg/L	
			Bromomethane	2014/11/19	<0.0020		mg/L	
			Carbon tetrachloride	2014/11/19	<0.00050		mg/L	
			Chlorobenzene	2014/11/19	<0.00050		mg/L	
			Chlorodibromomethane	2014/11/19	<0.0010		mg/L	
			Chloroethane	2014/11/19	<0.0010		mg/L	
			Chloroform	2014/11/19	<0.00050		mg/L	
			Chloromethane	2014/11/19	<0.0020		mg/L	
			1,2-dibromoethane	2014/11/19	<0.00050		mg/L	
			1,2-dichlorobenzene	2014/11/19	<0.00050		mg/L	
			1,3-dichlorobenzene	2014/11/19	<0.00050		mg/L	
			1,4-dichlorobenzene	2014/11/19	<0.00050		mg/L	
			1,1-dichloroethane	2014/11/19	<0.00050		mg/L	
			1,2-dichloroethane	2014/11/19	<0.00050		mg/L	
			1,1-dichloroethene	2014/11/19	<0.00050		mg/L	
			cis-1,2-dichloroethene	2014/11/19	<0.00050		mg/L	
			trans-1,2-dichloroethene	2014/11/19	<0.00050		mg/L	
			Dichloromethane	2014/11/19	<0.0020		mg/L	
			1,2-dichloropropane	2014/11/19	<0.00050		mg/L	
			cis-1,3-dichloropropene	2014/11/19	<0.00050		mg/L	
			trans-1,3-dichloropropene	2014/11/19	<0.00050		mg/L	
			Methyl methacrylate	2014/11/19	<0.00050		mg/L	
			Methyl-tert-butylether (MTBE)	2014/11/19	<0.00050		mg/L	
			Styrene	2014/11/19	<0.00050		mg/L	
			1,1,1,2-tetrachloroethane	2014/11/19	<0.0020		mg/L	
			1,1,2,2-tetrachloroethane	2014/11/19	<0.0020		mg/L	
			Tetrachloroethene	2014/11/19	<0.00050		mg/L	
			1,2,3-trichlorobenzene	2014/11/19	<0.0010		mg/L	
			1,2,4-trichlorobenzene	2014/11/19	<0.0010		mg/L	
			1,3,5-trichlorobenzene	2014/11/19	<0.00050		mg/L	

Maxxam Job #: B4A4551
Report Date: 2014/11/23

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: Q4, BROADVIEW & 19TH
Sampler Initials: JL

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			1,1,1-trichloroethane	2014/11/19	<0.00050		mg/L	
			1,1,2-trichloroethane	2014/11/19	<0.00050		mg/L	
			Trichloroethene	2014/11/19	<0.00050		mg/L	
			Trichlorofluoromethane	2014/11/19	<0.00050		mg/L	
			1,2,4-trimethylbenzene	2014/11/19	<0.00050		mg/L	
			1,3,5-trimethylbenzene	2014/11/19	<0.00050		mg/L	
			Vinyl chloride	2014/11/19	<0.00050		mg/L	
7724353	SLZ	RPD	Bromodichloromethane	2014/11/19	NC		%	40
			Bromoform	2014/11/19	NC		%	40
			Bromomethane	2014/11/19	NC		%	40
			Carbon tetrachloride	2014/11/19	NC		%	40
			Chlorobenzene	2014/11/19	NC		%	40
			Chlorodibromomethane	2014/11/19	NC		%	40
			Chloroethane	2014/11/19	NC		%	40
			Chloroform	2014/11/19	NC		%	40
			Chloromethane	2014/11/19	NC		%	40
			1,2-dibromoethane	2014/11/19	NC		%	40
			1,2-dichlorobenzene	2014/11/19	NC		%	40
			1,3-dichlorobenzene	2014/11/19	NC		%	40
			1,4-dichlorobenzene	2014/11/19	NC		%	40
			1,1-dichloroethane	2014/11/19	NC		%	40
			1,2-dichloroethane	2014/11/19	NC		%	40
			1,1-dichloroethene	2014/11/19	NC		%	40
			cis-1,2-dichloroethene	2014/11/19	NC		%	40
			trans-1,2-dichloroethene	2014/11/19	NC		%	40
			Dichloromethane	2014/11/19	NC		%	40
			1,2-dichloropropane	2014/11/19	NC		%	40
			cis-1,3-dichloropropene	2014/11/19	NC		%	40
			trans-1,3-dichloropropene	2014/11/19	NC		%	40
			Methyl methacrylate	2014/11/19	NC		%	40
			Methyl-tert-butylether (MTBE)	2014/11/19	NC		%	40
			Styrene	2014/11/19	NC		%	40
			1,1,1,2-tetrachloroethane	2014/11/19	NC		%	40
			1,1,2,2-tetrachloroethane	2014/11/19	NC		%	40
			Tetrachloroethene	2014/11/19	NC		%	40
			1,2,3-trichlorobenzene	2014/11/19	NC		%	40
			1,2,4-trichlorobenzene	2014/11/19	NC		%	40
			1,3,5-trichlorobenzene	2014/11/19	NC		%	40
			1,1,1-trichloroethane	2014/11/19	NC		%	40
			1,1,2-trichloroethane	2014/11/19	NC		%	40
			Trichloroethene	2014/11/19	NC		%	40
			Trichlorofluoromethane	2014/11/19	NC		%	40
			1,2,4-trimethylbenzene	2014/11/19	NC		%	40
			1,3,5-trimethylbenzene	2014/11/19	NC		%	40

Maxxam Job #: B4A4551
Report Date: 2014/11/23

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: Q4, BROADVIEW & 19TH
Sampler Initials: JL

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC				Date					
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	Units	QC Limits	
			Vinyl chloride	2014/11/19	NC		%	40	
<p>Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.</p> <p>Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.</p> <p>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.</p> <p>Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.</p> <p>Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.</p> <p>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 (one or both samples < 5x RDL).</p>									

Maxxam Job #: B4A4551
Report Date: 2014/11/23

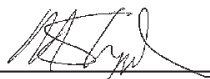
GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: Q4, BROADVIEW & 19TH
Sampler Initials: JL

VALIDATION SIGNATURE PAGE

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



Luba Shymushovska, Senior Analyst, Organic Department



Michael Sheppard, Organics Supervisor

Maxxam 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 Street, T6B 2Y4 Ph: (780) 577-7100, Fax: (780) 450-4187, Toll free: (877) 465-8888
 www.maxxamanalytics.com

2x11-598

Chain of Custody **A109691**
 Page: 1 of 1

Company: Golden Associates.
 Contact: Julie Burghardt
 Address: 162 2535 3rd Ave SE Calgary
 Phone: AB 724 705
 Contact #: 403 299-5660

Report To: Same as Invoice
 Report Distribution (E-Mail): julieburghardt@golden.com
 162 2535 3rd Ave SE Golden, AB
 Can Adequately@golden.com

REGULATORY GUIDELINES:
 AT1
 CCME
 Regulated Drinking Water
 Other:

PO #:
 Project # / Name: 13-1124-0204/04
 Site Location: Riverview @ 19th
 Quote #: G. U. in 2013
 Sampled by: JL
 SERVICE REQUESTED: RUSH (Contact lab to reserve)
 REGULAR (5 to 7 Days)

Sample ID	Depth (unit)	Matrix (GW / SW / Soil)	Date/Time Sampled (YY/MM/DD 24:00)
1 MW14-6A	-	GW	Nov 17/14 9:45
2 MW14-6B	-		10:00
3 MW14-7	-		10:50
4 Field Blank	-		10:50
5 MW14-01A	-		11:25
6 MW14-1A	-		12:45
7 MW14-8	-		13:15
8 MW14-4A	-		14:00
9 MW1	-		14:15
10			
11			
12			

SOIL				WATER				Other Analysis									
BTEX F1-F4	Sieve (75 micron)	Regulated Metals (CCME / AT1)	Salinity 4	Assessment (CP Metals)	Basic Class II Landfill	BTEX E1	BTEX F1-F2	BTEX F1-F4	Routine Water	Turb	DOC	Total Dissolved	Regulated Metals (scale AT1)	Mercury	Total Dissolved	HOLD - Do not Analyze	# of Containers Submitted
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						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						7
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						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						7
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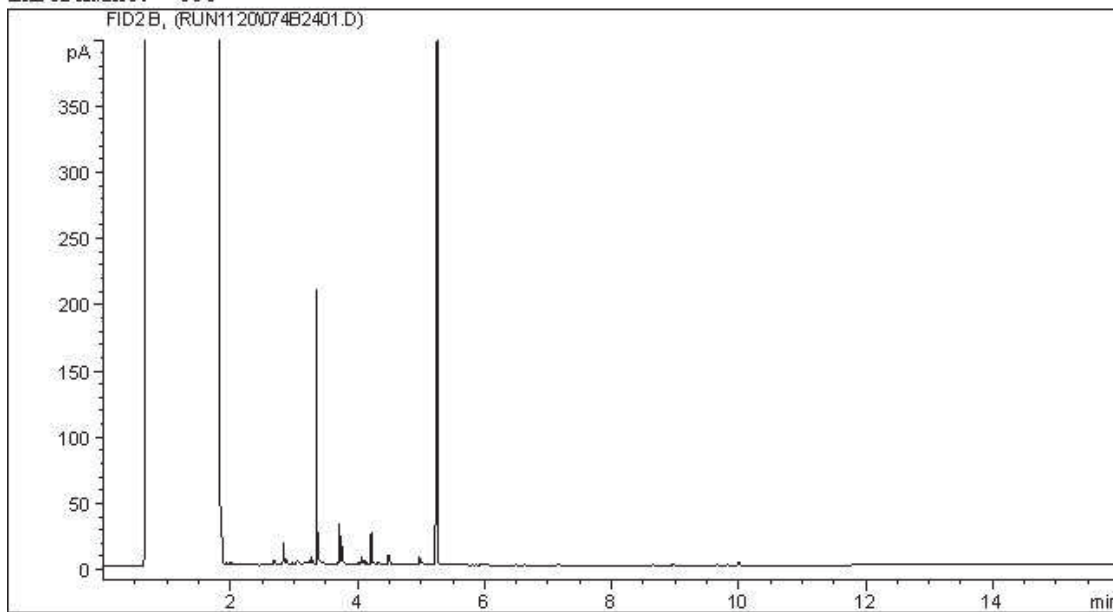
17-Nov-14 16:40
 Wendy Sears
 B4A4551
 NB6 INS-0115 FLS

Please indicate Filtered, Preserved or Both (F, P, F/P)
 Requisitioned By (Signature/Print): Jon Lewis Date (YYMMDD): Nov 17/14 Time (24:00): 16:37
 Requisitioned By (Signature/Print): [Signature] Date (YYMMDD): Time (24:00):
 Special Instructions: MW14-8 may have head space due to large amount of sediment
 # of Jars Used & Not Submitted:

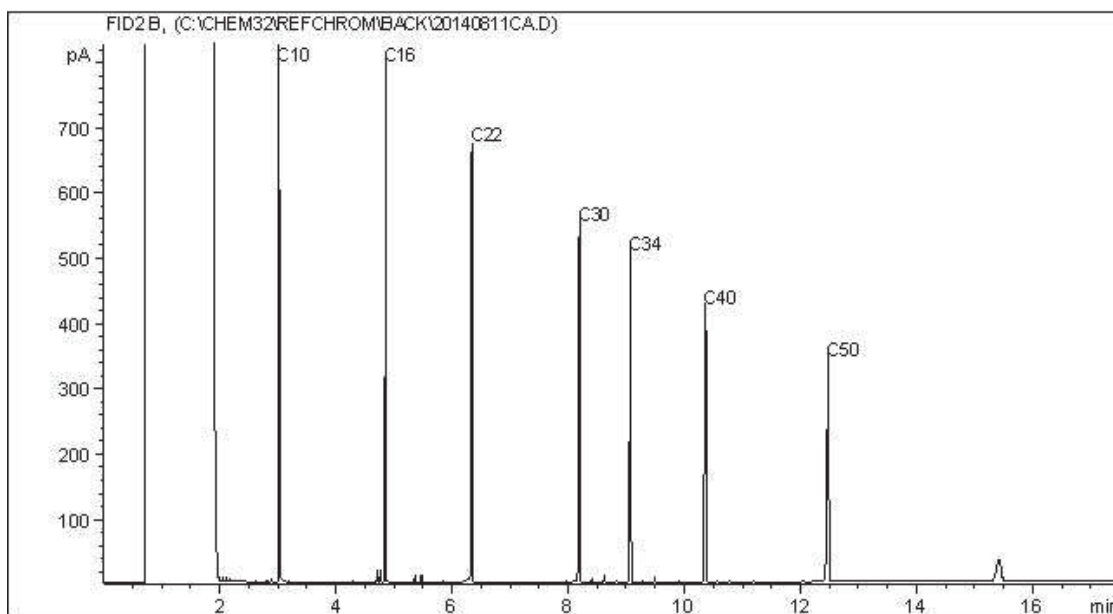
LAB USE ONLY
 Received By: Yunn peng Lin Date: 2014/11/17 Time: 16:40
 Maxxam Job #:
 Custody Seal: Y Temperature: 6.6.4 Ice: Y
 Lab Comments: 6.8.3

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC6



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

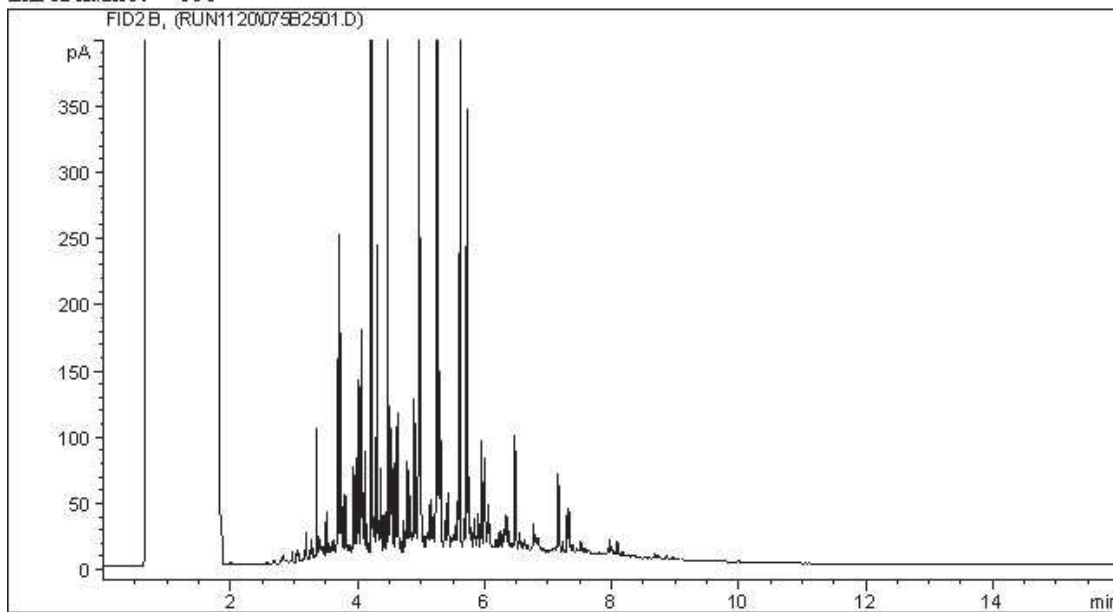
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

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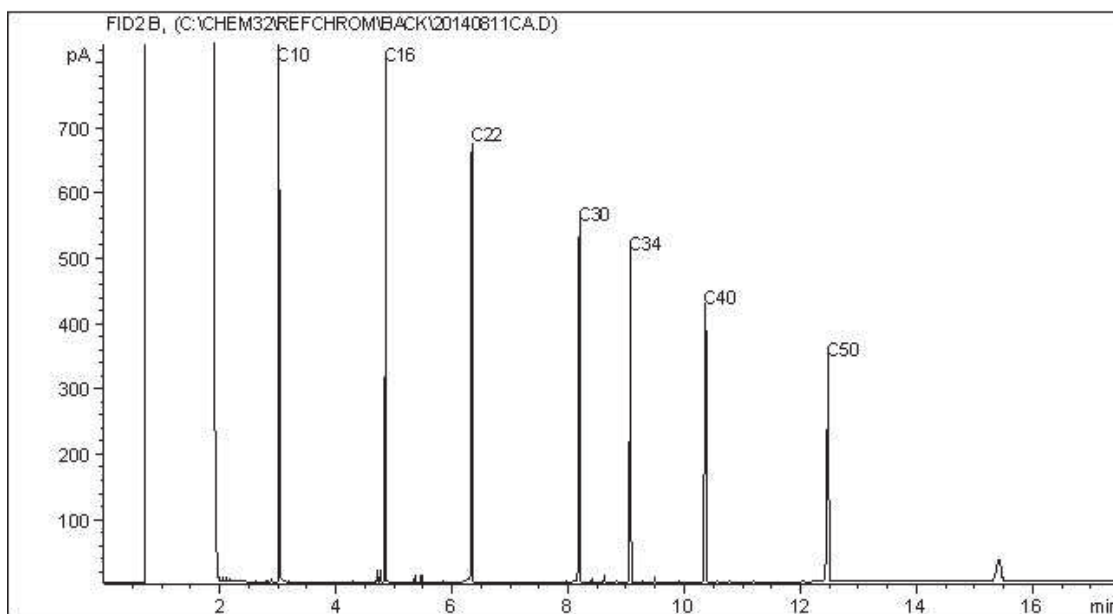
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC6



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

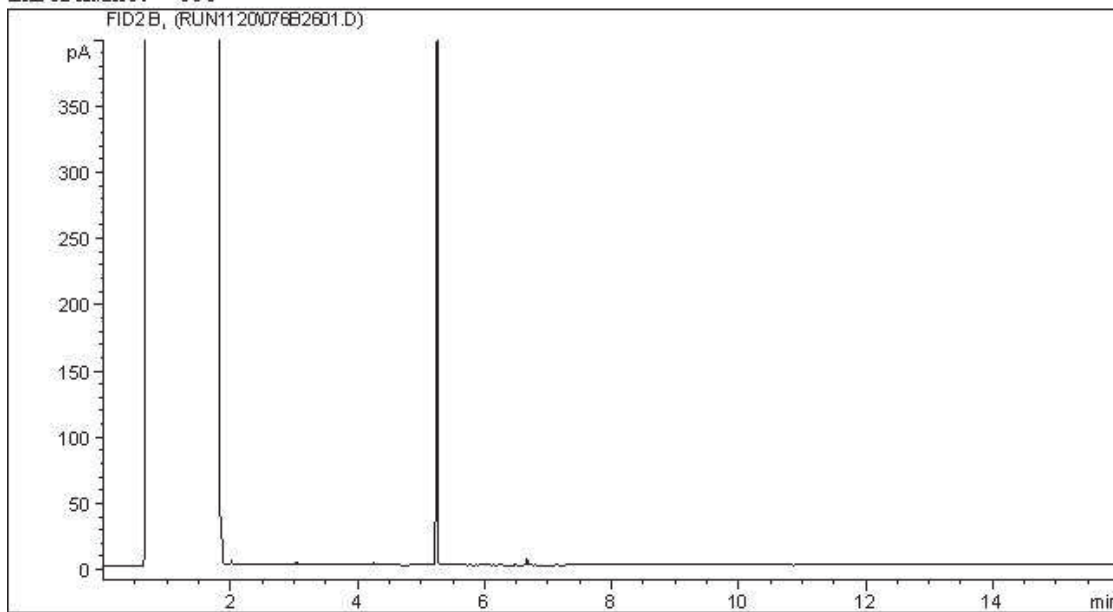
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

Page 1 of 1

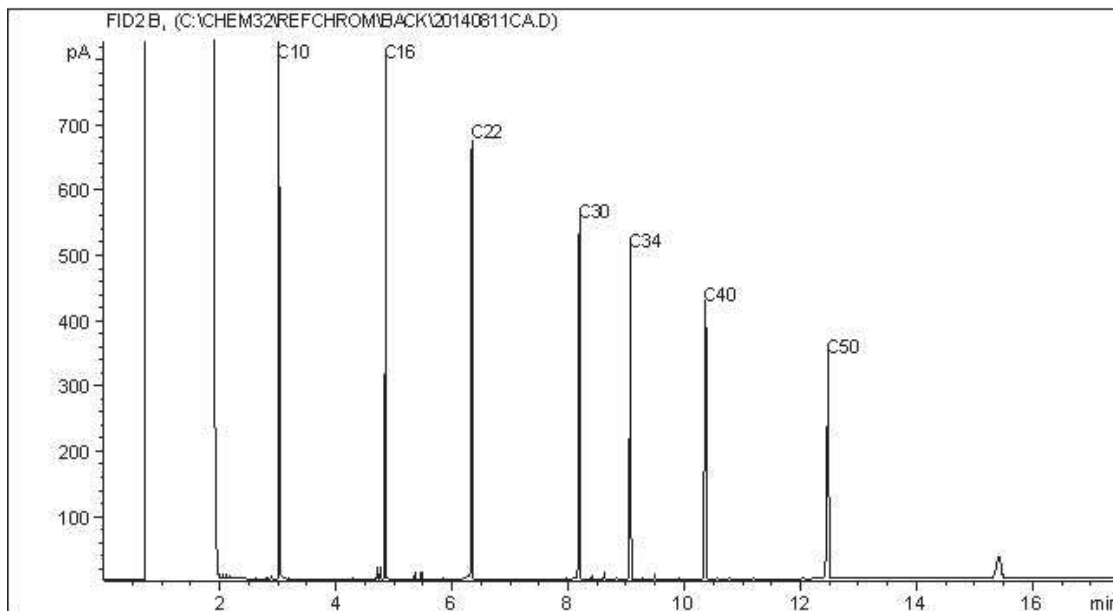
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC6



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

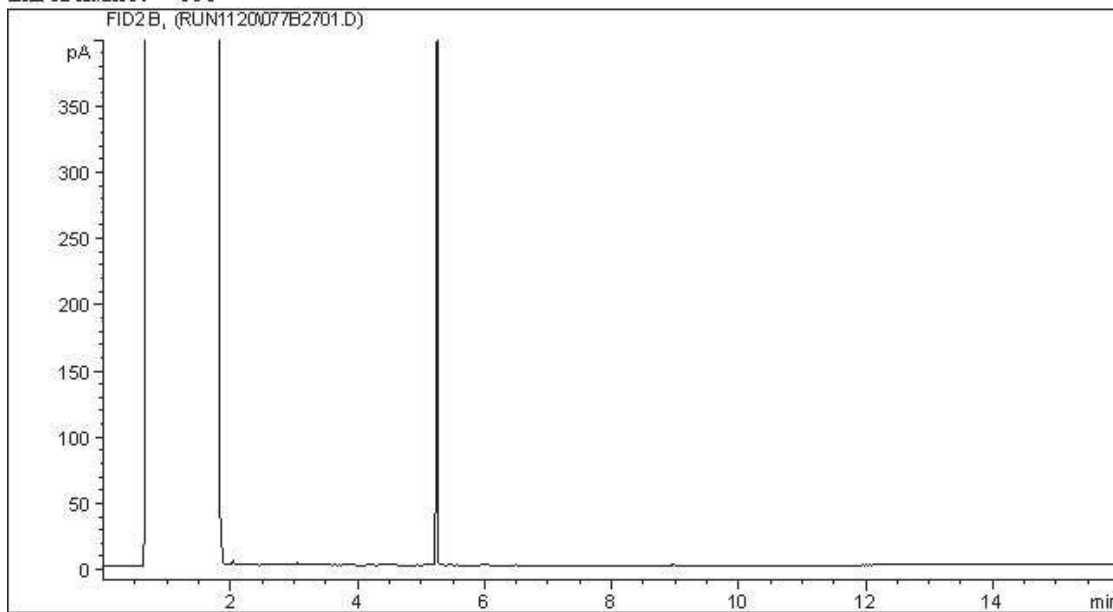
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

Page 1 of 1

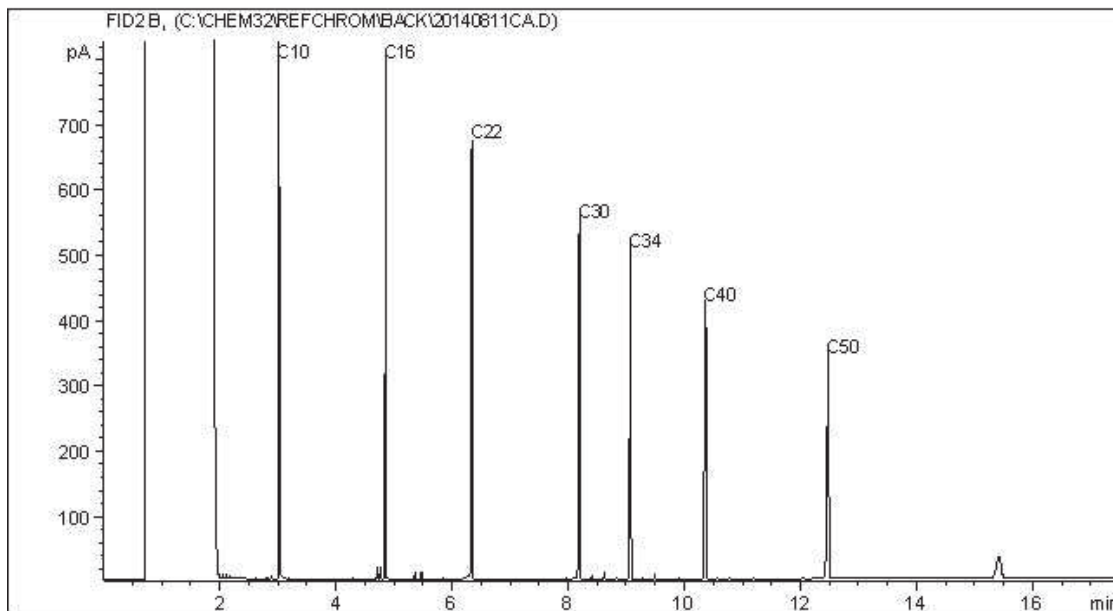
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC6



Carbon Range Distribution - Reference Chromatogram



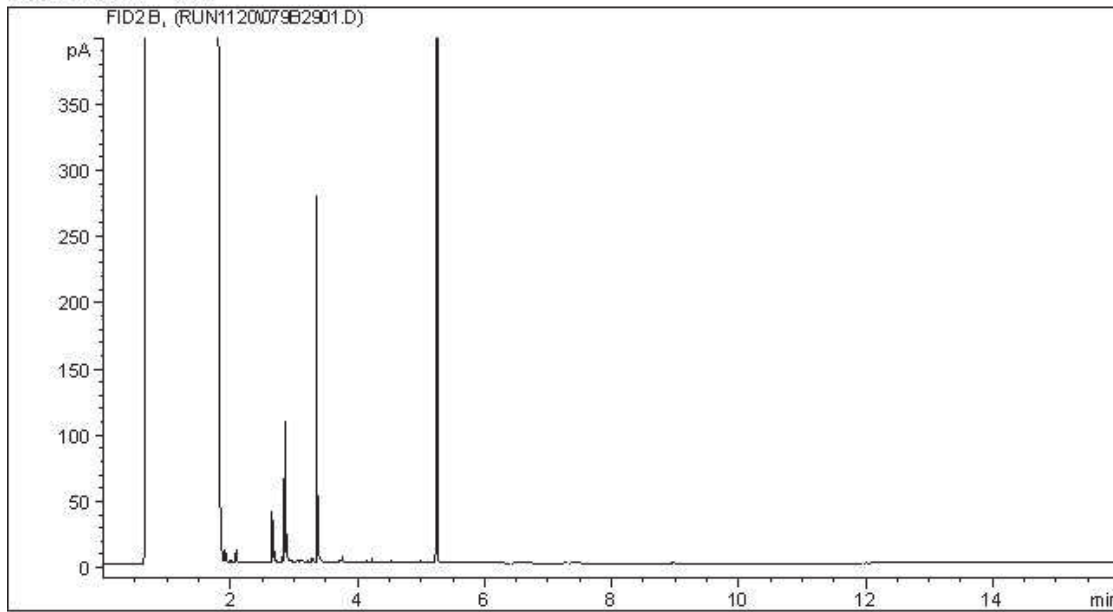
TYPICAL PRODUCT CARBON NUMBER RANGES

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

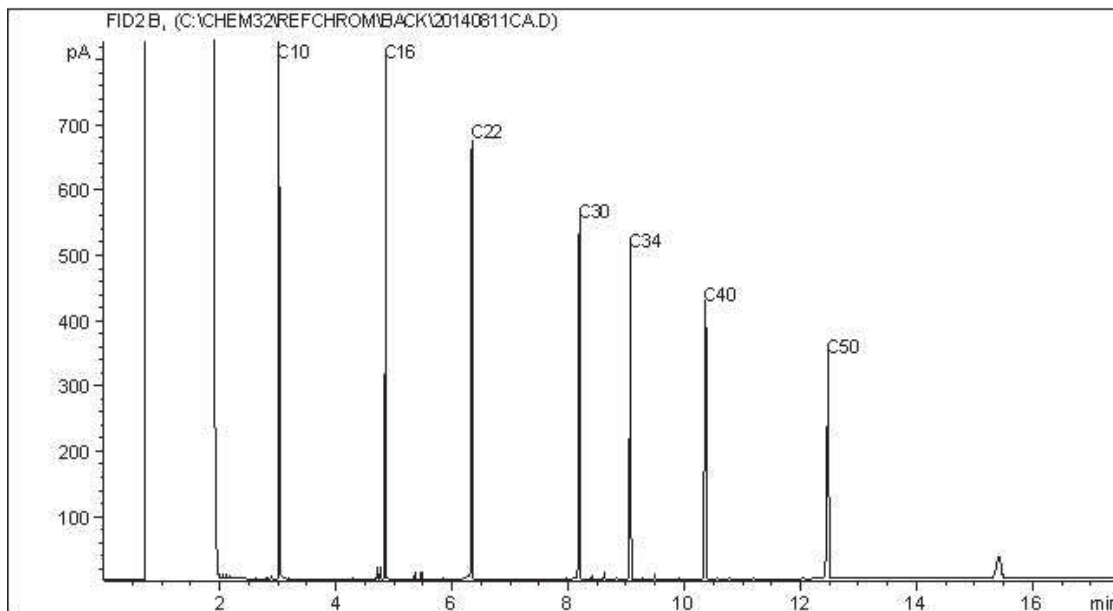
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC6



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

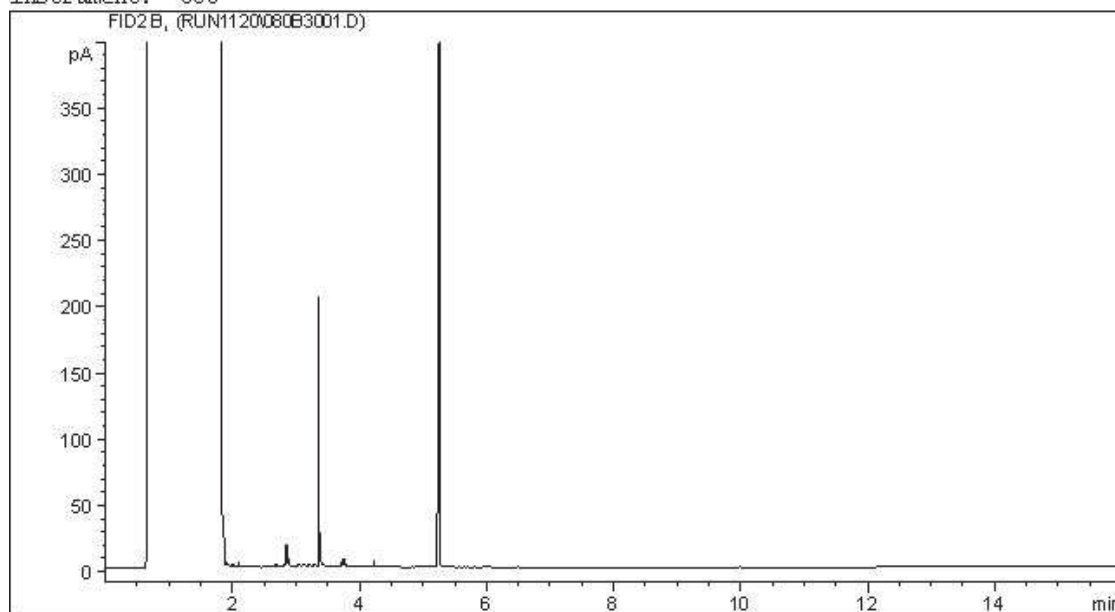
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

Page 1 of 1

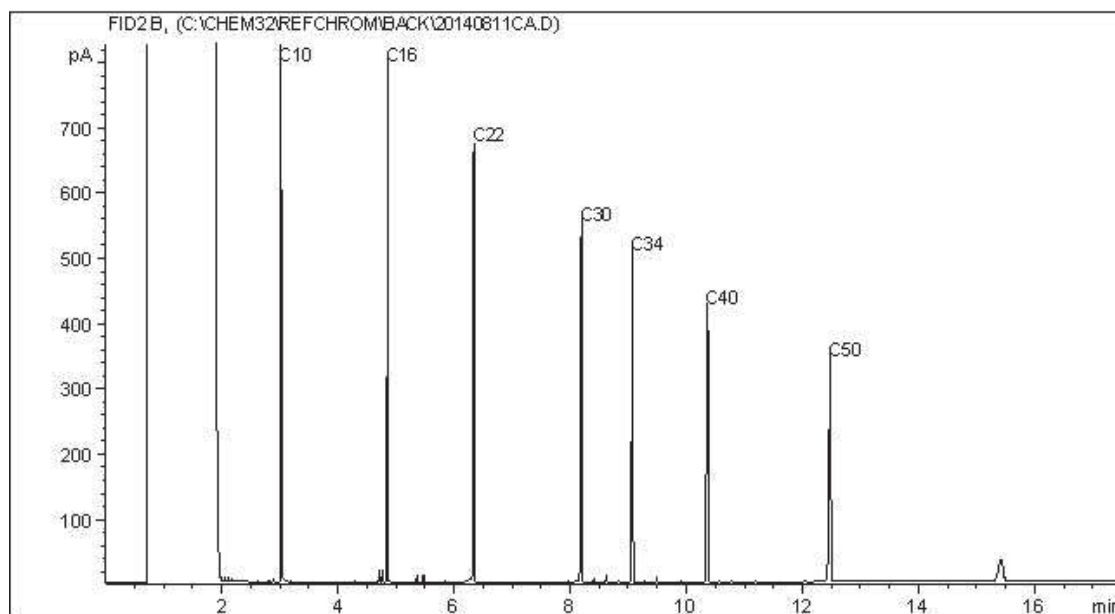
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC6



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

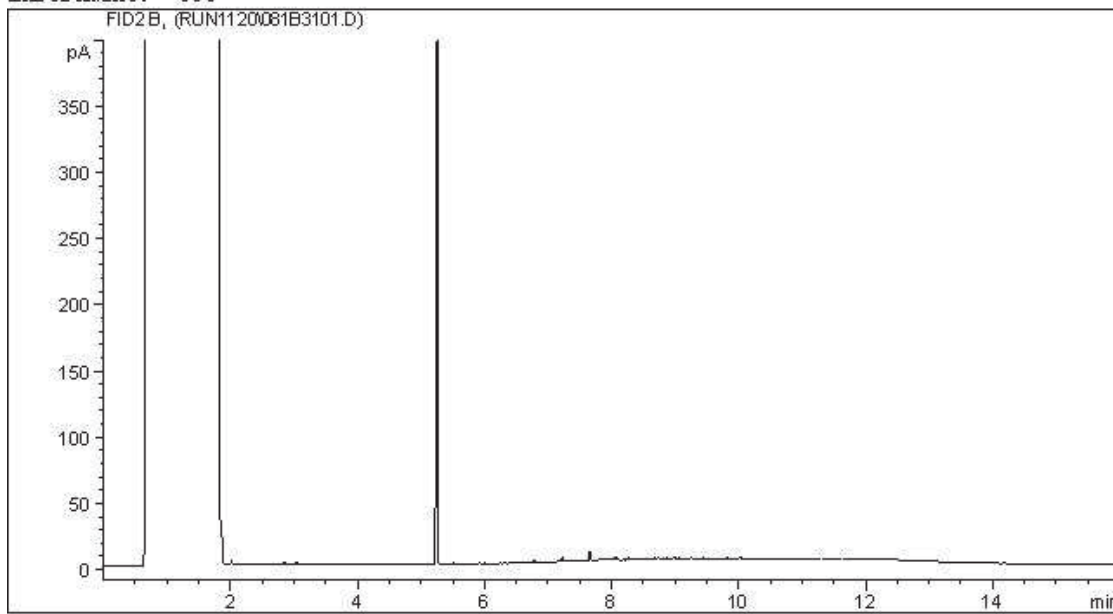
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

Page 1 of 1

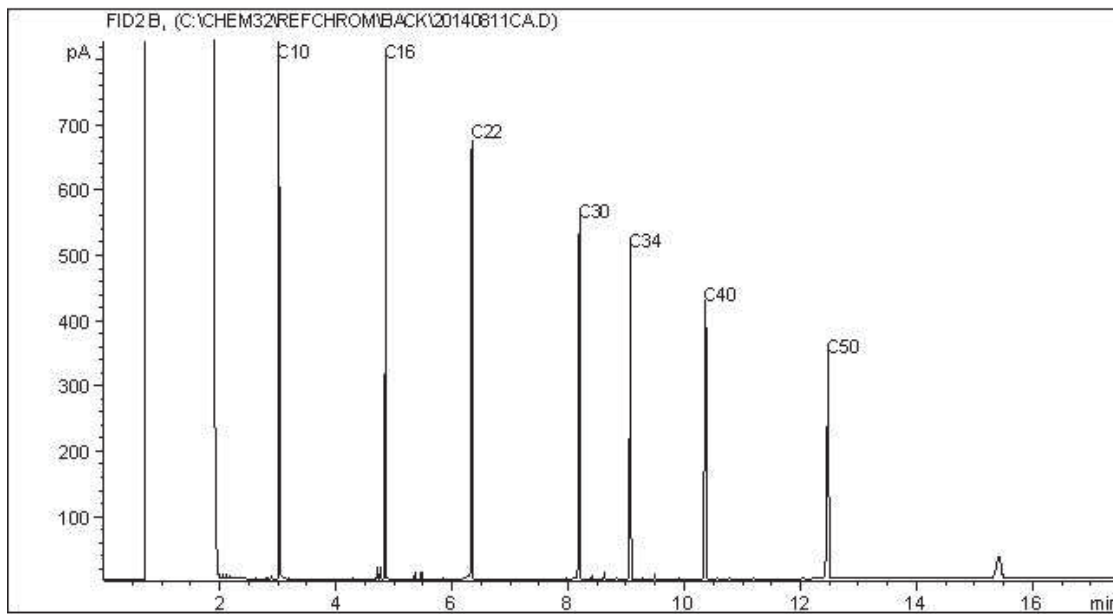
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC6



Carbon Range Distribution - Reference Chromatogram



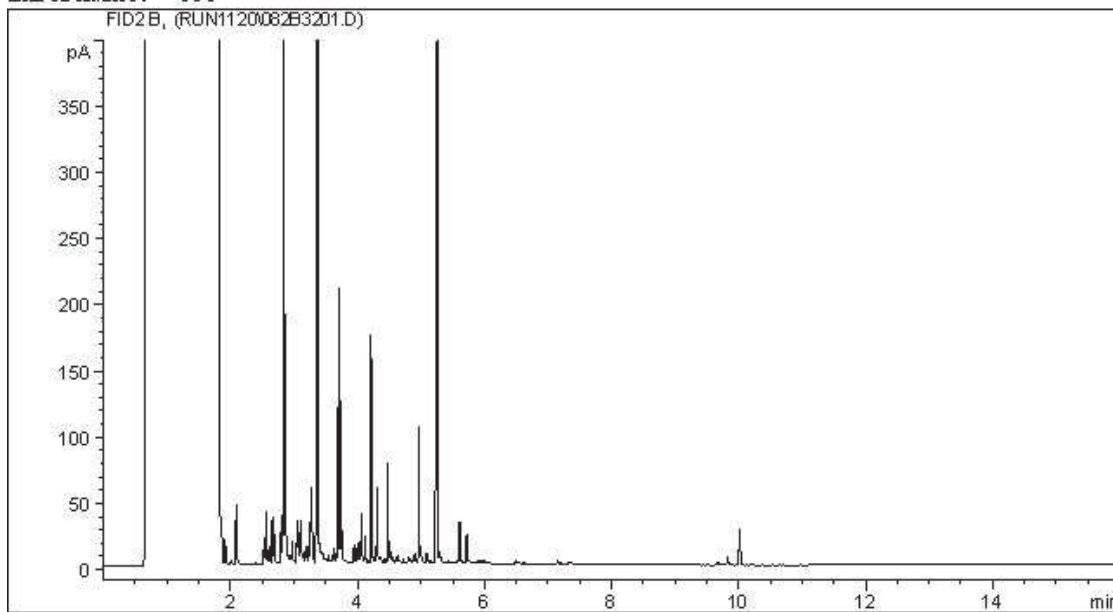
TYPICAL PRODUCT CARBON NUMBER RANGES

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

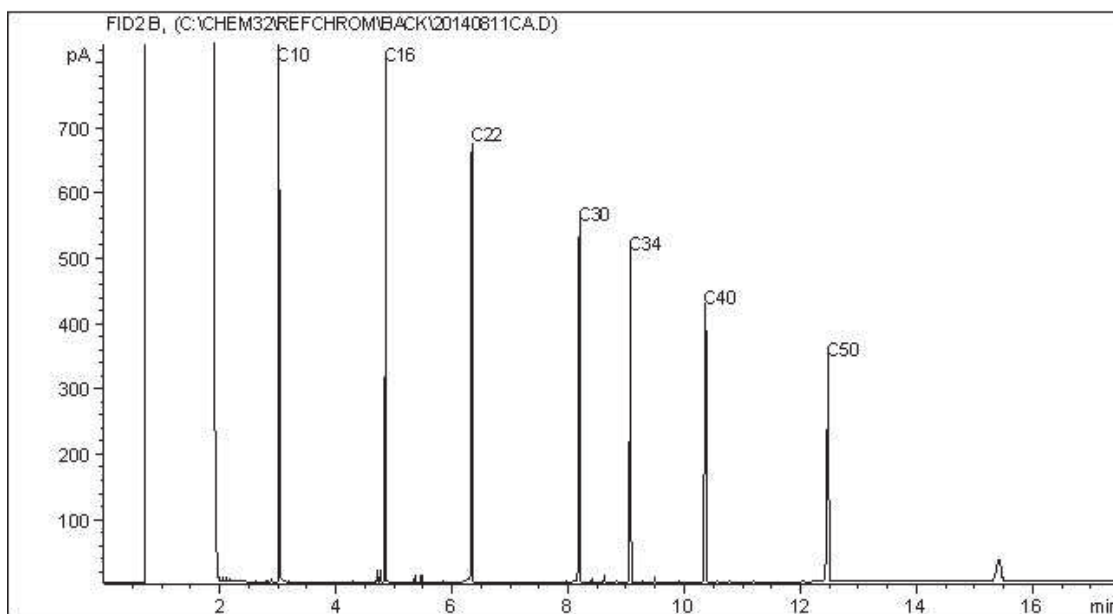
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC6



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

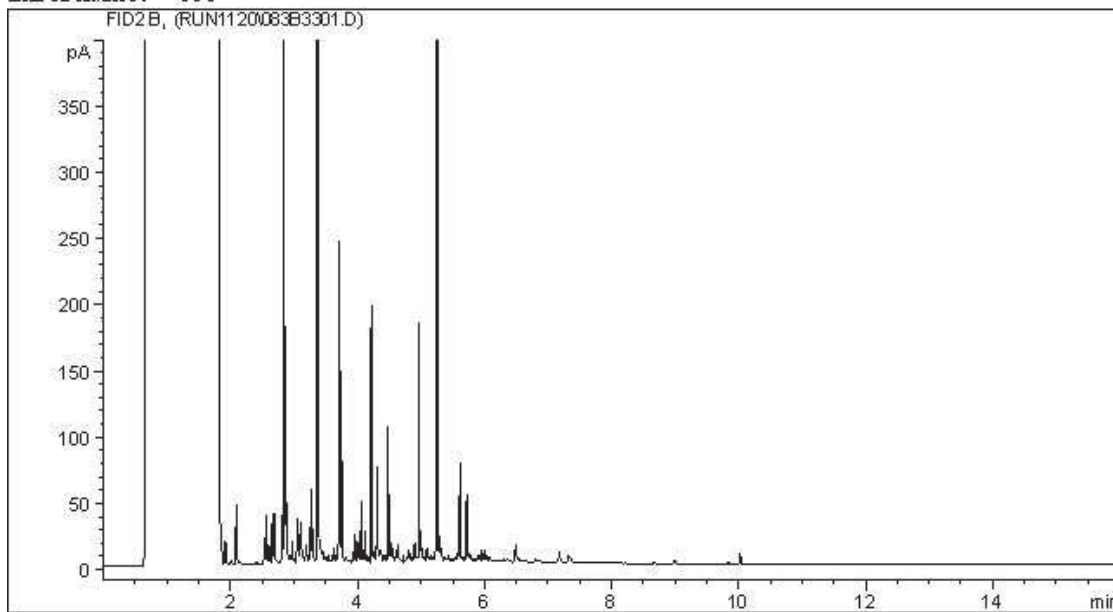
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

Page 1 of 1

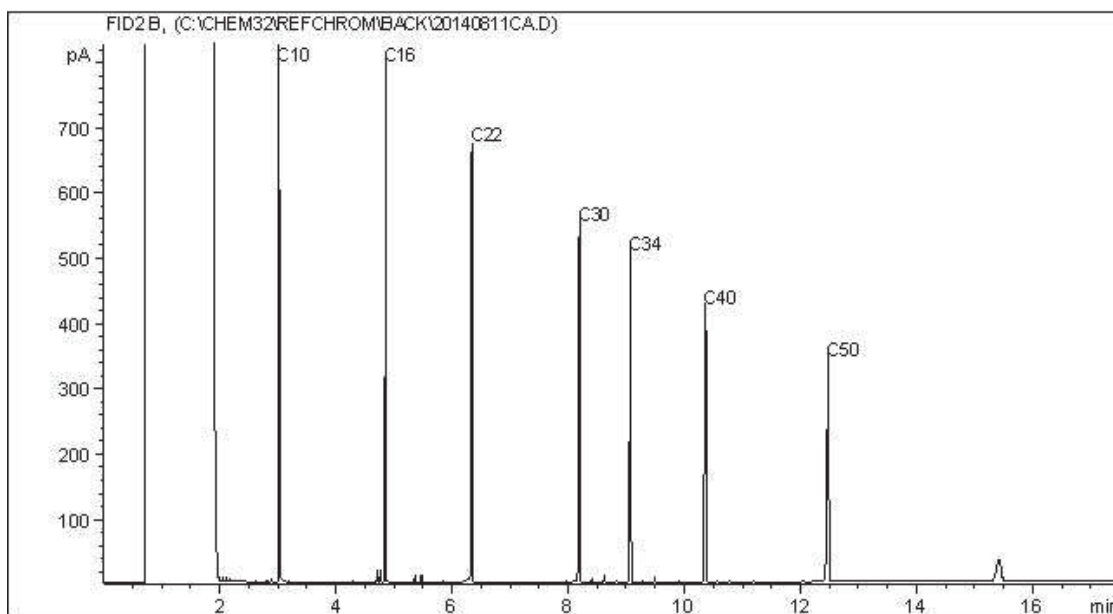
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: 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+

Page 1 of 1

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

Your Project #: 13-1324-0204
 Your C.O.C. #: A018809

Attention: Julie Burghardt

GOLDER ASSOCIATES LTD.
 CALGARY - NATIONAL CONTRACT
 102, 2535 - 3rd Avenue SE
 CALGARY, AB
 CANADA T2A 7W5

Report Date: 2014/03/18
Report #: R1536343
Version: 1

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B419154
Received: 2014/03/11, 12:14

Sample Matrix: Soil
 # Samples Received: 7

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
BTEX/F1 by HS GC/MS (MeOH extract)	7	2014/03/12	2014/03/13	AB SOP-00039	CCME, EPA 8260C
CCME Hydrocarbons (F2-F4 in soil)	7	2014/03/12	2014/03/17	AB SOP-00040 AB SOP-00036	CCME PHC-CWS
CCME Hydrocarbons (F4G in soil)	1	2014/03/12	2014/03/18	AB SOP-00040 AB SOP-00036	CCME PHC-CWS
Moisture	7	N/A	2014/03/14	AB SOP-00002	CCME PHC-CWS
Benzo[a]pyrene Equivalency	7	N/A	2014/03/17	AB SOP-00003	EPA 8270D
PAH in Soil by GC/MS	7	2014/03/12	2014/03/17	AB SOP-00003 AB SOP-00036	EPA 3540C/8270D
VOCs in Soil by HS GC/MS (Std List)	1	2014/03/12	2014/03/14	AB SOP-00056	EPA 5021A/8260C
VOCs in Soil by HS GC/MS (Std List)	6	2014/03/12	2014/03/15	AB SOP-00056	EPA 5021A/8260C
VOCs in Soil by HS GC/MS Low (Std List)	7	2014/03/12	2014/03/13	AB SOP-00056	EPA5021A/ 8260C

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
 * Results relate only to the items tested.

Encryption Key 
 Lisa McManes
 18 Mar 2014 18:37:30 -06:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Anna Gordon, Project Manager
 Email: AGordon@maxxam.ca
 Phone# (403) 291-3077

Maxxam 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.

Total cover pages: 1



Success Through Science®

Maxxam Job #: B419154
Report Date: 2014/03/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204

Sampler Initials: JL

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		IZ3917	IZ3917	IZ3918	IZ3919		
Sampling Date		2014/03/10	2014/03/10	2014/03/07	2014/03/10		
	UNITS	MW14-01B-2 @ 3.1-3.4	MW14-01B-2 @ 3.1-3.4 Lab-Dup	MW14-02-4 @ 2.7-2.9	MW14-04A-6 @ 5.5-5.6	RDL	QC Batch
Physical Properties							
Moisture	%	0.80		16	17	0.30	7414801
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	330	10	7417006
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	310	520	50	7417006
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	660	61	50	7417006
Reached Baseline at C50	mg/kg	YES	YES	NO	YES		7417006
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	105	93	72	92		7417006
Volatiles							
Benzene	mg/kg	<0.0050		<0.0050	0.012	0.0050	7414271
Toluene	mg/kg	<0.020		<0.020	0.055	0.020	7414271
Ethylbenzene	mg/kg	<0.010		<0.010	0.65	0.010	7414271
Xylenes (Total)	mg/kg	<0.040		<0.040	1.8	0.040	7414271
m & p-Xylene	mg/kg	<0.040		<0.040	1.2	0.040	7414271
o-Xylene	mg/kg	<0.020		<0.020	0.62	0.020	7414271
F1 (C6-C10) - BTEX	mg/kg	<12		<12	14	12	7414271
(C6-C10)	mg/kg	<12		<12	16	12	7414271
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	102		103	104		7414271
4-BROMOFLUOROBENZENE (sur.)	%	102		100	98		7414271
D10-ETHYLBENZENE (sur.)	%	93		90	90		7414271
D4-1,2-DICHLOROETHANE (sur.)	%	107		106	106		7414271

RDL = Reportable Detection Limit



Success Through Science®

Maxxam Job #: B419154
Report Date: 2014/03/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204

Sampler Initials: JL

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		IZ3920	IZ3921		IZ3922		IZ3923		
Sampling Date		2014/03/10	2014/03/07		2014/03/06		2014/03/06		
	UNITS	MW14-O4B-1 @ 4.7-5.0	MW14-05-5 @ 4.6-5.0	RDL	MW14-08-3 @ 4.0-4.6	RDL	MW14-09-3 @ 2.9-3.7	RDL	QC Batch
Physical Properties									
Moisture	%	7.1	3.6	0.30	22	0.30	6.7	0.30	7414801
Ext. Pet. Hydrocarbon									
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	10	<10	10	<10	10	7417006
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	91	50	<50	50	<50	50	7417006
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	72	50	<50	50	<50	50	7417006
Reached Baseline at C50	mg/kg	YES	YES		YES		YES		7417006
Surrogate Recovery (%)									
O-TERPHENYL (sur.)	%	91	97		91		128		7417006
Volatiles									
Benzene	mg/kg	<0.0050	<0.0050	0.0050	<0.010(1)	0.010	<0.0090(1)	0.0090	7414271
Toluene	mg/kg	<0.020	<0.020	0.020	<0.020	0.020	<0.020	0.020	7414271
Ethylbenzene	mg/kg	<0.010	<0.010	0.010	<0.010	0.010	<0.010	0.010	7414271
Xylenes (Total)	mg/kg	<0.040	<0.040	0.040	<0.040	0.040	<0.040	0.040	7414271
m & p-Xylene	mg/kg	<0.040	<0.040	0.040	<0.040	0.040	<0.040	0.040	7414271
o-Xylene	mg/kg	<0.020	<0.020	0.020	<0.020	0.020	<0.020	0.020	7414271
F1 (C6-C10) - BTEX	mg/kg	<12	<12	12	<12	12	<12	12	7414271
(C6-C10)	mg/kg	<12	<12	12	<12	12	<12	12	7414271
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	102	103		103		104		7414271
4-BROMOFLUOROBENZENE (sur.)	%	99	99		99		98		7414271
D10-ETHYLBENZENE (sur.)	%	91	93		93		96		7414271
D4-1,2-DICHLOROETHANE (sur.)	%	105	106		105		105		7414271

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		IZ3918		
Sampling Date		2014/03/07		
	UNITS	MW14-02-4 @ 2.7-2.9	RDL	QC Batch
Ext. Pet. Hydrocarbon				
F4G-SG (Heavy Hydrocarbons-Grav.)	mg/kg	1600	500	7417014

RDL = Reportable Detection Limit
(1) - Detection limit raised due to interferent.



Success Through Science®

Maxxam Job #: B419154
Report Date: 2014/03/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204

Sampler Initials: JL

SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		IZ3917	IZ3917	IZ3918		
Sampling Date		2014/03/10	2014/03/10	2014/03/07		
	UNITS	MW14-01B-2 @ 3.1-3.4	MW14-01B-2 @ 3.1-3.4 Lab-Dup	MW14-02-4 @ 2.7-2.9	RDL	QC Batch
Polycyclic Aromatics						
Acenaphthene	mg/kg	0.015	0.015	<0.0050	0.0050	7417015
Benzo(a)pyrene equivalency	mg/kg	<0.10		<0.10	0.10	7411398
Acenaphthylene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	7417015
Acridine	mg/kg	<0.010	<0.010	<0.010	0.010	7417015
Anthracene	mg/kg	0.0078	0.0071	<0.0040	0.0040	7417015
Benzo(a)anthracene	mg/kg	0.0081	0.0068	<0.0050	0.0050	7417015
Benzo(b&j)fluoranthene	mg/kg	0.0097	0.0088	0.0075	0.0050	7417015
Benzo(k)fluoranthene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	7417015
Benzo(g,h,i)perylene	mg/kg	<0.0050	<0.0050	0.0057	0.0050	7417015
Benzo(c)phenanthrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	7417015
Benzo(a)pyrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	7417015
Benzo[e]pyrene	mg/kg	0.0058	0.0051	0.0071	0.0050	7417015
Chrysene	mg/kg	0.0070	0.0061	<0.0050	0.0050	7417015
Dibenz(a,h)anthracene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	7417015
Fluoranthene	mg/kg	0.028	0.025	<0.0050	0.0050	7417015
Fluorene	mg/kg	0.017	0.017	<0.0050	0.0050	7417015
Indeno(1,2,3-cd)pyrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	7417015
2-Methylnaphthalene	mg/kg	0.012	0.012	0.016	0.0050	7417015
Naphthalene	mg/kg	0.012	0.012	0.012	0.0050	7417015
Phenanthrene	mg/kg	0.049	0.050	0.018	0.0050	7417015
Perylene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	7417015
Pyrene	mg/kg	0.022	0.019	<0.0050	0.0050	7417015
Quinoline	mg/kg	<0.010	<0.010	<0.010	0.010	7417015
Surrogate Recovery (%)						
D10-ANTHRACENE (sur.)	%	92	94	110		7417015
D12-BENZO(A)PYRENE (sur.)	%	90	92	112		7417015
D8-ACENAPHTHYLENE (sur.)	%	95	97	115		7417015
TERPHENYL-D14 (sur.)	%	93	95	113		7417015

RDL = Reportable Detection Limit



Success Through Science®

Maxxam Job #: B419154
Report Date: 2014/03/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204

Sampler Initials: JL

SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		IZ3919		IZ3920	IZ3921	IZ3922	IZ3923		
Sampling Date	UNITS	2014/03/10	RDL	2014/03/10	2014/03/07	2014/03/06	2014/03/06	RDL	QC Batch
		MW14-04A-6 @ 5.5-5.6		MW14-04B-1 @ 4.7-5.0	MW14-05-5 @ 4.6-5.0	MW14-08-3 @ 4.0-4.6	MW14-09-3 @ 2.9-3.7		
Polycyclic Aromatics									
Acenaphthene	mg/kg	17	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Benzo[a]pyrene equivalency	mg/kg	5.54	0.10	<0.10	<0.10	<0.10	<0.10	0.10	7411398
Acenaphthylene	mg/kg	0.65	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Acridine	mg/kg	0.50	0.10	<0.010	<0.010	<0.010	<0.010	0.010	7417015
Anthracene	mg/kg	7.1	0.040	<0.0040	<0.0040	<0.0040	<0.0040	0.0040	7417015
Benzo(a)anthracene	mg/kg	6.1	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Benzo(b&j)fluoranthene	mg/kg	5.5	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Benzo(k)fluoranthene	mg/kg	1.8	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Benzo(g,h,i)perylene	mg/kg	1.5	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Benzo(c)phenanthrene	mg/kg	<0.95 ⁽¹⁾	0.95	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Benzo(a)pyrene	mg/kg	3.5	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Benzo(e)pyrene	mg/kg	2.7	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Chrysene	mg/kg	3.9	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Dibenz(a,h)anthracene	mg/kg	0.46	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Fluoranthene	mg/kg	19	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Fluorene	mg/kg	14	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Indeno(1,2,3-cd)pyrene	mg/kg	1.5	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
2-Methylnaphthalene	mg/kg	23	0.050	0.0071	0.0058	0.012	<0.0050	0.0050	7417015
Naphthalene	mg/kg	79	0.050	0.0074	0.0056	0.011	<0.0050	0.0050	7417015
Phenanthrene	mg/kg	36	0.050	0.0066	0.012	0.015	<0.0050	0.0050	7417015
Perylene	mg/kg	1.1	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Pyrene	mg/kg	14	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Quinoline	mg/kg	0.77	0.010	<0.010	<0.010	<0.010	<0.010	0.010	7417015
Surrogate Recovery (%)									
D10-ANTHRACENE (sur.)	%	120		97	103	94	91		7417015
D12-BENZO(A)PYRENE (sur.)	%	110		99	104	95	90		7417015
D8-ACENAPHTHYLENE (sur.)	%	100		100	106	95	92		7417015
TERPHENYL-D14 (sur.)	%	90		98	105	96	91		7417015

RDL = Reportable Detection Limit

(1) - Detection limits raised due to matrix interference.



Success Through Science®

Maxxam Job #: B419154
Report Date: 2014/03/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204

Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		IZ3917	IZ3917		IZ3918	IZ3919		
Sampling Date		2014/03/10	2014/03/10		2014/03/07	2014/03/10		
	UNITS	MW14-01B-2 @ 3.1-3.4	MW14-01B-2 @ 3.1-3.4 Lab-Dup	QC Batch	MW14-02-4 @ 2.7-2.9	MW14-04A-6 @ 5.5-5.6	RDL	QC Batch
Volatiles								
Bromodichloromethane	mg/kg	<0.030	<0.030	7415431	<0.030	<0.030	0.030	7415431
Bromoform	mg/kg	<0.050	<0.050	7415431	<0.050	<0.050	0.050	7415431
Bromomethane	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
Carbon tetrachloride	mg/kg	<0.00050		7411505	<0.00050	<0.00050	0.00050	7411505
Chlorobenzene	mg/kg	<0.0010		7411505	<0.0010	<0.0010	0.0010	7411505
Chlorodibromomethane	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
Chloroethane	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
Chloroform	mg/kg	<0.00080		7411505	<0.00080	<0.00080	0.00080	7411505
Chloromethane	mg/kg	<0.030	<0.030	7415431	<0.030	<0.030	0.030	7415431
1,2-dibromoethane	mg/kg	<0.0020		7411505	<0.0020	<0.0020	0.0020	7411505
1,2-dichlorobenzene	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
1,3-dichlorobenzene	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
1,4-dichlorobenzene	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
1,1-dichloroethane	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
1,2-dichloroethane	mg/kg	<0.0020		7411505	<0.0020	<0.0020	0.0020	7411505
1,1-dichloroethene	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
cis-1,2-dichloroethene	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
trans-1,2-dichloroethene	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
Dichloromethane	mg/kg	<0.030	<0.030	7415431	<0.030	<0.030	0.030	7415431
1,2-dichloropropane	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
cis-1,3-dichloropropene	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
trans-1,3-dichloropropene	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
Methyl methacrylate	mg/kg	<0.040	<0.040	7415431	<0.040	<0.040	0.040	7415431
Methyl-tert-butylether (MTBE)	mg/kg	<0.030	<0.030	7415431	<0.030	<0.030	0.030	7415431
Styrene	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
1,1,1,2-tetrachloroethane	mg/kg	<0.10	<0.10	7415431	<0.10	<0.10	0.10	7415431
1,1,2,2-tetrachloroethane	mg/kg	<0.050	<0.050	7415431	<0.050	<0.050	0.050	7415431
Tetrachloroethene	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
1,2,3-trichlorobenzene	mg/kg	<0.040	<0.040	7415431	<0.040	<0.040	0.040	7415431
1,2,4-trichlorobenzene	mg/kg	<0.040	<0.040	7415431	<0.040	<0.040	0.040	7415431
1,3,5-trichlorobenzene	mg/kg	<0.040	<0.040	7415431	<0.040	<0.040	0.040	7415431
1,1,1-trichloroethane	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
1,1,2-trichloroethane	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
Trichloroethene	mg/kg	<0.010	<0.010	7415431	<0.010	<0.010	0.010	7415431
Trichlorofluoromethane	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431

RDL = Reportable Detection Limit



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Maxxam Job #: B419154
Report Date: 2014/03/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204

Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		IZ3917	IZ3917		IZ3918	IZ3919		
Sampling Date		2014/03/10	2014/03/10	QC Batch	2014/03/07	2014/03/10	RDL	QC Batch
	UNITS	MW14-01B-2 @ 3.1-3.4	MW14-01B-2 @ 3.1-3.4 Lab-Dup		MW14-02-4 @ 2.7-2.9	MW14-04A-6 @ 5.5-5.6		
1,2,4-trimethylbenzene	mg/kg	<0.50	<0.50	7415431	<0.50	3.7	0.50	7415431
1,3,5-trimethylbenzene	mg/kg	<0.50	<0.50	7415431	<0.50	1.8	0.50	7415431
Vinyl chloride	mg/kg	<0.00030		7411505	<0.00030	<0.00030	0.00030	7411505
Surrogate Recovery (%)								
1,4-Difluorobenzene (sur.)	%	99	99	7415431	98	100		7415431
4-BROMOFLUOROBENZENE (sur.)	%	100	101	7415431	139	53(1)		7411505
D10-ETHYLBENZENE (sur.)	%	100	107	7415431	95	98		7415431
D4-1,2-DICHLOROETHANE (sur.)	%	88	85	7415431	93	92		7411505

RDL = Reportable Detection Limit

(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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Maxxam Job #: B419154
Report Date: 2014/03/18

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Client Project #: 13-1324-0204

Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		IZ3920	IZ3921	IZ3922		IZ3923		
Sampling Date		2014/03/10	2014/03/07	2014/03/06		2014/03/06		
	UNITS	MW14-O4B-1 @ 4.7-5.0	MW14-05-5 @ 4.6-5.0	MW14-08-3 @ 4.0-4.6	QC Batch	MW14-09-3 @ 2.9-3.7	RDL	QC Batch
Volatiles								
Bromodichloromethane	mg/kg	<0.030	<0.030	<0.030	7415431	<0.030	0.030	7415431
Bromoform	mg/kg	<0.050	<0.050	<0.050	7415431	<0.050	0.050	7415431
Bromomethane	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
Carbon tetrachloride	mg/kg	<0.00050	<0.00050	<0.00050	7411505	<0.00050	0.00050	7411505
Chlorobenzene	mg/kg	<0.0010	<0.0010	<0.0010	7411505	<0.0010	0.0010	7411505
Chlorodibromomethane	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
Chloroethane	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
Chloroform	mg/kg	<0.00080	<0.00080	<0.00080	7411505	<0.00080	0.00080	7411505
Chloromethane	mg/kg	<0.030	<0.030	<0.030	7415431	<0.030	0.030	7415431
1,2-dibromoethane	mg/kg	<0.0020	<0.0020	<0.0020	7411505	<0.0020	0.0020	7411505
1,2-dichlorobenzene	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
1,3-dichlorobenzene	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
1,4-dichlorobenzene	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
1,1-dichloroethane	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
1,2-dichloroethane	mg/kg	<0.0020	<0.0020	<0.0020	7411505	<0.0020	0.0020	7411505
1,1-dichloroethene	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
cis-1,2-dichloroethene	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
trans-1,2-dichloroethene	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
Dichloromethane	mg/kg	<0.030	<0.030	<0.030	7415431	<0.030	0.030	7415431
1,2-dichloropropane	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
cis-1,3-dichloropropene	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
trans-1,3-dichloropropene	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
Methyl methacrylate	mg/kg	<0.040	<0.040	<0.040	7415431	<0.040	0.040	7415431
Methyl-tert-butylether (MTBE)	mg/kg	<0.030	<0.030	<0.030	7415431	<0.030	0.030	7415431
Styrene	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
1,1,1,2-tetrachloroethane	mg/kg	<0.10	<0.10	<0.10	7415431	<0.10	0.10	7415431
1,1,2,2-tetrachloroethane	mg/kg	<0.050	<0.050	<0.050	7415431	<0.050	0.050	7415431
Tetrachloroethene	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
1,2,3-trichlorobenzene	mg/kg	<0.040	<0.040	<0.040	7415431	<0.040	0.040	7415431
1,2,4-trichlorobenzene	mg/kg	<0.040	<0.040	<0.040	7415431	<0.040	0.040	7415431
1,3,5-trichlorobenzene	mg/kg	<0.040	<0.040	<0.040	7415431	<0.040	0.040	7415431
1,1,1-trichloroethane	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
1,1,2-trichloroethane	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
Trichloroethene	mg/kg	<0.010	<0.010	<0.010	7415431	<0.010	0.010	7415431
Trichlorofluoromethane	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431

RDL = Reportable Detection Limit



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Client Project #: 13-1324-0204

Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		IZ3920	IZ3921	IZ3922		IZ3923		
Sampling Date		2014/03/10	2014/03/07	2014/03/06		2014/03/06		
	UNITS	MW14-O4B-1 @ 4.7-5.0	MW14-O5-5 @ 4.6-5.0	MW14-O8-3 @ 4.0-4.6	QC Batch	MW14-O9-3 @ 2.9-3.7	RDL	QC Batch
1,2,4-trimethylbenzene	mg/kg	<0.50	<0.50	<0.50	7415431	<0.50	0.50	7415431
1,3,5-trimethylbenzene	mg/kg	<0.50	<0.50	<0.50	7415431	<0.50	0.50	7415431
Vinyl chloride	mg/kg	<0.00030	<0.00030	<0.00030	7411505	<0.00030	0.00030	7411505
Surrogate Recovery (%)								
1,4-Difluorobenzene (sur.)	%	100	98	100	7415431	99		7411505
4-BROMOFLUOROBENZENE (sur.)	%	94	112	111	7411505	101		7415431
D10-ETHYLBENZENE (sur.)	%	99	101	98	7415431	99		7411505
D4-1,2-DICHLOROETHANE (sur.)	%	101	93	94	7411505	91		7415431

RDL = Reportable Detection Limit



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Package 1	1.7°C
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Each temperature is the average of up to three cooler temperatures taken at receipt

SEMIVOLATILE ORGANICS BY GC-MS (SOIL) Comments

Sample IZ3919-01 PAH in Soil by GC/MS: Detection limits raised due to dilution to bring analyte within the calibrated range.



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Maxxam Job #: B419154
Report Date: 2014/03/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204

Sampler Initials: JL

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7411505	1,4-Difluorobenzene (sur.)	2014/03/11	101	60 - 140	103	60 - 140	100	%		
7411505	4-BROMOFLUOROBENZENE (sur.)	2014/03/11	109	60 - 140	105	60 - 140	98	%		
7411505	D10-ETHYLBENZENE (sur.)	2014/03/11	101	60 - 130	100	60 - 130	97	%		
7411505	D4-1,2-DICHLOROETHANE (sur.)	2014/03/11	110	60 - 140	112	60 - 140	99	%		
7411505	Carbon tetrachloride	2014/03/11	111	60 - 140	113	60 - 140	<0.00050	mg/kg		
7411505	Chlorobenzene	2014/03/11	100	60 - 140	102	60 - 140	<0.0010	mg/kg		
7411505	Chloroform	2014/03/11	105	60 - 140	109	60 - 140	<0.00080	mg/kg		
7411505	1,2-dibromoethane	2014/03/14	102	60 - 140	106	60 - 140	<0.0020	mg/kg	NC	50
7411505	1,2-dichloroethane	2014/03/14	108	60 - 140	114	60 - 140	<0.0020	mg/kg	NC	50
7411505	Vinyl chloride	2014/03/11	76	60 - 140	61	60 - 140	<0.00030	mg/kg		
7414271	1,4-Difluorobenzene (sur.)	2014/03/13	109	60 - 140	99	60 - 140	104	%		
7414271	4-BROMOFLUOROBENZENE (sur.)	2014/03/13	104	60 - 140	94	60 - 140	97	%		
7414271	D10-ETHYLBENZENE (sur.)	2014/03/13	89	60 - 130	95	60 - 130	98	%		
7414271	D4-1,2-DICHLOROETHANE (sur.)	2014/03/13	120	60 - 140	107	60 - 140	106	%		
7414271	Benzene	2014/03/13	88	60 - 140	88	60 - 140	<0.0050	mg/kg	NC	50
7414271	Toluene	2014/03/13	83	60 - 140	84	60 - 140	<0.020	mg/kg	NC	50
7414271	Ethylbenzene	2014/03/13	84	60 - 140	84	60 - 140	<0.010	mg/kg	NC	50
7414271	m & p-Xylene	2014/03/13	81	60 - 140	83	60 - 140	<0.040	mg/kg	NC	50
7414271	o-Xylene	2014/03/13	84	60 - 140	86	60 - 140	<0.020	mg/kg	NC	50
7414271	(C6-C10)	2014/03/13	75	60 - 140	97	60 - 140	<12	mg/kg	NC	50
7414271	Xylenes (Total)	2014/03/13					<0.040	mg/kg	NC	50
7414271	F1 (C6-C10) - BTEX	2014/03/13					<12	mg/kg	NC	50
7414801	Moisture	2014/03/14					<0.30	%	0.5	20
7415431	1,4-Difluorobenzene (sur.)	2014/03/14	100	60 - 140	99	60 - 140	99	%		
7415431	4-BROMOFLUOROBENZENE (sur.)	2014/03/14	102	60 - 140	100	60 - 140	99	%		
7415431	D10-ETHYLBENZENE (sur.)	2014/03/14	107	60 - 130	102	60 - 130	102	%		
7415431	D4-1,2-DICHLOROETHANE (sur.)	2014/03/14	91	60 - 140	99	60 - 140	87	%		
7415431	Bromodichloromethane	2014/03/14	92	60 - 140	82	60 - 140	<0.030	mg/kg	NC	50
7415431	Bromoform	2014/03/14	83	60 - 140	82	60 - 140	<0.050	mg/kg	NC	50
7415431	Bromomethane	2014/03/14	84	60 - 140	78	60 - 140	<0.020	mg/kg	NC	50
7415431	Chlorodibromomethane	2014/03/14	87	60 - 140	80	60 - 140	<0.020	mg/kg	NC	50
7415431	Chloroethane	2014/03/14	92	60 - 140	88	60 - 140	<0.020	mg/kg	NC	50
7415431	Chloromethane	2014/03/14	73	60 - 140	102	60 - 140	<0.030	mg/kg	NC	50
7415431	1,2-dichlorobenzene	2014/03/14	96	60 - 140	88	60 - 140	<0.020	mg/kg	NC	50
7415431	1,3-dichlorobenzene	2014/03/14	99	60 - 140	90	60 - 140	<0.020	mg/kg	NC	50
7415431	1,4-dichlorobenzene	2014/03/14	96	60 - 140	86	60 - 140	<0.020	mg/kg	NC	50
7415431	1,1-dichloroethane	2014/03/14	95	60 - 140	88	60 - 140	<0.020	mg/kg	NC	50
7415431	1,1-dichloroethene	2014/03/14	101	60 - 140	89	60 - 140	<0.020	mg/kg	NC	50
7415431	cis-1,2-dichloroethene	2014/03/14	90	60 - 140	85	60 - 140	<0.020	mg/kg	NC	50
7415431	trans-1,2-dichloroethene	2014/03/14	97	60 - 140	86	60 - 140	<0.020	mg/kg	NC	50



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Report Date: 2014/03/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204

Sampler Initials: JL

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7415431	Dichloromethane	2014/03/14	89	60 - 140	85	60 - 140	<0.030	mg/kg	NC	50
7415431	1,2-dichloropropane	2014/03/14	90	60 - 140	86	60 - 140	<0.020	mg/kg	NC	50
7415431	cis-1,3-dichloropropene	2014/03/14	79	60 - 140	86	60 - 140	<0.020	mg/kg	NC	50
7415431	trans-1,3-dichloropropene	2014/03/14	65	60 - 140	81	60 - 140	<0.020	mg/kg	NC	50
7415431	Methylmethacrylate	2014/03/14	74	60 - 140	76	60 - 140	<0.040	mg/kg	NC	50
7415431	Methyl-tert-butylether(MTBE)	2014/03/14	89	60 - 140	84	60 - 140	<0.030	mg/kg	NC	50
7415431	Styrene	2014/03/14	95	60 - 140	86	60 - 140	<0.020	mg/kg	NC	50
7415431	1,1,1,2-tetrachloroethane	2014/03/14	94	60 - 140	85	60 - 140	<0.10	mg/kg	NC	50
7415431	1,1,2,2-tetrachloroethane	2014/03/14	80	60 - 140	81	60 - 140	<0.050	mg/kg	NC	50
7415431	Tetrachloroethene	2014/03/14	105	60 - 140	91	60 - 140	<0.020	mg/kg	NC	50
7415431	1,2,3-trichlorobenzene	2014/03/14	94	60 - 140	87	60 - 140	<0.040	mg/kg	NC	50
7415431	1,2,4-trichlorobenzene	2014/03/14	102	60 - 140	92	60 - 140	<0.040	mg/kg	NC	50
7415431	1,3,5-trichlorobenzene	2014/03/14	112	60 - 140	97	60 - 140	<0.040	mg/kg	NC	50
7415431	1,1,1-trichloroethane	2014/03/14	99	60 - 140	87	60 - 140	<0.020	mg/kg	NC	50
7415431	1,1,2-trichloroethane	2014/03/14	85	60 - 140	85	60 - 140	<0.020	mg/kg	NC	50
7415431	Trichloroethene	2014/03/14	94	60 - 140	88	60 - 140	<0.010	mg/kg	NC	50
7415431	Trichlorofluoromethane	2014/03/14	97	60 - 140	92	60 - 140	<0.020	mg/kg	NC	50
7415431	1,2,4-trimethylbenzene	2014/03/14	107	60 - 140	97	60 - 140	<0.50	mg/kg	NC	50
7415431	1,3,5-trimethylbenzene	2014/03/14	113	60 - 140	97	60 - 140	<0.50	mg/kg	NC	50
7417006	O-TERPHENYL (sur.)	2014/03/17	90	50 - 130	78	50 - 130	93	%		
7417006	F2 (C10-C16 Hydrocarbons)	2014/03/17	93	50 - 130	80	70 - 130	<10	mg/kg	NC	50
7417006	F3 (C16-C34 Hydrocarbons)	2014/03/17	104	50 - 130	82	70 - 130	<50	mg/kg	NC	50
7417006	F4 (C34-C50 Hydrocarbons)	2014/03/17	108	50 - 130	104	70 - 130	<50	mg/kg	NC	50
7417014	F4G-SG (Heavy Hydrocarbons-Grav.)	2014/03/18			91	70 - 130	<500	mg/kg		
7417015	D10-ANTHRACENE (sur.)	2014/03/17	99	50 - 130	93	50 - 130	98	%		
7417015	D12-BENZO(A)PYRENE (sur.)	2014/03/17	97	50 - 130	94	50 - 130	100	%		
7417015	D8-ACENAPHTHYLENE (sur.)	2014/03/17	103	50 - 130	96	50 - 130	100	%		
7417015	TERPHENYL-D14 (sur.)	2014/03/17	99	50 - 130	93	50 - 130	99	%		
7417015	Acenaphthene	2014/03/17	105	50 - 130	99	50 - 130	<0.0050	mg/kg	NC	50
7417015	Acenaphthylene	2014/03/17	103	50 - 130	97	50 - 130	<0.0050	mg/kg	NC	50
7417015	Acridine	2014/03/17	68	50 - 130	65	50 - 130	<0.010	mg/kg	NC	50
7417015	Anthracene	2014/03/17	94	50 - 130	89	50 - 130	<0.0040	mg/kg	NC	50
7417015	Benzo(a)anthracene	2014/03/17	96	50 - 130	93	50 - 130	<0.0050	mg/kg	NC	50
7417015	Benzo(b&j)fluoranthene	2014/03/17	103	50 - 130	97	50 - 130	<0.0050	mg/kg	NC	50
7417015	Benzo(k)fluoranthene	2014/03/17	90	50 - 130	85	50 - 130	<0.0050	mg/kg	NC	50
7417015	Benzo(g,h,i)perylene	2014/03/17	88	50 - 130	92	50 - 130	<0.0050	mg/kg	NC	50
7417015	Benzo(c)phenanthrene	2014/03/17	95	50 - 130	90	50 - 130	<0.0050	mg/kg	NC	50
7417015	Benzo(a)pyrene	2014/03/17	95	50 - 130	94	50 - 130	<0.0050	mg/kg	NC	50
7417015	Benzo(e)pyrene	2014/03/17	96	50 - 130	94	50 - 130	<0.0050	mg/kg	NC	50
7417015	Chrysene	2014/03/17	98	50 - 130	95	50 - 130	<0.0050	mg/kg	NC	50



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GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204

Sampler Initials: JL

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7417015	Dibenz(a,h)anthracene	2014/03/17	92	50 - 130	94	50 - 130	<0.0050	mg/kg	NC	50
7417015	Fluoranthene	2014/03/17	92	50 - 130	90	50 - 130	<0.0050	mg/kg	10.5	50
7417015	Fluorene	2014/03/17	105	50 - 130	100	50 - 130	<0.0050	mg/kg	NC	50
7417015	Indeno(1,2,3-cd)pyrene	2014/03/17	92	50 - 130	94	50 - 130	<0.0050	mg/kg	NC	50
7417015	2-Methylnaphthalene	2014/03/17	74	50 - 130	70	50 - 130	<0.0050	mg/kg	NC	50
7417015	Naphthalene	2014/03/17	94	50 - 130	89	50 - 130	<0.0050	mg/kg	NC	50
7417015	Phenanthrene	2014/03/17	96	50 - 130	91	50 - 130	<0.0050	mg/kg	1.7	50
7417015	Perylene	2014/03/17	99	50 - 130	97	50 - 130	<0.0050	mg/kg	NC	50
7417015	Pyrene	2014/03/17	95	50 - 130	92	50 - 130	<0.0050	mg/kg	NC	50
7417015	Quinoline	2014/03/17	91	50 - 130	92	50 - 130	<0.010	mg/kg	NC	50

N/A = Not Applicable

RPD = Relative Percent Difference

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 (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.



Validation Signature Page

Maxxam Job #: B419154

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

Janet Gao, Senior Analyst, Organics Department

Luba Shymushovska, Senior Analyst, Organic Department

=====
Maxxam 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.

Your Project #: 13-1324-0204
 Your C.O.C. #: A018809

Attention: Julie Burghardt

GOLDER ASSOCIATES LTD.
 CALGARY - NATIONAL CONTRACT
 102, 2535 - 3rd Avenue SE
 CALGARY, AB
 CANADA T2A 7W5

Report Date: 2014/03/18
Report #: R1536343
Version: 1

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B419154
Received: 2014/03/11, 12:14

Sample Matrix: Soil
 # Samples Received: 7

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
BTEX/F1 by HS GC/MS (MeOH extract)	7	2014/03/12	2014/03/13	AB SOP-00039	CCME, EPA 8260C
CCME Hydrocarbons (F2-F4 in soil)	7	2014/03/12	2014/03/17	AB SOP-00040 AB SOP-00036	CCME PHC-CWS
CCME Hydrocarbons (F4G in soil)	1	2014/03/12	2014/03/18	AB SOP-00040 AB SOP-00036	CCME PHC-CWS
Moisture	7	N/A	2014/03/14	AB SOP-00002	CCME PHC-CWS
Benzo[a]pyrene Equivalency	7	N/A	2014/03/17	AB SOP-00003	EPA 8270D
PAH in Soil by GC/MS	7	2014/03/12	2014/03/17	AB SOP-00003 AB SOP-00036	EPA 3540C/8270D
VOCs in Soil by HS GC/MS (Std List)	1	2014/03/12	2014/03/14	AB SOP-00056	EPA 5021A/8260C
VOCs in Soil by HS GC/MS (Std List)	6	2014/03/12	2014/03/15	AB SOP-00056	EPA 5021A/8260C
VOCs in Soil by HS GC/MS Low (Std List)	7	2014/03/12	2014/03/13	AB SOP-00056	EPA5021A/ 8260C

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
 * Results relate only to the items tested.

Encryption Key 
 Lisa McManes
 18 Mar 2014 18:37:30 -06:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Anna Gordon, Project Manager
 Email: AGordon@maxxam.ca
 Phone# (403) 291-3077

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Total cover pages: 1



Success Through Science®

Maxxam Job #: B419154
Report Date: 2014/03/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204

Sampler Initials: JL

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		IZ3917	IZ3917	IZ3918	IZ3919		
Sampling Date		2014/03/10	2014/03/10	2014/03/07	2014/03/10		
	UNITS	MW14-01B-2 @ 3.1-3.4	MW14-01B-2 @ 3.1-3.4 Lab-Dup	MW14-02-4 @ 2.7-2.9	MW14-04A-6 @ 5.5-5.6	RDL	QC Batch
Physical Properties							
Moisture	%	0.80		16	17	0.30	7414801
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	330	10	7417006
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	<50	310	520	50	7417006
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	660	61	50	7417006
Reached Baseline at C50	mg/kg	YES	YES	NO	YES		7417006
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	105	93	72	92		7417006
Volatiles							
Benzene	mg/kg	<0.0050		<0.0050	0.012	0.0050	7414271
Toluene	mg/kg	<0.020		<0.020	0.055	0.020	7414271
Ethylbenzene	mg/kg	<0.010		<0.010	0.65	0.010	7414271
Xylenes (Total)	mg/kg	<0.040		<0.040	1.8	0.040	7414271
m & p-Xylene	mg/kg	<0.040		<0.040	1.2	0.040	7414271
o-Xylene	mg/kg	<0.020		<0.020	0.62	0.020	7414271
F1 (C6-C10) - BTEX	mg/kg	<12		<12	14	12	7414271
(C6-C10)	mg/kg	<12		<12	16	12	7414271
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	102		103	104		7414271
4-BROMOFLUOROBENZENE (sur.)	%	102		100	98		7414271
D10-ETHYLBENZENE (sur.)	%	93		90	90		7414271
D4-1,2-DICHLOROETHANE (sur.)	%	107		106	106		7414271

RDL = Reportable Detection Limit



Success Through Science®

Maxxam Job #: B419154
Report Date: 2014/03/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204

Sampler Initials: JL

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		IZ3920	IZ3921		IZ3922		IZ3923		
Sampling Date		2014/03/10	2014/03/07		2014/03/06		2014/03/06		
	UNITS	MW14-O4B-1 @ 4.7-5.0	MW14-05-5 @ 4.6-5.0	RDL	MW14-08-3 @ 4.0-4.6	RDL	MW14-09-3 @ 2.9-3.7	RDL	QC Batch
Physical Properties									
Moisture	%	7.1	3.6	0.30	22	0.30	6.7	0.30	7414801
Ext. Pet. Hydrocarbon									
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	10	<10	10	<10	10	7417006
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	91	50	<50	50	<50	50	7417006
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	72	50	<50	50	<50	50	7417006
Reached Baseline at C50	mg/kg	YES	YES		YES		YES		7417006
Surrogate Recovery (%)									
O-TERPHENYL (sur.)	%	91	97		91		128		7417006
Volatiles									
Benzene	mg/kg	<0.0050	<0.0050	0.0050	<0.010(1)	0.010	<0.0090(1)	0.0090	7414271
Toluene	mg/kg	<0.020	<0.020	0.020	<0.020	0.020	<0.020	0.020	7414271
Ethylbenzene	mg/kg	<0.010	<0.010	0.010	<0.010	0.010	<0.010	0.010	7414271
Xylenes (Total)	mg/kg	<0.040	<0.040	0.040	<0.040	0.040	<0.040	0.040	7414271
m & p-Xylene	mg/kg	<0.040	<0.040	0.040	<0.040	0.040	<0.040	0.040	7414271
o-Xylene	mg/kg	<0.020	<0.020	0.020	<0.020	0.020	<0.020	0.020	7414271
F1 (C6-C10) - BTEX	mg/kg	<12	<12	12	<12	12	<12	12	7414271
(C6-C10)	mg/kg	<12	<12	12	<12	12	<12	12	7414271
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	102	103		103		104		7414271
4-BROMOFLUOROBENZENE (sur.)	%	99	99		99		98		7414271
D10-ETHYLBENZENE (sur.)	%	91	93		93		96		7414271
D4-1,2-DICHLOROETHANE (sur.)	%	105	106		105		105		7414271

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		IZ3918		
Sampling Date		2014/03/07		
	UNITS	MW14-02-4 @ 2.7-2.9	RDL	QC Batch
Ext. Pet. Hydrocarbon				
F4G-SG (Heavy Hydrocarbons-Grav.)	mg/kg	1600	500	7417014

RDL = Reportable Detection Limit
(1) - Detection limit raised due to interferent.



Success Through Science®

Maxxam Job #: B419154
Report Date: 2014/03/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204

Sampler Initials: JL

SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		IZ3917	IZ3917	IZ3918		
Sampling Date		2014/03/10	2014/03/10	2014/03/07		
	UNITS	MW14-01B-2 @ 3.1-3.4	MW14-01B-2 @ 3.1-3.4 Lab-Dup	MW14-02-4 @ 2.7-2.9	RDL	QC Batch
Polycyclic Aromatics						
Acenaphthene	mg/kg	0.015	0.015	<0.0050	0.0050	7417015
Benzo[a]pyrene equivalency	mg/kg	<0.10		<0.10	0.10	7411398
Acenaphthylene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	7417015
Acridine	mg/kg	<0.010	<0.010	<0.010	0.010	7417015
Anthracene	mg/kg	0.0078	0.0071	<0.0040	0.0040	7417015
Benzo(a)anthracene	mg/kg	0.0081	0.0068	<0.0050	0.0050	7417015
Benzo(b&j)fluoranthene	mg/kg	0.0097	0.0088	0.0075	0.0050	7417015
Benzo(k)fluoranthene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	7417015
Benzo(g,h,i)perylene	mg/kg	<0.0050	<0.0050	0.0057	0.0050	7417015
Benzo(c)phenanthrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	7417015
Benzo(a)pyrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	7417015
Benzo[e]pyrene	mg/kg	0.0058	0.0051	0.0071	0.0050	7417015
Chrysene	mg/kg	0.0070	0.0061	<0.0050	0.0050	7417015
Dibenz(a,h)anthracene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	7417015
Fluoranthene	mg/kg	0.028	0.025	<0.0050	0.0050	7417015
Fluorene	mg/kg	0.017	0.017	<0.0050	0.0050	7417015
Indeno(1,2,3-cd)pyrene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	7417015
2-Methylnaphthalene	mg/kg	0.012	0.012	0.016	0.0050	7417015
Naphthalene	mg/kg	0.012	0.012	0.012	0.0050	7417015
Phenanthrene	mg/kg	0.049	0.050	0.018	0.0050	7417015
Perylene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	7417015
Pyrene	mg/kg	0.022	0.019	<0.0050	0.0050	7417015
Quinoline	mg/kg	<0.010	<0.010	<0.010	0.010	7417015
Surrogate Recovery (%)						
D10-ANTHRACENE (sur.)	%	92	94	110		7417015
D12-BENZO(A)PYRENE (sur.)	%	90	92	112		7417015
D8-ACENAPHTHYLENE (sur.)	%	95	97	115		7417015
TERPHENYL-D14 (sur.)	%	93	95	113		7417015

RDL = Reportable Detection Limit



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Maxxam Job #: B419154
Report Date: 2014/03/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204

Sampler Initials: JL

SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		IZ3919		IZ3920	IZ3921	IZ3922	IZ3923		
Sampling Date	UNITS	2014/03/10	RDL	2014/03/10	2014/03/07	2014/03/06	2014/03/06	RDL	QC Batch
		MW14-04A-6 @ 5.5-5.6		MW14-04B-1 @ 4.7-5.0	MW14-05-5 @ 4.6-5.0	MW14-08-3 @ 4.0-4.6	MW14-09-3 @ 2.9-3.7		
Polycyclic Aromatics									
Acenaphthene	mg/kg	17	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Benzo[a]pyrene equivalency	mg/kg	5.54	0.10	<0.10	<0.10	<0.10	<0.10	0.10	7411398
Acenaphthylene	mg/kg	0.65	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Acridine	mg/kg	0.50	0.10	<0.010	<0.010	<0.010	<0.010	0.010	7417015
Anthracene	mg/kg	7.1	0.040	<0.0040	<0.0040	<0.0040	<0.0040	0.0040	7417015
Benzo(a)anthracene	mg/kg	6.1	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Benzo(b&j)fluoranthene	mg/kg	5.5	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Benzo(k)fluoranthene	mg/kg	1.8	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Benzo(g,h,i)perylene	mg/kg	1.5	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Benzo(c)phenanthrene	mg/kg	<0.95 ⁽¹⁾	0.95	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Benzo(a)pyrene	mg/kg	3.5	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Benzo(e)pyrene	mg/kg	2.7	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Chrysene	mg/kg	3.9	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Dibenz(a,h)anthracene	mg/kg	0.46	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Fluoranthene	mg/kg	19	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Fluorene	mg/kg	14	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Indeno(1,2,3-cd)pyrene	mg/kg	1.5	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
2-Methylnaphthalene	mg/kg	23	0.050	0.0071	0.0058	0.012	<0.0050	0.0050	7417015
Naphthalene	mg/kg	79	0.050	0.0074	0.0056	0.011	<0.0050	0.0050	7417015
Phenanthrene	mg/kg	36	0.050	0.0066	0.012	0.015	<0.0050	0.0050	7417015
Perylene	mg/kg	1.1	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Pyrene	mg/kg	14	0.050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7417015
Quinoline	mg/kg	0.77	0.010	<0.010	<0.010	<0.010	<0.010	0.010	7417015
Surrogate Recovery (%)									
D10-ANTHRACENE (sur.)	%	120		97	103	94	91		7417015
D12-BENZO(A)PYRENE (sur.)	%	110		99	104	95	90		7417015
D8-ACENAPHTHYLENE (sur.)	%	100		100	106	95	92		7417015
TERPHENYL-D14 (sur.)	%	90		98	105	96	91		7417015

RDL = Reportable Detection Limit

(1) - Detection limits raised due to matrix interference.



Success Through Science®

Maxxam Job #: B419154
Report Date: 2014/03/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204

Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		IZ3917	IZ3917		IZ3918	IZ3919		
Sampling Date		2014/03/10	2014/03/10		2014/03/07	2014/03/10		
	UNITS	MW14-01B-2 @ 3.1-3.4	MW14-01B-2 @ 3.1-3.4 Lab-Dup	QC Batch	MW14-02-4 @ 2.7-2.9	MW14-04A-6 @ 5.5-5.6	RDL	QC Batch
Volatiles								
Bromodichloromethane	mg/kg	<0.030	<0.030	7415431	<0.030	<0.030	0.030	7415431
Bromoform	mg/kg	<0.050	<0.050	7415431	<0.050	<0.050	0.050	7415431
Bromomethane	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
Carbon tetrachloride	mg/kg	<0.00050		7411505	<0.00050	<0.00050	0.00050	7411505
Chlorobenzene	mg/kg	<0.0010		7411505	<0.0010	<0.0010	0.0010	7411505
Chlorodibromomethane	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
Chloroethane	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
Chloroform	mg/kg	<0.00080		7411505	<0.00080	<0.00080	0.00080	7411505
Chloromethane	mg/kg	<0.030	<0.030	7415431	<0.030	<0.030	0.030	7415431
1,2-dibromoethane	mg/kg	<0.0020		7411505	<0.0020	<0.0020	0.0020	7411505
1,2-dichlorobenzene	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
1,3-dichlorobenzene	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
1,4-dichlorobenzene	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
1,1-dichloroethane	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
1,2-dichloroethane	mg/kg	<0.0020		7411505	<0.0020	<0.0020	0.0020	7411505
1,1-dichloroethene	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
cis-1,2-dichloroethene	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
trans-1,2-dichloroethene	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
Dichloromethane	mg/kg	<0.030	<0.030	7415431	<0.030	<0.030	0.030	7415431
1,2-dichloropropane	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
cis-1,3-dichloropropene	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
trans-1,3-dichloropropene	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
Methyl methacrylate	mg/kg	<0.040	<0.040	7415431	<0.040	<0.040	0.040	7415431
Methyl-tert-butylether (MTBE)	mg/kg	<0.030	<0.030	7415431	<0.030	<0.030	0.030	7415431
Styrene	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
1,1,1,2-tetrachloroethane	mg/kg	<0.10	<0.10	7415431	<0.10	<0.10	0.10	7415431
1,1,2,2-tetrachloroethane	mg/kg	<0.050	<0.050	7415431	<0.050	<0.050	0.050	7415431
Tetrachloroethene	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
1,2,3-trichlorobenzene	mg/kg	<0.040	<0.040	7415431	<0.040	<0.040	0.040	7415431
1,2,4-trichlorobenzene	mg/kg	<0.040	<0.040	7415431	<0.040	<0.040	0.040	7415431
1,3,5-trichlorobenzene	mg/kg	<0.040	<0.040	7415431	<0.040	<0.040	0.040	7415431
1,1,1-trichloroethane	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
1,1,2-trichloroethane	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431
Trichloroethene	mg/kg	<0.010	<0.010	7415431	<0.010	<0.010	0.010	7415431
Trichlorofluoromethane	mg/kg	<0.020	<0.020	7415431	<0.020	<0.020	0.020	7415431

RDL = Reportable Detection Limit



Success Through Science®

Maxxam Job #: B419154
Report Date: 2014/03/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204

Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		IZ3917	IZ3917		IZ3918	IZ3919		
Sampling Date		2014/03/10	2014/03/10	QC Batch	2014/03/07	2014/03/10	RDL	QC Batch
	UNITS	MW14-01B-2 @ 3.1-3.4	MW14-01B-2 @ 3.1-3.4 Lab-Dup		MW14-02-4 @ 2.7-2.9	MW14-04A-6 @ 5.5-5.6		
1,2,4-trimethylbenzene	mg/kg	<0.50	<0.50	7415431	<0.50	3.7	0.50	7415431
1,3,5-trimethylbenzene	mg/kg	<0.50	<0.50	7415431	<0.50	1.8	0.50	7415431
Vinyl chloride	mg/kg	<0.00030		7411505	<0.00030	<0.00030	0.00030	7411505
Surrogate Recovery (%)								
1,4-Difluorobenzene (sur.)	%	99	99	7415431	98	100		7415431
4-BROMOFLUOROBENZENE (sur.)	%	100	101	7415431	139	53(1)		7411505
D10-ETHYLBENZENE (sur.)	%	100	107	7415431	95	98		7415431
D4-1,2-DICHLOROETHANE (sur.)	%	88	85	7415431	93	92		7411505

RDL = Reportable Detection Limit

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



Success Through Science®

Maxxam Job #: B419154
Report Date: 2014/03/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204

Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		IZ3920	IZ3921	IZ3922		IZ3923		
Sampling Date		2014/03/10	2014/03/07	2014/03/06		2014/03/06		
	UNITS	MW14-O4B-1 @ 4.7-5.0	MW14-05-5 @ 4.6-5.0	MW14-08-3 @ 4.0-4.6	QC Batch	MW14-09-3 @ 2.9-3.7	RDL	QC Batch
Volatiles								
Bromodichloromethane	mg/kg	<0.030	<0.030	<0.030	7415431	<0.030	0.030	7415431
Bromoform	mg/kg	<0.050	<0.050	<0.050	7415431	<0.050	0.050	7415431
Bromomethane	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
Carbon tetrachloride	mg/kg	<0.00050	<0.00050	<0.00050	7411505	<0.00050	0.00050	7411505
Chlorobenzene	mg/kg	<0.0010	<0.0010	<0.0010	7411505	<0.0010	0.0010	7411505
Chlorodibromomethane	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
Chloroethane	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
Chloroform	mg/kg	<0.00080	<0.00080	<0.00080	7411505	<0.00080	0.00080	7411505
Chloromethane	mg/kg	<0.030	<0.030	<0.030	7415431	<0.030	0.030	7415431
1,2-dibromoethane	mg/kg	<0.0020	<0.0020	<0.0020	7411505	<0.0020	0.0020	7411505
1,2-dichlorobenzene	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
1,3-dichlorobenzene	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
1,4-dichlorobenzene	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
1,1-dichloroethane	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
1,2-dichloroethane	mg/kg	<0.0020	<0.0020	<0.0020	7411505	<0.0020	0.0020	7411505
1,1-dichloroethene	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
cis-1,2-dichloroethene	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
trans-1,2-dichloroethene	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
Dichloromethane	mg/kg	<0.030	<0.030	<0.030	7415431	<0.030	0.030	7415431
1,2-dichloropropane	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
cis-1,3-dichloropropene	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
trans-1,3-dichloropropene	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
Methyl methacrylate	mg/kg	<0.040	<0.040	<0.040	7415431	<0.040	0.040	7415431
Methyl-tert-butylether (MTBE)	mg/kg	<0.030	<0.030	<0.030	7415431	<0.030	0.030	7415431
Styrene	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
1,1,1,2-tetrachloroethane	mg/kg	<0.10	<0.10	<0.10	7415431	<0.10	0.10	7415431
1,1,2,2-tetrachloroethane	mg/kg	<0.050	<0.050	<0.050	7415431	<0.050	0.050	7415431
Tetrachloroethene	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
1,2,3-trichlorobenzene	mg/kg	<0.040	<0.040	<0.040	7415431	<0.040	0.040	7415431
1,2,4-trichlorobenzene	mg/kg	<0.040	<0.040	<0.040	7415431	<0.040	0.040	7415431
1,3,5-trichlorobenzene	mg/kg	<0.040	<0.040	<0.040	7415431	<0.040	0.040	7415431
1,1,1-trichloroethane	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
1,1,2-trichloroethane	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431
Trichloroethene	mg/kg	<0.010	<0.010	<0.010	7415431	<0.010	0.010	7415431
Trichlorofluoromethane	mg/kg	<0.020	<0.020	<0.020	7415431	<0.020	0.020	7415431

RDL = Reportable Detection Limit



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Maxxam Job #: B419154
Report Date: 2014/03/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204

Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		IZ3920	IZ3921	IZ3922		IZ3923		
Sampling Date		2014/03/10	2014/03/07	2014/03/06		2014/03/06		
	UNITS	MW14-O4B-1 @ 4.7-5.0	MW14-O5-5 @ 4.6-5.0	MW14-O8-3 @ 4.0-4.6	QC Batch	MW14-O9-3 @ 2.9-3.7	RDL	QC Batch
1,2,4-trimethylbenzene	mg/kg	<0.50	<0.50	<0.50	7415431	<0.50	0.50	7415431
1,3,5-trimethylbenzene	mg/kg	<0.50	<0.50	<0.50	7415431	<0.50	0.50	7415431
Vinyl chloride	mg/kg	<0.00030	<0.00030	<0.00030	7411505	<0.00030	0.00030	7411505
Surrogate Recovery (%)								
1,4-Difluorobenzene (sur.)	%	100	98	100	7415431	99		7411505
4-BROMOFLUOROBENZENE (sur.)	%	94	112	111	7411505	101		7415431
D10-ETHYLBENZENE (sur.)	%	99	101	98	7415431	99		7411505
D4-1,2-DICHLOROETHANE (sur.)	%	101	93	94	7411505	91		7415431

RDL = Reportable Detection Limit



Success Through Science®

Maxxam Job #: B419154
Report Date: 2014/03/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204

Sampler Initials: JL

Package 1	1.7°C
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Each temperature is the average of up to three cooler temperatures taken at receipt

SEMIVOLATILE ORGANICS BY GC-MS (SOIL) Comments

Sample IZ3919-01 PAH in Soil by GC/MS: Detection limits raised due to dilution to bring analyte within the calibrated range.



Success Through Science®

Maxxam Job #: B419154
Report Date: 2014/03/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204

Sampler Initials: JL

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7411505	1,4-Difluorobenzene (sur.)	2014/03/11	101	60 - 140	103	60 - 140	100	%		
7411505	4-BROMOFLUOROBENZENE (sur.)	2014/03/11	109	60 - 140	105	60 - 140	98	%		
7411505	D10-ETHYLBENZENE (sur.)	2014/03/11	101	60 - 130	100	60 - 130	97	%		
7411505	D4-1,2-DICHLOROETHANE (sur.)	2014/03/11	110	60 - 140	112	60 - 140	99	%		
7411505	Carbon tetrachloride	2014/03/11	111	60 - 140	113	60 - 140	<0.00050	mg/kg		
7411505	Chlorobenzene	2014/03/11	100	60 - 140	102	60 - 140	<0.0010	mg/kg		
7411505	Chloroform	2014/03/11	105	60 - 140	109	60 - 140	<0.00080	mg/kg		
7411505	1,2-dibromoethane	2014/03/14	102	60 - 140	106	60 - 140	<0.0020	mg/kg	NC	50
7411505	1,2-dichloroethane	2014/03/14	108	60 - 140	114	60 - 140	<0.0020	mg/kg	NC	50
7411505	Vinyl chloride	2014/03/11	76	60 - 140	61	60 - 140	<0.00030	mg/kg		
7414271	1,4-Difluorobenzene (sur.)	2014/03/13	109	60 - 140	99	60 - 140	104	%		
7414271	4-BROMOFLUOROBENZENE (sur.)	2014/03/13	104	60 - 140	94	60 - 140	97	%		
7414271	D10-ETHYLBENZENE (sur.)	2014/03/13	89	60 - 130	95	60 - 130	98	%		
7414271	D4-1,2-DICHLOROETHANE (sur.)	2014/03/13	120	60 - 140	107	60 - 140	106	%		
7414271	Benzene	2014/03/13	88	60 - 140	88	60 - 140	<0.0050	mg/kg	NC	50
7414271	Toluene	2014/03/13	83	60 - 140	84	60 - 140	<0.020	mg/kg	NC	50
7414271	Ethylbenzene	2014/03/13	84	60 - 140	84	60 - 140	<0.010	mg/kg	NC	50
7414271	m & p-Xylene	2014/03/13	81	60 - 140	83	60 - 140	<0.040	mg/kg	NC	50
7414271	o-Xylene	2014/03/13	84	60 - 140	86	60 - 140	<0.020	mg/kg	NC	50
7414271	(C6-C10)	2014/03/13	75	60 - 140	97	60 - 140	<12	mg/kg	NC	50
7414271	Xylenes (Total)	2014/03/13					<0.040	mg/kg	NC	50
7414271	F1 (C6-C10) - BTEX	2014/03/13					<12	mg/kg	NC	50
7414801	Moisture	2014/03/14					<0.30	%	0.5	20
7415431	1,4-Difluorobenzene (sur.)	2014/03/14	100	60 - 140	99	60 - 140	99	%		
7415431	4-BROMOFLUOROBENZENE (sur.)	2014/03/14	102	60 - 140	100	60 - 140	99	%		
7415431	D10-ETHYLBENZENE (sur.)	2014/03/14	107	60 - 130	102	60 - 130	102	%		
7415431	D4-1,2-DICHLOROETHANE (sur.)	2014/03/14	91	60 - 140	99	60 - 140	87	%		
7415431	Bromodichloromethane	2014/03/14	92	60 - 140	82	60 - 140	<0.030	mg/kg	NC	50
7415431	Bromoform	2014/03/14	83	60 - 140	82	60 - 140	<0.050	mg/kg	NC	50
7415431	Bromomethane	2014/03/14	84	60 - 140	78	60 - 140	<0.020	mg/kg	NC	50
7415431	Chlorodibromomethane	2014/03/14	87	60 - 140	80	60 - 140	<0.020	mg/kg	NC	50
7415431	Chloroethane	2014/03/14	92	60 - 140	88	60 - 140	<0.020	mg/kg	NC	50
7415431	Chloromethane	2014/03/14	73	60 - 140	102	60 - 140	<0.030	mg/kg	NC	50
7415431	1,2-dichlorobenzene	2014/03/14	96	60 - 140	88	60 - 140	<0.020	mg/kg	NC	50
7415431	1,3-dichlorobenzene	2014/03/14	99	60 - 140	90	60 - 140	<0.020	mg/kg	NC	50
7415431	1,4-dichlorobenzene	2014/03/14	96	60 - 140	86	60 - 140	<0.020	mg/kg	NC	50
7415431	1,1-dichloroethane	2014/03/14	95	60 - 140	88	60 - 140	<0.020	mg/kg	NC	50
7415431	1,1-dichloroethene	2014/03/14	101	60 - 140	89	60 - 140	<0.020	mg/kg	NC	50
7415431	cis-1,2-dichloroethene	2014/03/14	90	60 - 140	85	60 - 140	<0.020	mg/kg	NC	50
7415431	trans-1,2-dichloroethene	2014/03/14	97	60 - 140	86	60 - 140	<0.020	mg/kg	NC	50



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Maxxam Job #: B419154
Report Date: 2014/03/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204

Sampler Initials: JL

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7415431	Dichloromethane	2014/03/14	89	60 - 140	85	60 - 140	<0.030	mg/kg	NC	50
7415431	1,2-dichloropropane	2014/03/14	90	60 - 140	86	60 - 140	<0.020	mg/kg	NC	50
7415431	cis-1,3-dichloropropene	2014/03/14	79	60 - 140	86	60 - 140	<0.020	mg/kg	NC	50
7415431	trans-1,3-dichloropropene	2014/03/14	65	60 - 140	81	60 - 140	<0.020	mg/kg	NC	50
7415431	Methylmethacrylate	2014/03/14	74	60 - 140	76	60 - 140	<0.040	mg/kg	NC	50
7415431	Methyl-tert-butylether(MTBE)	2014/03/14	89	60 - 140	84	60 - 140	<0.030	mg/kg	NC	50
7415431	Styrene	2014/03/14	95	60 - 140	86	60 - 140	<0.020	mg/kg	NC	50
7415431	1,1,1,2-tetrachloroethane	2014/03/14	94	60 - 140	85	60 - 140	<0.10	mg/kg	NC	50
7415431	1,1,2,2-tetrachloroethane	2014/03/14	80	60 - 140	81	60 - 140	<0.050	mg/kg	NC	50
7415431	Tetrachloroethene	2014/03/14	105	60 - 140	91	60 - 140	<0.020	mg/kg	NC	50
7415431	1,2,3-trichlorobenzene	2014/03/14	94	60 - 140	87	60 - 140	<0.040	mg/kg	NC	50
7415431	1,2,4-trichlorobenzene	2014/03/14	102	60 - 140	92	60 - 140	<0.040	mg/kg	NC	50
7415431	1,3,5-trichlorobenzene	2014/03/14	112	60 - 140	97	60 - 140	<0.040	mg/kg	NC	50
7415431	1,1,1-trichloroethane	2014/03/14	99	60 - 140	87	60 - 140	<0.020	mg/kg	NC	50
7415431	1,1,2-trichloroethane	2014/03/14	85	60 - 140	85	60 - 140	<0.020	mg/kg	NC	50
7415431	Trichloroethene	2014/03/14	94	60 - 140	88	60 - 140	<0.010	mg/kg	NC	50
7415431	Trichlorofluoromethane	2014/03/14	97	60 - 140	92	60 - 140	<0.020	mg/kg	NC	50
7415431	1,2,4-trimethylbenzene	2014/03/14	107	60 - 140	97	60 - 140	<0.50	mg/kg	NC	50
7415431	1,3,5-trimethylbenzene	2014/03/14	113	60 - 140	97	60 - 140	<0.50	mg/kg	NC	50
7417006	O-TERPHENYL (sur.)	2014/03/17	90	50 - 130	78	50 - 130	93	%		
7417006	F2 (C10-C16 Hydrocarbons)	2014/03/17	93	50 - 130	80	70 - 130	<10	mg/kg	NC	50
7417006	F3 (C16-C34 Hydrocarbons)	2014/03/17	104	50 - 130	82	70 - 130	<50	mg/kg	NC	50
7417006	F4 (C34-C50 Hydrocarbons)	2014/03/17	108	50 - 130	104	70 - 130	<50	mg/kg	NC	50
7417014	F4G-SG (Heavy Hydrocarbons-Grav.)	2014/03/18			91	70 - 130	<500	mg/kg		
7417015	D10-ANTHRACENE (sur.)	2014/03/17	99	50 - 130	93	50 - 130	98	%		
7417015	D12-BENZO(A)PYRENE (sur.)	2014/03/17	97	50 - 130	94	50 - 130	100	%		
7417015	D8-ACENAPHTHYLENE (sur.)	2014/03/17	103	50 - 130	96	50 - 130	100	%		
7417015	TERPHENYL-D14 (sur.)	2014/03/17	99	50 - 130	93	50 - 130	99	%		
7417015	Acenaphthene	2014/03/17	105	50 - 130	99	50 - 130	<0.0050	mg/kg	NC	50
7417015	Acenaphthylene	2014/03/17	103	50 - 130	97	50 - 130	<0.0050	mg/kg	NC	50
7417015	Acridine	2014/03/17	68	50 - 130	65	50 - 130	<0.010	mg/kg	NC	50
7417015	Anthracene	2014/03/17	94	50 - 130	89	50 - 130	<0.0040	mg/kg	NC	50
7417015	Benzo(a)anthracene	2014/03/17	96	50 - 130	93	50 - 130	<0.0050	mg/kg	NC	50
7417015	Benzo(b&j)fluoranthene	2014/03/17	103	50 - 130	97	50 - 130	<0.0050	mg/kg	NC	50
7417015	Benzo(k)fluoranthene	2014/03/17	90	50 - 130	85	50 - 130	<0.0050	mg/kg	NC	50
7417015	Benzo(g,h,i)perylene	2014/03/17	88	50 - 130	92	50 - 130	<0.0050	mg/kg	NC	50
7417015	Benzo(c)phenanthrene	2014/03/17	95	50 - 130	90	50 - 130	<0.0050	mg/kg	NC	50
7417015	Benzo(a)pyrene	2014/03/17	95	50 - 130	94	50 - 130	<0.0050	mg/kg	NC	50
7417015	Benzo(e)pyrene	2014/03/17	96	50 - 130	94	50 - 130	<0.0050	mg/kg	NC	50
7417015	Chrysene	2014/03/17	98	50 - 130	95	50 - 130	<0.0050	mg/kg	NC	50



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Maxxam Job #: B419154
Report Date: 2014/03/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204

Sampler Initials: JL

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7417015	Dibenz(a,h)anthracene	2014/03/17	92	50 - 130	94	50 - 130	<0.0050	mg/kg	NC	50
7417015	Fluoranthene	2014/03/17	92	50 - 130	90	50 - 130	<0.0050	mg/kg	10.5	50
7417015	Fluorene	2014/03/17	105	50 - 130	100	50 - 130	<0.0050	mg/kg	NC	50
7417015	Indeno(1,2,3-cd)pyrene	2014/03/17	92	50 - 130	94	50 - 130	<0.0050	mg/kg	NC	50
7417015	2-Methylnaphthalene	2014/03/17	74	50 - 130	70	50 - 130	<0.0050	mg/kg	NC	50
7417015	Naphthalene	2014/03/17	94	50 - 130	89	50 - 130	<0.0050	mg/kg	NC	50
7417015	Phenanthrene	2014/03/17	96	50 - 130	91	50 - 130	<0.0050	mg/kg	1.7	50
7417015	Perylene	2014/03/17	99	50 - 130	97	50 - 130	<0.0050	mg/kg	NC	50
7417015	Pyrene	2014/03/17	95	50 - 130	92	50 - 130	<0.0050	mg/kg	NC	50
7417015	Quinoline	2014/03/17	91	50 - 130	92	50 - 130	<0.010	mg/kg	NC	50

N/A = Not Applicable

RPD = Relative Percent Difference

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 (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.



Validation Signature Page

Maxxam Job #: B419154

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

Janet Gao, Senior Analyst, Organics Department

Luba Shymushovska, Senior Analyst, Organic Department

=====
Maxxam 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.

Your Project #: 13-1324-0204
Site Location: CANADA CREOSOTE NORTH
Your C.O.C. #: A018980

Attention: Julie Burghardt

GOLDER ASSOCIATES LTD.
CALGARY - NATIONAL CONTRACT
102, 2535 - 3rd Avenue SE
CALGARY, AB
CANADA T2A 7W5

Report Date: 2015/01/30
Report #: R1795574
Version: 4 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B422343

Received: 2014/03/20, 13:34

Sample Matrix: Water
Samples Received: 6

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
BTEX/F1 in Water by HS GC/MS/FID	6	N/A	2014/03/22	AB SOP-00039	CCME CWS/EPA 8260C m
CCME Hydrocarbons in Water (F2; C10-C16)	6	2014/03/24	2014/03/25	AB SOP-00040 AB SOP-00037	CCME PHC-CWS
Benzo[a]pyrene Equivalency (1)	6	N/A	2014/03/27	AB SOP-00003	Auto Calc
PAH in Water by GC/MS	6	2014/03/24	2014/03/26	AB SOP-00037 / AB SOP-00003	EPA 8270D m
Total Trihalomethanes Calculation	6	N/A	2014/03/27	CAL SOP-00104	Auto Calc
VOCs in Water by HS GC/MS (Std List)	6	N/A	2014/03/25	AB SOP-00056	EPA 8260C / 5021A m

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

(1) 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  Wendy Sears
30 Jan 2015 15:15:23 -07:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Anna Gordon, Project Manager
Email: AGordon@maxxam.ca
Phone# (403) 291-3077

Maxxam 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.

Maxxam Job #: B422343
Report Date: 2015/01/30

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: CANADA CREOSOTE NORTH
Sampler Initials: LLO

AT1 BTEX AND F1-F2 (WATER)

Maxxam ID		JC1562	JC1563		JC1564		JC1565	JC1566		
Sampling Date		2014/03/18 14:00	2014/03/18 14:00		2014/03/18 17:00		2014/03/18 17:30	2014/03/19 10:45		
COC Number		A018980	A018980		A018980		A018980	A018980		
	Units	MW10-07A	MW1	RDL	MW11-6	RDL	FIELD BLANK	MW11-01A	RDL	QC Batch
Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	<0.10	0.10	24	0.10	<0.10	1.2	0.10	7424525
Volatiles										
Benzene	mg/L	0.080	0.080	0.00040	0.72	0.00040	<0.00040	0.040	0.00040	7424929
Toluene	mg/L	0.013	0.013	0.00040	2.1 (1)	0.0020	0.00048	0.016	0.00040	7424929
Ethylbenzene	mg/L	0.17	0.17	0.00040	0.51	0.00040	<0.00040	0.036	0.00040	7424929
m & p-Xylene	mg/L	0.13	0.13	0.00080	1.5	0.00080	<0.00080	0.041	0.00080	7424929
o-Xylene	mg/L	0.15	0.15	0.00040	0.67	0.00040	<0.00040	0.034	0.00040	7424929
Xylenes (Total)	mg/L	0.27	0.27	0.00080	2.1	0.00080	<0.00080	0.075	0.00080	7424929
F1 (C6-C10) - BTEX	mg/L	0.21	0.13	0.10	0.21	0.10	<0.10	<0.10	0.10	7424929
(C6-C10)	mg/L	0.75	0.66	0.10	5.7	0.10	<0.10	0.22	0.10	7424929
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	110	109	N/A	109	N/A	108	109	N/A	7424929
4-Bromofluorobenzene (sur.)	%	108	108	N/A	105	N/A	108	108	N/A	7424929
D4-1,2-Dichloroethane (sur.)	%	102	101	N/A	105	N/A	98	100	N/A	7424929
O-TERPHENYL (sur.)	%	97	99	N/A	100	N/A	99	96	N/A	7424525
RDL = Reportable Detection Limit N/A = Not Applicable (1) Detection limits raised due to dilution to bring analyte within the calibrated range.										

Maxxam Job #: B422343
Report Date: 2015/01/30

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: CANADA CREOSOTE NORTH
Sampler Initials: LLO

AT1 BTEX AND F1-F2 (WATER)

Maxxam ID		JC1567	JC1567		
Sampling Date		2014/03/19 16:25	2014/03/19 16:25		
COC Number		A018980	A018980		
	Units	MW14-6B	MW14-6B Lab-Dup	RDL	QC Batch
Hydrocarbons					
F2 (C10-C16 Hydrocarbons)	mg/L	27	25	0.10	7424525
Volatiles					
Benzene	mg/L	0.00061	N/A	0.00040	7424929
Toluene	mg/L	0.0025	N/A	0.00040	7424929
Ethylbenzene	mg/L	0.025	N/A	0.00040	7424929
m & p-Xylene	mg/L	0.073	N/A	0.00080	7424929
o-Xylene	mg/L	0.042	N/A	0.00040	7424929
Xylenes (Total)	mg/L	0.12	N/A	0.00080	7424929
F1 (C6-C10) - BTEX	mg/L	0.38	N/A	0.10	7424929
(C6-C10)	mg/L	0.52	N/A	0.10	7424929
Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	110	N/A	N/A	7424929
4-Bromofluorobenzene (sur.)	%	108	N/A	N/A	7424929
D4-1,2-Dichloroethane (sur.)	%	101	N/A	N/A	7424929
O-TERPHENYL (sur.)	%	116	100	N/A	7424525
RDL = Reportable Detection Limit					
Lab-Dup = Laboratory Initiated Duplicate					
N/A = Not Applicable					

Maxxam Job #: B422343
Report Date: 2015/01/30

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: CANADA CREOSOTE NORTH
Sampler Initials: LLO

SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		JC1562	JC1563		JC1564		JC1565		
Sampling Date		2014/03/18 14:00	2014/03/18 14:00		2014/03/18 17:00		2014/03/18 17:30		
COC Number		A018980	A018980		A018980		A018980		
	Units	MW10-07A	MW1	RDL	MW11-6	RDL	FIELD BLANK	RDL	QC Batch
Polycyclic Aromatics									
Benzo[a]pyrene equivalency	ug/L	0.093	0.093	0.010	1.8	0.010	<0.010	0.010	7422193
Acenaphthene	mg/L	0.049	0.046	0.0010	0.22	0.0010	<0.00010	0.00010	7424533
Acenaphthylene	mg/L	0.0030	0.0028	0.0010	0.018	0.0010	<0.00010	0.00010	7424533
Acridine	mg/L	<0.0020	<0.0020	0.0020	0.012	0.0020	<0.00020	0.00020	7424533
Anthracene	mg/L	0.00033	0.00029	0.00010	0.016	0.00010	<0.00010	0.00010	7424533
Benzo(a)anthracene	mg/L	<0.000085	<0.000085	0.000085	0.0023	0.000085	<0.000085	0.000085	7424533
Benzo(b&j)fluoranthene	mg/L	<0.000085	<0.000085	0.000085	0.0018	0.000085	<0.000085	0.000085	7424533
Benzo(k)fluoranthene	mg/L	<0.000085	<0.000085	0.000085	0.00062	0.000085	<0.000085	0.000085	7424533
Benzo(g,h,i)perylene	mg/L	<0.000085	<0.000085	0.000085	0.00043	0.000085	<0.000085	0.000085	7424533
Benzo(c)phenanthrene	mg/L	<0.00050	<0.00050	0.00050	<0.00060 (1)	0.00060	<0.00050	0.00050	7424533
Benzo(a)pyrene	mg/L	<0.000075	<0.000075	0.000075	0.0012	0.000075	<0.000075	0.000075	7424533
Benzo[e]pyrene	mg/L	<0.00050	<0.00050	0.00050	0.0010	0.00050	<0.00050	0.00050	7424533
Chrysene	mg/L	<0.000085	<0.000085	0.000085	0.0017	0.000085	<0.000085	0.000085	7424533
Dibenz(a,h)anthracene	mg/L	<0.000075	<0.000075	0.000075	<0.00015 (1)	0.00015	<0.000075	0.000075	7424533
Fluoranthene	mg/L	0.00015	<0.00010	0.00010	0.018	0.00010	<0.00010	0.00010	7424533
Fluorene	mg/L	0.013	0.012	0.00050	0.11	0.00050	<0.000050	0.000050	7424533
Indeno(1,2,3-cd)pyrene	mg/L	<0.000085	<0.000085	0.000085	0.00040	0.000085	<0.000085	0.000085	7424533
2-Methylnaphthalene	mg/L	0.11	0.099	0.0010	0.90	0.10	<0.00010	0.00010	7424533
Naphthalene	mg/L	4.9	4.8	0.10	13	0.10	<0.00010	0.00010	7424533
Phenanthrene	mg/L	0.0037	0.0034	0.00050	0.11	0.00050	<0.000050	0.000050	7424533
Perylene	mg/L	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.000050	0.000050	7424533
Pyrene	mg/L	<0.00020	<0.00020	0.00020	0.012	0.00020	<0.000020	0.000020	7424533
Quinoline	mg/L	NC	NC	0.0020	NC	0.0020	<0.00020	0.00020	7424533
Surrogate Recovery (%)									
D10-ANTHRACENE (sur.)	%	120	130	N/A	120	N/A	106	N/A	7424533
D12-BENZO(A)PYRENE (sur.)	%	80	90	N/A	90	N/A	106	N/A	7424533
D8-ACENAPHTHYLENE (sur.)	%	90	90	N/A	80	N/A	101	N/A	7424533
TERPHENYL-D14 (sur.)	%	80	90	N/A	90	N/A	106	N/A	7424533
RDL = Reportable Detection Limit N/A = Not Applicable (1) Detection limits raised due to matrix interference.									

Maxxam Job #: B422343
Report Date: 2015/01/30

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: CANADA CREOSOTE NORTH
Sampler Initials: LLO

SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		JC1566		JC1567		JC1567		
Sampling Date		2014/03/19 10:45		2014/03/19 16:25		2014/03/19 16:25		
COC Number		A018980		A018980		A018980		
	Units	MW11-01A	RDL	MW14-6B	RDL	MW14-6B Lab-Dup	RDL	QC Batch
Polycyclic Aromatics								
Benzo[a]pyrene equivalency	ug/L	2.2	0.010	89	0.010	N/A	0.010	7422193
Acenaphthene	mg/L	0.023	0.00010	1.3	0.10	1.6	0.10	7424533
Acenaphthylene	mg/L	0.0011	0.00010	0.035	0.0010	0.039	0.0010	7424533
Acridine	mg/L	0.00038	0.00020	0.0045	0.0020	0.0060	0.0020	7424533
Anthracene	mg/L	0.0056	0.000010	0.32 (1)	0.00010	0.52 (1)	0.010	7424533
Benzo(a)anthracene	mg/L	0.0031	0.0000085	0.11 (1)	0.000085	0.20 (1)	0.000085	7424533
Benzo(b&j)fluoranthene	mg/L	0.0020	0.0000085	0.085 (1)	0.000085	0.15 (1)	0.000085	7424533
Benzo(k)fluoranthene	mg/L	0.00067	0.0000085	0.029 (1)	0.000085	0.047 (1)	0.000085	7424533
Benzo(g,h,i)perylene	mg/L	0.00044	0.0000085	0.021 (1)	0.000085	0.035 (1)	0.000085	7424533
Benzo(c)phenanthrene	mg/L	<0.00052 (2)	0.00052	<0.032 (2)	0.032	<0.032	0.032	7424533
Benzo(a)pyrene	mg/L	0.0014	0.0000075	0.055 (1)	0.000075	0.095 (1)	0.000075	7424533
Benzo[e]pyrene	mg/L	0.0013	0.000050	0.041 (1)	0.00050	0.073 (1)	0.00050	7424533
Chrysene	mg/L	0.0028	0.0000085	0.079 (1)	0.000085	0.15 (1)	0.000085	7424533
Dibenz(a,h)anthracene	mg/L	0.00014	0.0000075	0.0074 (1)	0.000075	0.013 (1)	0.000075	7424533
Fluoranthene	mg/L	0.013	0.000010	0.56 (1)	0.010	1.1 (1)	0.010	7424533
Fluorene	mg/L	0.015	0.000050	0.98	0.050	1.3	0.050	7424533
Indeno(1,2,3-cd)pyrene	mg/L	0.00042	0.0000085	0.023 (1)	0.000085	0.039 (1)	0.000085	7424533
2-Methylnaphthalene	mg/L	0.043	0.010	2.3	0.10	2.7	0.10	7424533
Naphthalene	mg/L	0.59	0.010	9.3	0.10	11	0.10	7424533
Phenanthrene	mg/L	0.028	0.000050	2.0 (1)	0.050	3.0 (1)	0.050	7424533
Perylene	mg/L	0.00025	0.000050	0.013 (1)	0.00050	0.023 (1)	0.00050	7424533
Pyrene	mg/L	0.0097	0.000020	0.37 (1)	0.00020	0.73 (1)	0.020	7424533
Quinoline	mg/L	0.00092	0.00020	NC	0.0020	NC	0.0020	7424533
Surrogate Recovery (%)								
D10-ANTHRACENE (sur.)	%	99	N/A	120	N/A	140 (3)	N/A	7424533
D12-BENZO(A)PYRENE (sur.)	%	107	N/A	90	N/A	120	N/A	7424533
D8-ACENAPHTHYLENE (sur.)	%	99	N/A	80	N/A	100	N/A	7424533
TERPHENYL-D14 (sur.)	%	100	N/A	90	N/A	110	N/A	7424533
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable (1) Duplicate exceeds acceptance criteria due to sample non homogeneity. Reanalysis yields similar results. (2) Detection limits raised due to matrix interference. (3) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.								

Maxxam Job #: B422343
Report Date: 2015/01/30

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: CANADA CREOSOTE NORTH
Sampler Initials: LLO

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		JC1562	JC1563	JC1564	JC1565	JC1566		
Sampling Date		2014/03/18 14:00	2014/03/18 14:00	2014/03/18 17:00	2014/03/18 17:30	2014/03/19 10:45		
COC Number		A018980	A018980	A018980	A018980	A018980		
	Units	MW10-07A	MW1	MW11-6	FIELD BLANK	MW11-01A	RDL	QC Batch
Volatiles								
Total Trihalomethanes	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7422046
Bromodichloromethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
Bromoform	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
Bromomethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7424289
Carbon tetrachloride	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
Chlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
Chlorodibromomethane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	7424289
Chloroethane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	7424289
Chloroform	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
Chloromethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7424289
1,2-dibromoethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
1,2-dichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
1,3-dichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
1,4-dichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
1,1-dichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
1,2-dichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
1,1-dichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
cis-1,2-dichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
trans-1,2-dichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
Dichloromethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7424289
1,2-dichloropropane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
cis-1,3-dichloropropene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
trans-1,3-dichloropropene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
Methyl methacrylate	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
Methyl-tert-butylether (MTBE)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
Styrene	mg/L	0.00065	<0.00050	0.20	<0.00050	<0.00050	0.00050	7424289
1,1,1,2-tetrachloroethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7424289
1,1,2,2-tetrachloroethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7424289
Tetrachloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
1,2,3-trichlorobenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	7424289
1,2,4-trichlorobenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	7424289
1,3,5-trichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
1,1,1-trichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
1,1,2-trichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
RDL = Reportable Detection Limit								

Maxxam Job #: B422343
Report Date: 2015/01/30

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: CANADA CREOSOTE NORTH
Sampler Initials: LLO

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		JC1562	JC1563	JC1564	JC1565	JC1566		
Sampling Date		2014/03/18 14:00	2014/03/18 14:00	2014/03/18 17:00	2014/03/18 17:30	2014/03/19 10:45		
COC Number		A018980	A018980	A018980	A018980	A018980		
	Units	MW10-07A	MW1	MW11-6	FIELD BLANK	MW11-01A	RDL	QC Batch
Trichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
Trichlorofluoromethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
1,2,4-trimethylbenzene	mg/L	0.10	0.10	0.33	<0.00050	0.021	0.00050	7424289
1,3,5-trimethylbenzene	mg/L	0.012	0.013	0.14	<0.00050	0.0059	0.00050	7424289
Vinyl chloride	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7424289
Surrogate Recovery (%)								
1,4-Difluorobenzene (sur.)	%	98	98	98	97	98	N/A	7424289
4-Bromofluorobenzene (sur.)	%	96	97	82	102	100	N/A	7424289
D4-1,2-Dichloroethane (sur.)	%	99	98	97	96	95	N/A	7424289
RDL = Reportable Detection Limit N/A = Not Applicable								

Maxxam Job #: B422343
Report Date: 2015/01/30

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: CANADA CREOSOTE NORTH
Sampler Initials: LLO

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		JC1567		
Sampling Date		2014/03/19 16:25		
COC Number		A018980		
	Units	MW14-6B	RDL	QC Batch
Volatiles				
Total Trihalomethanes	mg/L	<0.0020	0.0020	7422046
Bromodichloromethane	mg/L	<0.00050	0.00050	7424289
Bromoform	mg/L	<0.00050	0.00050	7424289
Bromomethane	mg/L	<0.0020	0.0020	7424289
Carbon tetrachloride	mg/L	<0.00050	0.00050	7424289
Chlorobenzene	mg/L	<0.00050	0.00050	7424289
Chlorodibromomethane	mg/L	<0.0010	0.0010	7424289
Chloroethane	mg/L	<0.0010	0.0010	7424289
Chloroform	mg/L	0.00071	0.00050	7424289
Chloromethane	mg/L	<0.0020	0.0020	7424289
1,2-dibromoethane	mg/L	<0.00050	0.00050	7424289
1,2-dichlorobenzene	mg/L	<0.00050	0.00050	7424289
1,3-dichlorobenzene	mg/L	<0.00050	0.00050	7424289
1,4-dichlorobenzene	mg/L	<0.00050	0.00050	7424289
1,1-dichloroethane	mg/L	<0.00050	0.00050	7424289
1,2-dichloroethane	mg/L	<0.00050	0.00050	7424289
1,1-dichloroethene	mg/L	<0.00050	0.00050	7424289
cis-1,2-dichloroethene	mg/L	<0.00050	0.00050	7424289
trans-1,2-dichloroethene	mg/L	<0.00050	0.00050	7424289
Dichloromethane	mg/L	<0.0020	0.0020	7424289
1,2-dichloropropane	mg/L	<0.00050	0.00050	7424289
cis-1,3-dichloropropene	mg/L	<0.00050	0.00050	7424289
trans-1,3-dichloropropene	mg/L	<0.00050	0.00050	7424289
Methyl methacrylate	mg/L	<0.00050	0.00050	7424289
Methyl-tert-butylether (MTBE)	mg/L	<0.00050	0.00050	7424289
Styrene	mg/L	<0.00050	0.00050	7424289
1,1,1,2-tetrachloroethane	mg/L	<0.0020	0.0020	7424289
1,1,1,2-tetrachloroethane	mg/L	<0.0020	0.0020	7424289
Tetrachloroethene	mg/L	<0.00050	0.00050	7424289
1,2,3-trichlorobenzene	mg/L	<0.0010	0.0010	7424289
1,2,4-trichlorobenzene	mg/L	<0.0010	0.0010	7424289
1,3,5-trichlorobenzene	mg/L	<0.00050	0.00050	7424289
1,1,1-trichloroethane	mg/L	<0.00050	0.00050	7424289
1,1,2-trichloroethane	mg/L	<0.00050	0.00050	7424289
RDL = Reportable Detection Limit				

Maxxam Job #: B422343
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GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
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Sampler Initials: LLO

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		JC1567		
Sampling Date		2014/03/19 16:25		
COC Number		A018980		
	Units	MW14-6B	RDL	QC Batch
Trichloroethene	mg/L	<0.00050	0.00050	7424289
Trichlorofluoromethane	mg/L	<0.00050	0.00050	7424289
1,2,4-trimethylbenzene	mg/L	0.15	0.00050	7424289
1,3,5-trimethylbenzene	mg/L	0.064	0.00050	7424289
Vinyl chloride	mg/L	<0.00050	0.00050	7424289
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	98	N/A	7424289
4-Bromofluorobenzene (sur.)	%	89	N/A	7424289
D4-1,2-Dichloroethane (sur.)	%	97	N/A	7424289
RDL = Reportable Detection Limit N/A = Not Applicable				

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GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
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Sampler Initials: LLO

GENERAL COMMENTS

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

Package 1	0.3°C
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SEMIVOLATILE ORGANICS BY GC-MS (WATER) Comments

Sample JC1562-02 PAH in Water by GC/MS: Detection limits raised due to dilution to bring analyte within the calibrated range. Matrix spike non calculable due to high concentration of original analyte.

Sample JC1563-02 PAH in Water by GC/MS: Detection limits raised due to dilution to bring analyte within the calibrated range.

Sample JC1564-01 PAH in Water by GC/MS: Detection limits raised due to dilution to bring analyte within the calibrated range.

Sample JC1567-01 PAH in Water by GC/MS: Detection limits raised due to dilution to bring analyte within the calibrated range. Duplicate exceeds acceptance criteria due to sample non homogeneity. Reanalysis yields similar results.

Results relate only to the items tested.

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GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: CANADA CREOSOTE NORTH
Sampler Initials: LLO

QUALITY ASSURANCE REPORT

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	Units	QC Limits
7424289	MJ0	Matrix Spike	1,4-Difluorobenzene (sur.)	2014/03/25		98	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/03/25		106	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2014/03/25		107	%	70 - 130
			Bromodichloromethane	2014/03/25		96	%	70 - 130
			Bromoform	2014/03/25		94	%	70 - 130
			Bromomethane	2014/03/25		83	%	70 - 130
			Carbon tetrachloride	2014/03/25		92	%	70 - 130
			Chlorobenzene	2014/03/25		90	%	70 - 130
			Chlorodibromomethane	2014/03/25		95	%	70 - 130
			Chloroethane	2014/03/25		88	%	70 - 130
			Chloroform	2014/03/25		93	%	70 - 130
			Chloromethane	2014/03/25		73	%	70 - 130
			1,2-dibromoethane	2014/03/25		94	%	70 - 130
			1,2-dichlorobenzene	2014/03/25		93	%	70 - 130
			1,3-dichlorobenzene	2014/03/25		89	%	70 - 130
			1,4-dichlorobenzene	2014/03/25		92	%	70 - 130
			1,1-dichloroethane	2014/03/25		93	%	70 - 130
			1,2-dichloroethane	2014/03/25		93	%	70 - 130
			1,1-dichloroethene	2014/03/25		89	%	70 - 130
			cis-1,2-dichloroethene	2014/03/25		88	%	70 - 130
			trans-1,2-dichloroethene	2014/03/25		89	%	70 - 130
			Dichloromethane	2014/03/25		92	%	70 - 130
			1,2-dichloropropane	2014/03/25		97	%	70 - 130
			cis-1,3-dichloropropene	2014/03/25		103	%	70 - 130
			trans-1,3-dichloropropene	2014/03/25		106	%	70 - 130
			Methyl methacrylate	2014/03/25		98	%	70 - 130
			Methyl-tert-butylether (MTBE)	2014/03/25		90	%	70 - 130
			Styrene	2014/03/25		89	%	70 - 130
			1,1,1,2-tetrachloroethane	2014/03/25		92	%	70 - 130
			1,1,1,2-tetrachloroethane	2014/03/25		93	%	70 - 130
			Tetrachloroethene	2014/03/25		87	%	70 - 130
			1,2,3-trichlorobenzene	2014/03/25		97	%	70 - 130
1,2,4-trichlorobenzene	2014/03/25		95	%	70 - 130			
1,3,5-trichlorobenzene	2014/03/25		95	%	70 - 130			
1,1,1-trichloroethane	2014/03/25		88	%	70 - 130			
1,1,2-trichloroethane	2014/03/25		98	%	70 - 130			
Trichloroethene	2014/03/25		84	%	70 - 130			
Trichlorofluoromethane	2014/03/25		81	%	70 - 130			
1,2,4-trimethylbenzene	2014/03/25		93	%	70 - 130			
1,3,5-trimethylbenzene	2014/03/25		97	%	70 - 130			
Vinyl chloride	2014/03/25		68 (1)	%	70 - 130			
7424289	MJ0	Spiked Blank	1,4-Difluorobenzene (sur.)	2014/03/25		98	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/03/25		108	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2014/03/25		108	%	70 - 130
			Bromodichloromethane	2014/03/25		95	%	70 - 130
			Bromoform	2014/03/25		97	%	70 - 130
			Bromomethane	2014/03/25		91	%	70 - 130
			Carbon tetrachloride	2014/03/25		90	%	70 - 130
			Chlorobenzene	2014/03/25		87	%	70 - 130
			Chlorodibromomethane	2014/03/25		95	%	70 - 130
			Chloroethane	2014/03/25		87	%	70 - 130
			Chloroform	2014/03/25		91	%	70 - 130

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GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: CANADA CREOSOTE NORTH
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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			Chloromethane	2014/03/25		73	%	70 - 130
			1,2-dibromoethane	2014/03/25		96	%	70 - 130
			1,2-dichlorobenzene	2014/03/25		91	%	70 - 130
			1,3-dichlorobenzene	2014/03/25		88	%	70 - 130
			1,4-dichlorobenzene	2014/03/25		89	%	70 - 130
			1,1-dichloroethane	2014/03/25		91	%	70 - 130
			1,2-dichloroethane	2014/03/25		94	%	70 - 130
			1,1-dichloroethene	2014/03/25		86	%	70 - 130
			cis-1,2-dichloroethene	2014/03/25		86	%	70 - 130
			trans-1,2-dichloroethene	2014/03/25		86	%	70 - 130
			Dichloromethane	2014/03/25		92	%	70 - 130
			1,2-dichloropropane	2014/03/25		95	%	70 - 130
			cis-1,3-dichloropropene	2014/03/25		118	%	70 - 130
			trans-1,3-dichloropropene	2014/03/25		127	%	70 - 130
			Methyl methacrylate	2014/03/25		99	%	70 - 130
			Methyl-tert-butylether (MTBE)	2014/03/25		90	%	70 - 130
			Styrene	2014/03/25		88	%	70 - 130
			1,1,1,2-tetrachloroethane	2014/03/25		91	%	70 - 130
			1,1,2,2-tetrachloroethane	2014/03/25		94	%	70 - 130
			Tetrachloroethene	2014/03/25		85	%	70 - 130
			1,2,3-trichlorobenzene	2014/03/25		86	%	70 - 130
			1,2,4-trichlorobenzene	2014/03/25		86	%	70 - 130
			1,3,5-trichlorobenzene	2014/03/25		88	%	70 - 130
			1,1,1-trichloroethane	2014/03/25		86	%	70 - 130
			1,1,2-trichloroethane	2014/03/25		98	%	70 - 130
			Trichloroethene	2014/03/25		81	%	70 - 130
			Trichlorofluoromethane	2014/03/25		79	%	70 - 130
			1,2,4-trimethylbenzene	2014/03/25		90	%	70 - 130
			1,3,5-trimethylbenzene	2014/03/25		94	%	70 - 130
			Vinyl chloride	2014/03/25		80	%	70 - 130
7424289	MJO	Method Blank	1,4-Difluorobenzene (sur.)	2014/03/25		98	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/03/25		102	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2014/03/25		101	%	70 - 130
			Bromodichloromethane	2014/03/25	<0.00050		mg/L	
			Bromoform	2014/03/25	<0.00050		mg/L	
			Bromomethane	2014/03/25	<0.0020		mg/L	
			Carbon tetrachloride	2014/03/25	<0.00050		mg/L	
			Chlorobenzene	2014/03/25	<0.00050		mg/L	
			Chlorodibromomethane	2014/03/25	<0.0010		mg/L	
			Chloroethane	2014/03/25	<0.0010		mg/L	
			Chloroform	2014/03/25	<0.00050		mg/L	
			Chloromethane	2014/03/25	<0.0020		mg/L	
			1,2-dibromoethane	2014/03/25	<0.00050		mg/L	
			1,2-dichlorobenzene	2014/03/25	<0.00050		mg/L	
			1,3-dichlorobenzene	2014/03/25	<0.00050		mg/L	
			1,4-dichlorobenzene	2014/03/25	<0.00050		mg/L	
			1,1-dichloroethane	2014/03/25	<0.00050		mg/L	
			1,2-dichloroethane	2014/03/25	<0.00050		mg/L	
			1,1-dichloroethene	2014/03/25	<0.00050		mg/L	
			cis-1,2-dichloroethene	2014/03/25	<0.00050		mg/L	
			trans-1,2-dichloroethene	2014/03/25	<0.00050		mg/L	
			Dichloromethane	2014/03/25	<0.0020		mg/L	

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Client Project #: 13-1324-0204
Site Location: CANADA CREOSOTE NORTH
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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	2014/03/25	<0.00050		mg/L	
			cis-1,3-dichloropropene	2014/03/25	<0.00050		mg/L	
			trans-1,3-dichloropropene	2014/03/25	<0.00050		mg/L	
			Methyl methacrylate	2014/03/25	<0.00050		mg/L	
			Methyl-tert-butylether (MTBE)	2014/03/25	<0.00050		mg/L	
			Styrene	2014/03/25	<0.00050		mg/L	
			1,1,1,2-tetrachloroethane	2014/03/25	<0.0020		mg/L	
			1,1,2,2-tetrachloroethane	2014/03/25	<0.0020		mg/L	
			Tetrachloroethene	2014/03/25	<0.00050		mg/L	
			1,2,3-trichlorobenzene	2014/03/25	<0.0010		mg/L	
			1,2,4-trichlorobenzene	2014/03/25	<0.0010		mg/L	
			1,3,5-trichlorobenzene	2014/03/25	<0.00050		mg/L	
			1,1,1-trichloroethane	2014/03/25	<0.00050		mg/L	
			1,1,2-trichloroethane	2014/03/25	<0.00050		mg/L	
			Trichloroethene	2014/03/25	<0.00050		mg/L	
			Trichlorofluoromethane	2014/03/25	<0.00050		mg/L	
			1,2,4-trimethylbenzene	2014/03/25	<0.00050		mg/L	
			1,3,5-trimethylbenzene	2014/03/25	<0.00050		mg/L	
			Vinyl chloride	2014/03/25	<0.00050		mg/L	
7424289	MJ0	RPD	1,2-dibromoethane	2014/03/25	NC		%	40
			1,2-dichloroethane	2014/03/25	NC		%	40
7424525	DO1	Matrix Spike	O-TERPHENYL (sur.)	2014/03/24		83	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2014/03/24		69	%	50 - 130
7424525	DO1	Spiked Blank	O-TERPHENYL (sur.)	2014/03/24		93	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2014/03/24		91	%	70 - 130
7424525	DO1	Method Blank	O-TERPHENYL (sur.)	2014/03/24		98	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2014/03/24	<0.10		mg/L	
7424525	DO1	RPD [JC1567-01]	F2 (C10-C16 Hydrocarbons)	2014/03/25	9.4		%	40
7424533	JC7	Matrix Spike [JC1562-02]	D10-ANTHRACENE (sur.)	2014/03/26		130	%	50 - 130
			D12-BENZO(A)PYRENE (sur.)	2014/03/26		90	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2014/03/26		90	%	50 - 130
			TERPHENYL-D14 (sur.)	2014/03/26		90	%	50 - 130
			Acenaphthene	2014/03/26		NC	%	50 - 130
			Acenaphthylene	2014/03/26		NC	%	50 - 130
			Acridine	2014/03/26		NC	%	50 - 130
			Anthracene	2014/03/26		NC	%	50 - 130
			Benzo(a)anthracene	2014/03/26		NC	%	50 - 130
			Benzo(b&j)fluoranthene	2014/03/26		NC	%	50 - 130
			Benzo(k)fluoranthene	2014/03/26		NC	%	50 - 130
			Benzo(g,h,i)perylene	2014/03/26		NC	%	50 - 130
			Benzo(c)phenanthrene	2014/03/26		NC	%	50 - 130
			Benzo(a)pyrene	2014/03/26		NC	%	50 - 130
			Benzo[e]pyrene	2014/03/26		NC	%	50 - 130
			Chrysene	2014/03/26		NC	%	50 - 130
			Dibenz(a,h)anthracene	2014/03/26		NC	%	50 - 130
			Fluoranthene	2014/03/26		NC	%	50 - 130
			Fluorene	2014/03/26		NC	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2014/03/26		NC	%	50 - 130
			2-Methylnaphthalene	2014/03/26		NC	%	50 - 130
			Naphthalene	2014/03/26		NC	%	50 - 130
			Phenanthrene	2014/03/26		NC	%	50 - 130
			Perylene	2014/03/26		NC	%	50 - 130

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GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
7424533	JC7	Spiked Blank	Pyrene	2014/03/26		NC	%	50 - 130
			Quinoline	2014/03/26		NC	%	50 - 130
			D10-ANTHRACENE (sur.)	2014/03/24		106	%	50 - 130
			D12-BENZO(A)PYRENE (sur.)	2014/03/24		112	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2014/03/24		99	%	50 - 130
			TERPHENYL-D14 (sur.)	2014/03/24		107	%	50 - 130
			Acenaphthene	2014/03/24		101	%	50 - 130
			Acenaphthylene	2014/03/24		105	%	50 - 130
			Acridine	2014/03/24		86	%	50 - 130
			Anthracene	2014/03/24		102	%	50 - 130
			Benzo(a)anthracene	2014/03/24		115	%	50 - 130
			Benzo(b&j)fluoranthene	2014/03/24		123	%	50 - 130
			Benzo(k)fluoranthene	2014/03/24		111	%	50 - 130
			Benzo(g,h,i)perylene	2014/03/24		116	%	50 - 130
			Benzo(c)phenanthrene	2014/03/24		109	%	50 - 130
			Benzo(a)pyrene	2014/03/24		107	%	50 - 130
			Benzo[e]pyrene	2014/03/24		118	%	50 - 130
			Chrysene	2014/03/24		118	%	50 - 130
			Dibenz(a,h)anthracene	2014/03/24		113	%	50 - 130
			Fluoranthene	2014/03/24		105	%	50 - 130
			Fluorene	2014/03/24		107	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2014/03/24		116	%	50 - 130
			2-Methylnaphthalene	2014/03/24		76	%	50 - 130
Naphthalene	2014/03/24		100	%	50 - 130			
Phenanthrene	2014/03/24		108	%	50 - 130			
Perylene	2014/03/24		114	%	50 - 130			
Pyrene	2014/03/24		104	%	50 - 130			
Quinoline	2014/03/24		96	%	50 - 130			
7424533	JC7	Method Blank	D10-ANTHRACENE (sur.)	2014/03/24			%	50 - 130
			D12-BENZO(A)PYRENE (sur.)	2014/03/24			%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2014/03/24			%	50 - 130
			TERPHENYL-D14 (sur.)	2014/03/24			%	50 - 130
			Acenaphthene	2014/03/24	<0.00010		mg/L	
			Acenaphthylene	2014/03/24	<0.00010		mg/L	
			Acridine	2014/03/24	<0.00020		mg/L	
			Anthracene	2014/03/24	<0.000010		mg/L	
			Benzo(a)anthracene	2014/03/24	<0.0000085		mg/L	
			Benzo(b&j)fluoranthene	2014/03/24	<0.0000085		mg/L	
			Benzo(k)fluoranthene	2014/03/24	<0.0000085		mg/L	
			Benzo(g,h,i)perylene	2014/03/24	<0.0000085		mg/L	
			Benzo(c)phenanthrene	2014/03/24	<0.000050		mg/L	
			Benzo(a)pyrene	2014/03/24	<0.0000075		mg/L	
			Benzo[e]pyrene	2014/03/24	<0.000050		mg/L	
			Chrysene	2014/03/24	<0.0000085		mg/L	
			Dibenz(a,h)anthracene	2014/03/24	<0.0000075		mg/L	
			Fluoranthene	2014/03/24	<0.000010		mg/L	
			Fluorene	2014/03/24	<0.000050		mg/L	
			Indeno(1,2,3-cd)pyrene	2014/03/24	<0.0000085		mg/L	
			2-Methylnaphthalene	2014/03/24	<0.00010		mg/L	
			Naphthalene	2014/03/24	<0.00010		mg/L	
			Phenanthrene	2014/03/24	<0.000050		mg/L	
Perylene	2014/03/24	<0.000050		mg/L				

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GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: CANADA CREOSOTE NORTH
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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
7424533	JC7	RPD [JC1567-01]	Pyrene	2014/03/24	<0.00020		mg/L	
			Quinoline	2014/03/24	<0.00020		mg/L	
			Acenaphthene	2014/03/26	21		%	40
			Acenaphthylene	2014/03/26	12		%	40
			Acridine	2014/03/26	NC		%	40
			Anthracene	2014/03/26	46 (2)		%	40
			Benzo(a)anthracene	2014/03/26	58 (2)		%	40
			Benzo(b&j)fluoranthene	2014/03/26	54 (2)		%	40
			Benzo(k)fluoranthene	2014/03/26	49 (2)		%	40
			Benzo(g,h,i)perylene	2014/03/26	48 (2)		%	40
			Benzo(c)phenanthrene	2014/03/26	NC		%	40
			Benzo(a)pyrene	2014/03/26	52 (2)		%	40
			Benzo[e]pyrene	2014/03/26	56 (2)		%	40
			Chrysene	2014/03/26	59 (2)		%	40
			Dibenz(a,h)anthracene	2014/03/26	53 (2)		%	40
			Fluoranthene	2014/03/26	61 (2)		%	40
			Fluorene	2014/03/26	26		%	40
			Indeno(1,2,3-cd)pyrene	2014/03/26	53 (2)		%	40
			2-Methylnaphthalene	2014/03/26	18		%	40
			Naphthalene	2014/03/26	12		%	40
Phenanthrene	2014/03/26	40 (2)		%	40			
Perylene	2014/03/26	56 (2)		%	40			
Pyrene	2014/03/26	67 (2)		%	40			
Quinoline	2014/03/26	NC		%	40			
7424929	RSA	Matrix Spike	1,4-Difluorobenzene (sur.)	2014/03/22		109	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/03/22		113	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2014/03/22		107	%	70 - 130
			Benzene	2014/03/22		88	%	70 - 130
			Toluene	2014/03/22		84	%	70 - 130
			Ethylbenzene	2014/03/22		87	%	70 - 130
			m & p-Xylene	2014/03/22		84	%	70 - 130
			o-Xylene	2014/03/22		82	%	70 - 130
			(C6-C10)	2014/03/22		66 (1)	%	70 - 130
			7424929	RSA	Spiked Blank	1,4-Difluorobenzene (sur.)	2014/03/22	
4-Bromofluorobenzene (sur.)	2014/03/22					106	%	70 - 130
D4-1,2-Dichloroethane (sur.)	2014/03/22					103	%	70 - 130
Benzene	2014/03/22					82	%	70 - 130
Toluene	2014/03/22					79	%	70 - 130
Ethylbenzene	2014/03/22					83	%	70 - 130
m & p-Xylene	2014/03/22					81	%	70 - 130
o-Xylene	2014/03/22					78	%	70 - 130
(C6-C10)	2014/03/22					74	%	70 - 130
7424929	RSA	Method Blank				1,4-Difluorobenzene (sur.)	2014/03/22	
			4-Bromofluorobenzene (sur.)	2014/03/22		107	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2014/03/22		103	%	70 - 130
			Benzene	2014/03/22	<0.00040		mg/L	
			Toluene	2014/03/22	<0.00040		mg/L	
			Ethylbenzene	2014/03/22	<0.00040		mg/L	
			m & p-Xylene	2014/03/22	<0.00080		mg/L	
			o-Xylene	2014/03/22	<0.00040		mg/L	
			Xylenes (Total)	2014/03/22	<0.00080		mg/L	
			F1 (C6-C10) - BTEX	2014/03/22	<0.10		mg/L	

Maxxam Job #: B422343
Report Date: 2015/01/30

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: CANADA CREOSOTE NORTH
Sampler Initials: LLO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
7424929	RSA	RPD	(C6-C10)	2014/03/22	<0.10		mg/L	
			Benzene	2014/03/22	NC		%	40
			Toluene	2014/03/22	NC		%	40
			Ethylbenzene	2014/03/22	NC		%	40
			m & p-Xylene	2014/03/22	NC		%	40
			o-Xylene	2014/03/22	NC		%	40
			Xylenes (Total)	2014/03/22	NC		%	40
			F1 (C6-C10) - BTEX	2014/03/22	NC		%	40
			(C6-C10)	2014/03/22	NC		%	40

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 spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of 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 (one or both samples < 5x RDL).

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

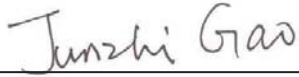
(2) Duplicate exceeds acceptance criteria due to sample non homogeneity. Reanalysis yields similar results.

Maxxam Job #: B422343
Report Date: 2015/01/30

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: CANADA CREOSOTE NORTH
Sampler Initials: LLO

VALIDATION SIGNATURE PAGE

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



Janet Gao, Supervisor



Luba Shymushovska, Organics – Senior Analyst

Maxxam 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.

Maxxam

Calgary: 400 1st St. NE, T2E 6P8, Ph: (403) 291-9077, Fax: (403) 239-2240, Toll free: (800) 380-7247
 Edmonton: 9331 - 48 Street, T6B 2B4, Ph: (780) 577-7100, Fax: (780) 450-4167, Toll free: (877) 465-4888
 www.maxxamanalytics.com

Chain of Custody **A018980**

Page: 1 of 1


Invoice To: C/O Report Address
 Company: **GOLDER ASSOCIATES LTD.**
 Contact: **JULIE BURGHARDT**
 Address: **102, 2535 2nd AVE SE**
 City: **AB** PC: **T2A 7W5**
 Contact #: Ph: **403 299 5600** Cell:

Report To: Same as Invoice
 Report Distribution (E-Mail):
Julie.Burghardt@golder.com
CSMDataQuality@golder.com

REGULATORY GUIDELINES:
 AT1
 CCME
 Regulated Drinking Water
 Other:

All samples are held for 90 calendar days after sample receipt, unless specified otherwise.
 Project # / Name: **13-1224-0204**
 Site Location: **Canada Crescent North**
 Quote #: _____
 Sampled By: **LLO**
 SERVICE REQUESTED: RUSH (Contact lab to reserve)
 REGULAR (5 to 7 Days)

Sample ID	Depth (unit)	Matrix GW / SW Soil	Date/Time Sampled YYMMDD 24:00	SOIL				WATER				Other Analysis		HOLD - Do not Analyze	# of Containers Submitted
				BTEX F1-F4	Sieve (75 micron)	Regulated Metals (CCME / AT1)	Salinity 4	Assessment ICP Metals	Basic Class II Landfill	BTEX F1	BTEX F1-F4	Regulated Metals	Other Analysis		
1 MW10-07A	GW		14/03/18 2:00 pm	X	X	X	X	X	X	X	X	X	X		7
2 MW1	GW		14/03/18 2:00 pm	X	X	X	X	X	X	X	X	X	X		7
3 MW11-6	GW		14/03/18 5:00 pm	X	X	X	X	X	X	X	X	X	X		7
4 Field blank	GW		14/03/18 5:30 pm	X	X	X	X	X	X	X	X	X	X		7
5 MW11-01A	GW		14/03/19 10:45 am	X	X	X	X	X	X	X	X	X	X		7
6 MW14-6B	GW		14/03/19 4:45 pm	X	X	X	X	X	X	X	X	X	X		7

20-Mar-14 13:34
 Anna Gordon

 B422343
 SU2 INS-0079

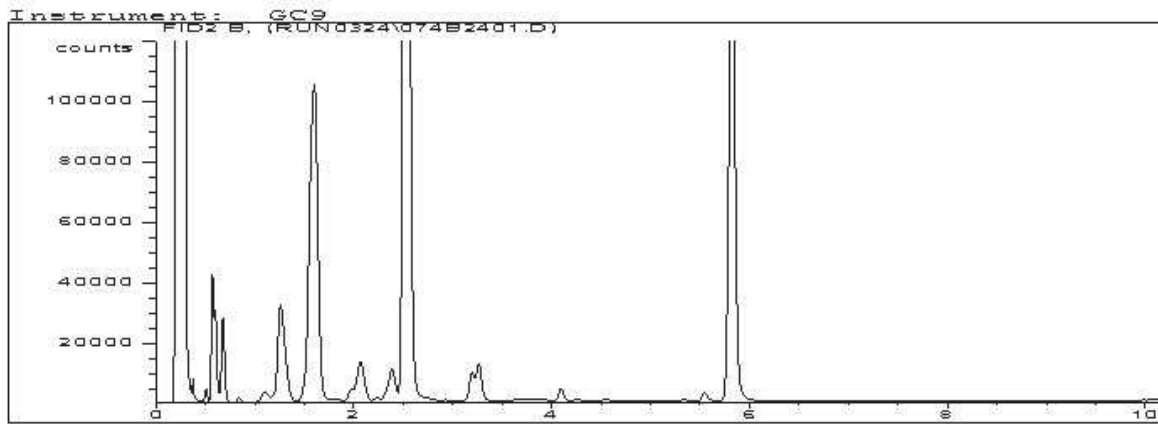
Please indicate Filtered, Preserved or Both (F, P, F/P)
 Requisitioned By (Signature/Print): **Jon Lewis** Date (YYMMDD): **14/03/14** Time (24:00): **13:30**
 Requisitioned By (Signature/Print): _____ Date (YYMMDD): _____ Time (24:00): _____
 Special Instructions: **Please use specified PAH + FZ bottles for MW10-07A and MW1** # of Jars Used & Not Submitted:

LAB USE ONLY
 Received By: **Jacob R. Kave** Date: **2014/03/20** Maxxam Job #: _____
 Lab Comments: **JACOB R. KAWE 13:54**
 Custody Seal: **YES** Temperature: **0/0/1** Ice: **YES**

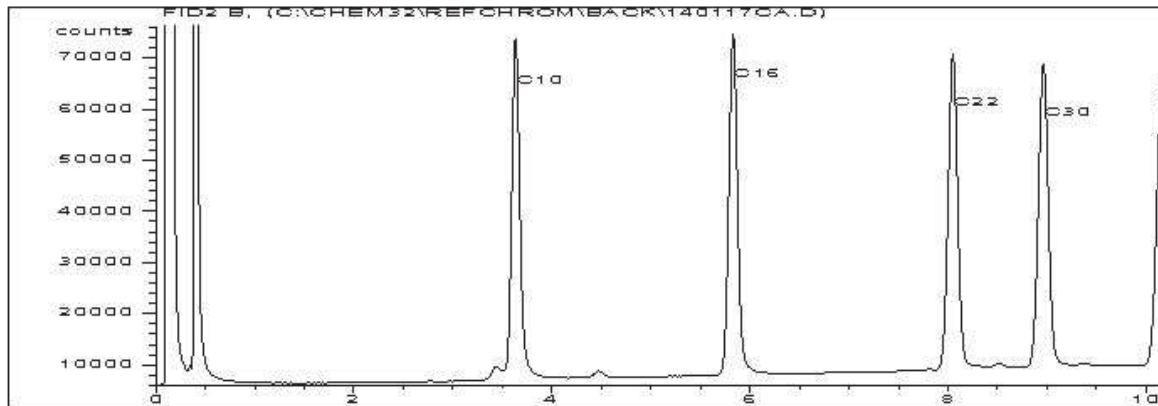
AB FCD-00331 Rev3 2013/05

Maxxam Analytics International Corporation © Maxxam Analytics

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram



Carbon Range Distribution - Reference Chromatogram

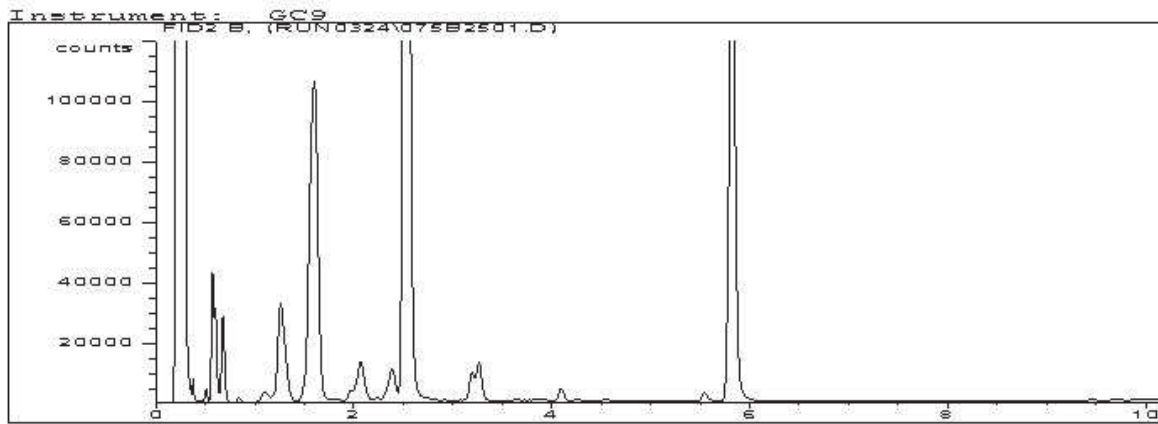


TYPICAL PRODUCT CARBON NUMBER R₂

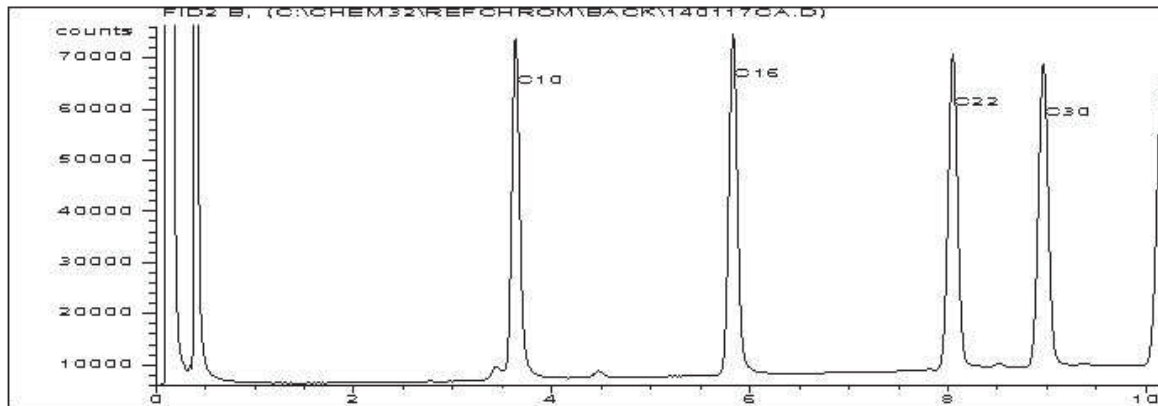
VC	000	111	000	Diesel:
000	1004	000	111	Lubricat:
000	000	000	000	Crude Oil:

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



Carbon Range Distribution - Reference Chromatogram

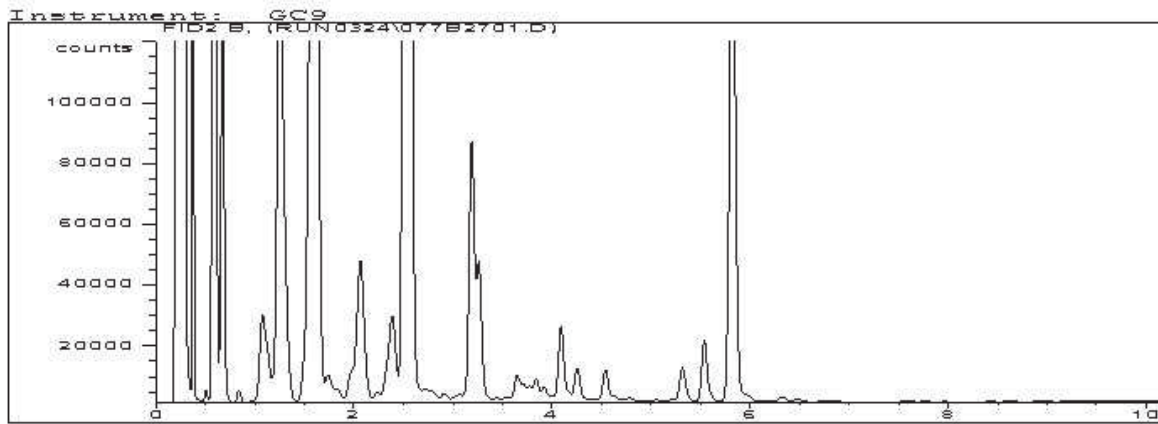


TYPICAL PRODUCT CARBON NUMBER R₂

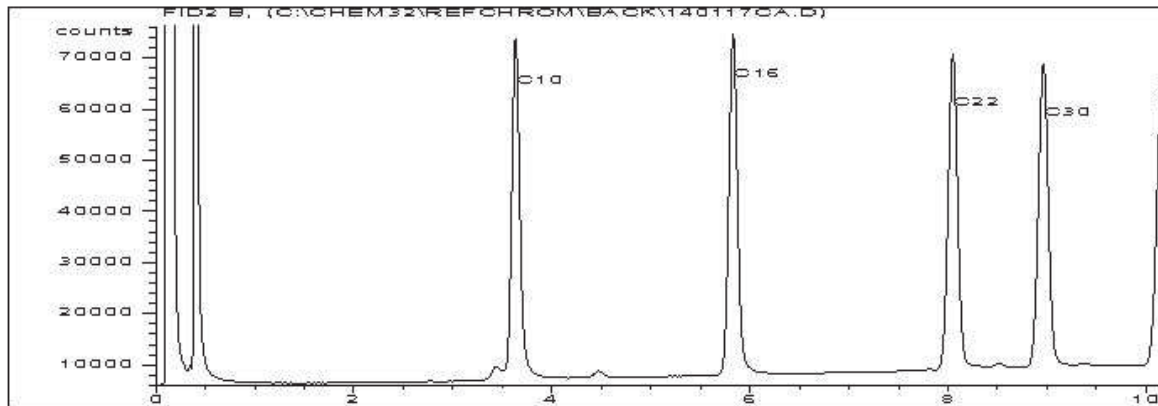
VC	000	111	000	Diesel:
000	1004	000	111	Lubricat:
000	000	000	000	Crude Oil:
000	000	000	000	000

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



Carbon Range Distribution - Reference Chromatogram

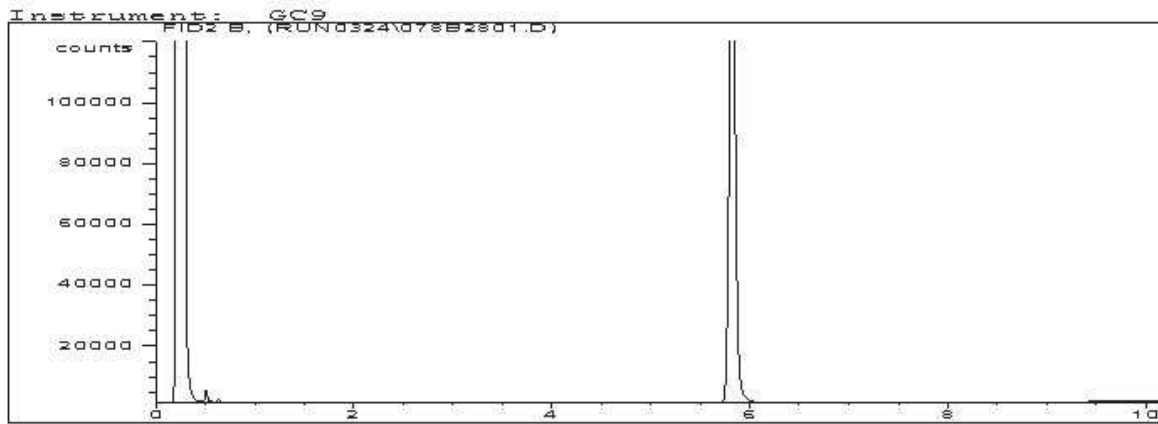


TYPICAL PRODUCT CARBON NUMBER R₂

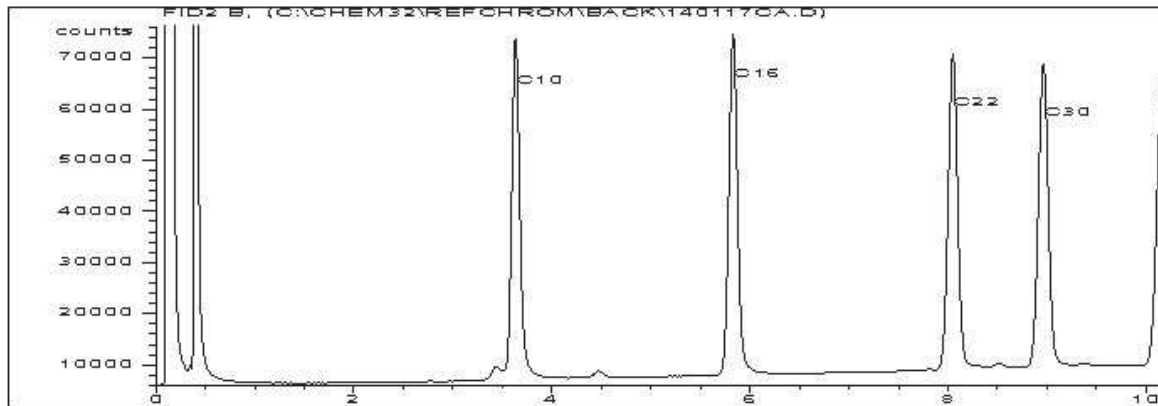
Kerosene	000	111	000	Diesel:
Gasoline	100	111	111	Lubricant:
Crude Oil:	100	111	000	Crude Oil:

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



Carbon Range Distribution - Reference Chromatogram

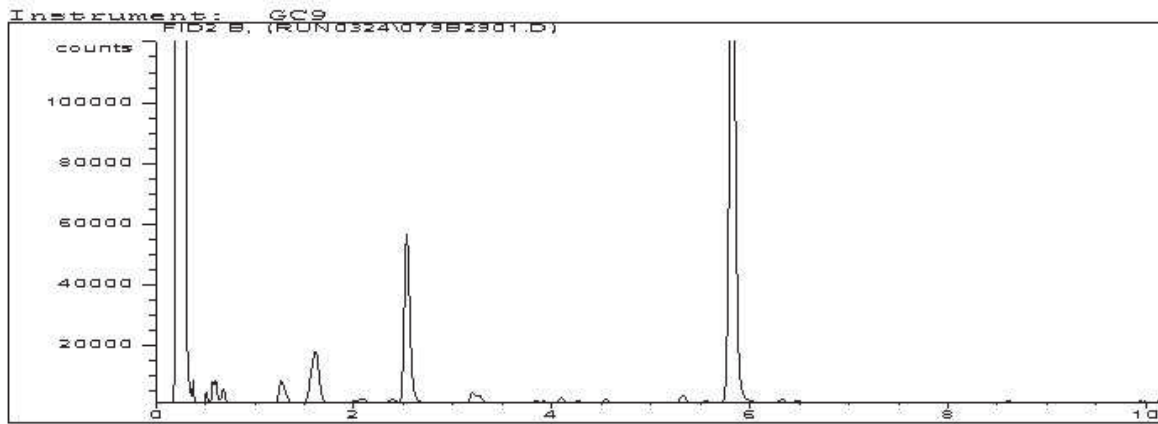


TYPICAL PRODUCT CARBON NUMBER R₂

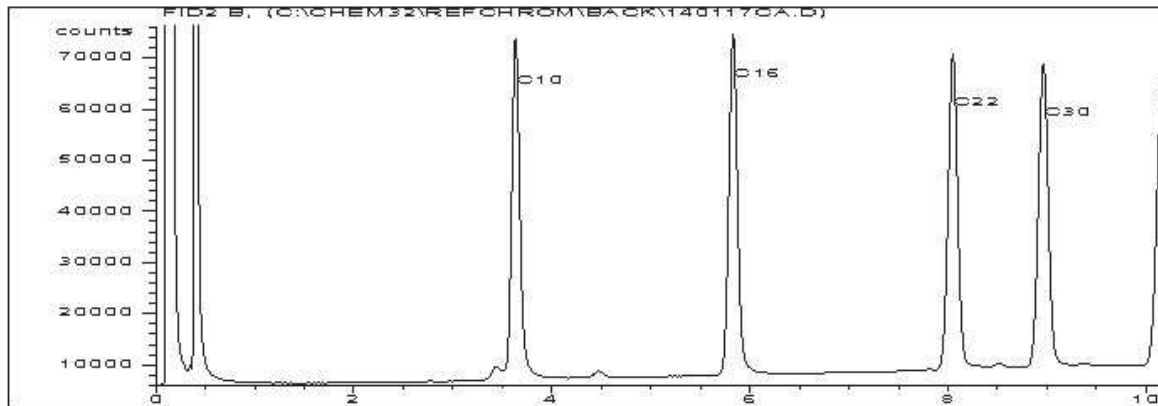
GC	000	111	000	Diesel:
000	004	000	000	Lubricat:
000	000	000	000	Crude Oil:
000	000	000	000	000

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



Carbon Range Distribution - Reference Chromatogram

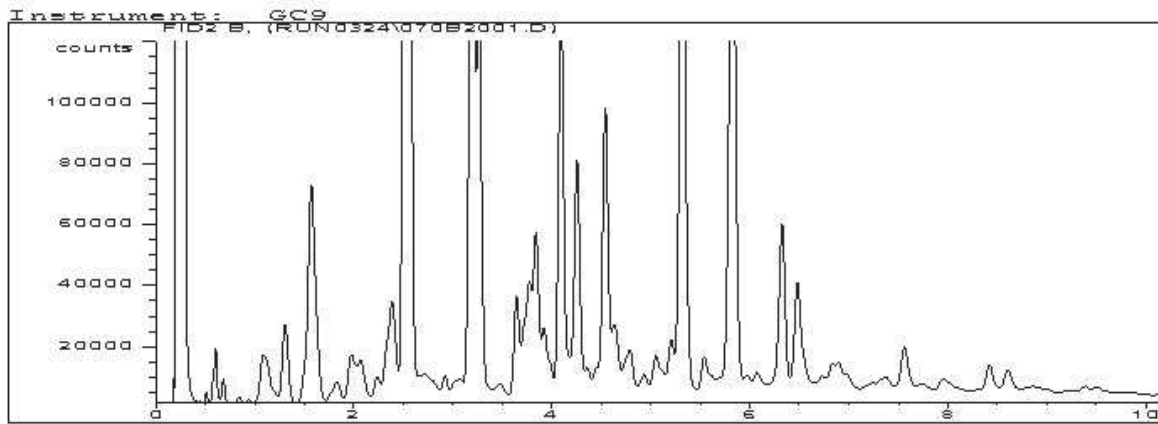


TYPICAL PRODUCT CARBON NUMBER R₂

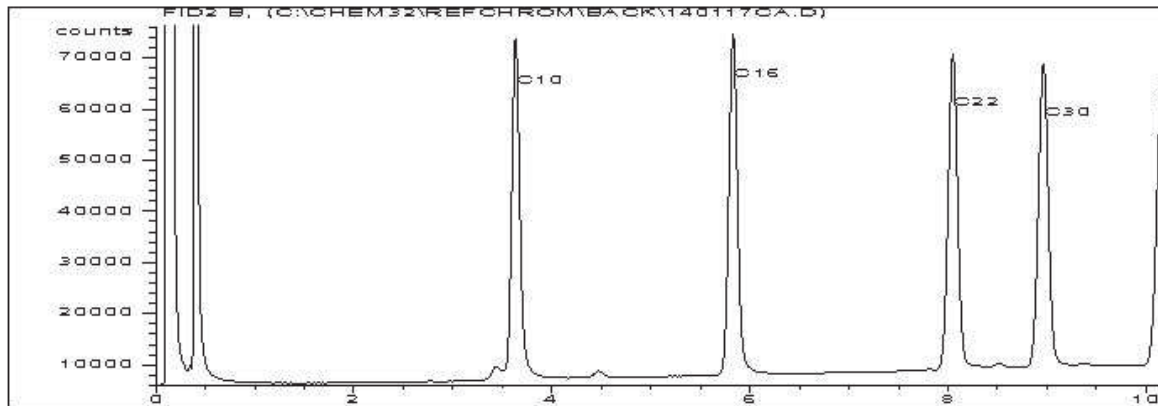
VC	000	111	000	Diesel:
000	1004	000	111	Lubricat:
000	000	000	000	Crude Oil:
000	000	000	000	000

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



Carbon Range Distribution - Reference Chromatogram

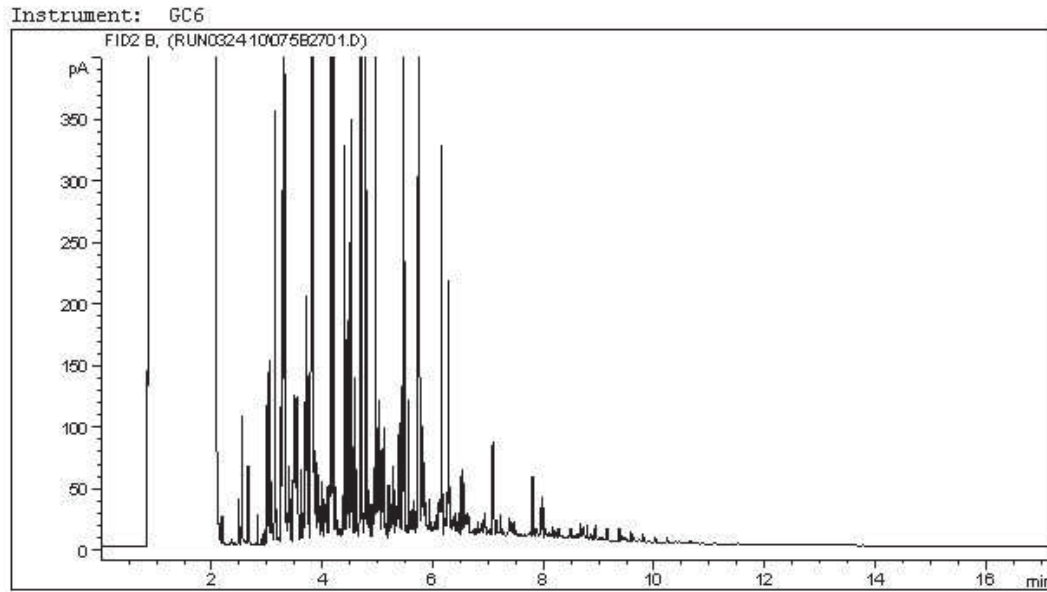


TYPICAL PRODUCT CARBON NUMBER R₂

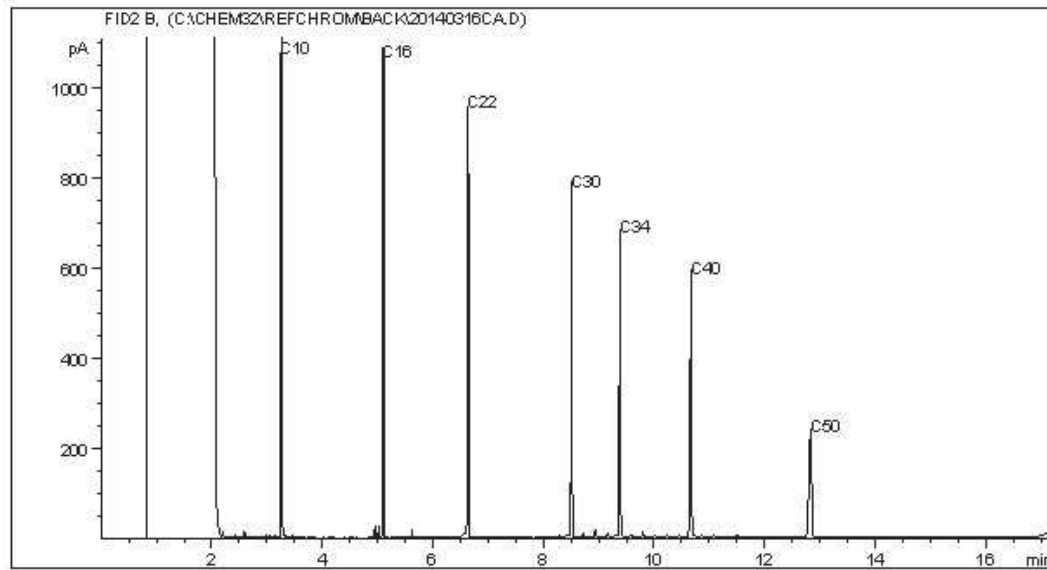
Kerosene	000	111	000	Diesel:
Gasoline	1004	111	111	Lubricant:
Crude Oil:	000	111	000	Crude Oil:

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



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 #: 13-1324-0204
 Site Location: CANADA CREOSOTE NORTH
 Your C.O.C. #: A018978, `, A018979

Attention: Julie Burghardt
 GOLDER ASSOCIATES LTD.
 CALGARY - NATIONAL CONTRACT
 102, 2535 - 3rd Avenue SE
 CALGARY, AB
 CANADA T2A 7W5

Report Date: 2014/03/28
Report #: R1542706
Version: 1

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B422737
Received: 2014/03/21, 13:18

Sample Matrix: Water
 # Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 in Water by HS GC/MS	7	N/A	2014/03/25	AB SOP-00039	CCME, EPA 8260C
CCME Hydrocarbons in Water (F2; C10-C16)	6	2014/03/25	2014/03/26	AB SOP-00040 AB SOP-00037	EPA3510C/CCME PHCCWS
Benzo[a]pyrene Equivalency	6	N/A	2014/03/27	AB SOP-00003	EPA 8270D
PAH in Water by GC/MS (1)	6	2014/03/25	2014/03/25	AB SOP-00003 AB SOP-00037	EPA 3510C/8270D
Total Trihalomethanes Calculation	7	N/A	2014/03/28	CAL SOP-00104	EPA 8260 C
VOCs in Water by HS GC/MS (Std List)	7	N/A	2014/03/26	CAL SOP-00227	EPA 8260 C

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
 * Results relate only to the items tested.

(1) 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



Anna Gordon
 28 Mar 2014 18:19:26 -06:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Anna Gordon, Project Manager
 Email: AGordon@maxxam.ca
 Phone# (403) 291-3077

=====
 Maxxam 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.

Total cover pages: 1



Success Through Science®

Maxxam Job #: B422737
Report Date: 2014/03/28

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: CANADA CREOSOTE NORTH
Sampler Initials: LLG

AT1 BTEX AND F1-F2 (WATER)

Maxxam ID		JC4792	JC4793	JC4794	JC4795	JC4795	JC4811		
Sampling Date		2014/03/20 09:15	2014/03/20 13:30	2014/03/20 14:30	2014/03/20 16:00	2014/03/20 16:00	2014/03/21 08:45		
	UNITS	MW14-1A	MW14-4B	MW14-4A	MW14-5	MW14-5 Lab-Dup	MW14-2	RDL	QC Batch
Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	mg/L	1.4	<0.10	0.42	<0.10	<0.10	<0.10	0.10	7425259
Surrogate Recovery (%)									
O-TERPHENYL (sur.)	%	112	98	107	98	100	110		7425259
Volatiles									
Benzene	mg/L	0.0023	<0.00040	<0.00040	<0.00040		<0.00040	0.00040	7427589
Toluene	mg/L	0.0016	<0.00040	<0.00040	<0.00040		0.0011	0.00040	7427589
Ethylbenzene	mg/L	0.0049	<0.00040	0.00054	<0.00040		<0.00040	0.00040	7427589
m & p-Xylene	mg/L	0.013	<0.00080	<0.00080	<0.00080		<0.00080	0.00080	7427589
o-Xylene	mg/L	0.014	<0.00040	0.0010	<0.00040		<0.00040	0.00040	7427589
Xylenes (Total)	mg/L	0.027	<0.00080	0.0010	<0.00080		<0.00080	0.00080	7427589
F1 (C6-C10) - BTEX	mg/L	<0.10	<0.10	<0.10	<0.10		<0.10	0.10	7427589
(C6-C10)	mg/L	<0.10	<0.10	<0.10	<0.10		<0.10	0.10	7427589
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	111	110	110	110		109		7427589
4-Bromofluorobenzene (sur.)	%	106	106	105	105		105		7427589
D4-1,2-Dichloroethane (sur.)	%	111	109	111	109		110		7427589

RDL = Reportable Detection Limit



Success Through Science®

Maxxam Job #: B422737
Report Date: 2014/03/28

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: CANADA CREOSOTE NORTH
Sampler Initials: LLG

AT1 BTEX AND F1 (WATER)

Maxxam ID		JC4796	JC4813		
Sampling Date		2014/03/20 17:30	2014/03/21 10:00		
	UNITS	MW14-6A	MW10-01	RDL	QC Batch
Volatiles					
Benzene	mg/L	0.00075	<0.00040	0.00040	7427589
Toluene	mg/L	0.0010	<0.00040	0.00040	7427589
Ethylbenzene	mg/L	0.0014	<0.00040	0.00040	7427589
m & p-Xylene	mg/L	<0.00080	<0.00080	0.00080	7427589
o-Xylene	mg/L	0.0022	<0.00040	0.00040	7427589
Xylenes (Total)	mg/L	0.0022	<0.00080	0.00080	7427589
F1 (C6-C10) - BTEX	mg/L	<0.10	<0.10	0.10	7427589
(C6-C10)	mg/L	<0.10	<0.10	0.10	7427589
Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	110	110		7427589
4-Bromofluorobenzene (sur.)	%	105	105		7427589
D4-1,2-Dichloroethane (sur.)	%	110	111		7427589

AT1 F2 (WATER)

Maxxam ID		JC4812			
Sampling Date		2014/03/19 09:00			
	UNITS	MW10-01	RDL		QC Batch
Hydrocarbons					
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	0.10		7425259
Surrogate Recovery (%)					
O-TERPHENYL (sur.)	%	102			7425259

RDL = Reportable Detection Limit



Success Through Science®

Maxxam Job #: B422737
Report Date: 2014/03/28

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: CANADA CREOSOTE NORTH
Sampler Initials: LLG

SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		JC4792		JC4793		
Sampling Date		2014/03/20 09:15		2014/03/20 13:30		
	UNITS	MW14-1A	RDL	MW14-4B	RDL	QC Batch
Polycyclic Aromatics						
Benzo[a]pyrene equivalency	ug/L	0.020	0.010	<0.010	0.010	7424769
Acenaphthene	mg/L	0.028	0.00010	0.00024	0.00010	7425261
Acenaphthylene	mg/L	0.0011	0.00010	<0.00010	0.00010	7425261
Acridine	mg/L	<0.00020	0.00020	<0.00020	0.00020	7425261
Anthracene	mg/L	0.0015	0.00010	0.00058	0.00010	7425261
Benzo(a)anthracene	mg/L	0.000037 ⁽¹⁾	0.000085	<0.000085	0.000085	7425261
Benzo(b&j)fluoranthene	mg/L	0.000019 ⁽¹⁾	0.000085	<0.000085	0.000085	7425261
Benzo(k)fluoranthene	mg/L	<0.000085 ⁽¹⁾	0.000085	<0.000085	0.000085	7425261
Benzo(g,h,i)perylene	mg/L	<0.000085 ⁽¹⁾	0.000085	<0.000085	0.000085	7425261
Benzo(c)phenanthrene	mg/L	<0.000050	0.000050	<0.000050	0.000050	7425261
Benzo(a)pyrene	mg/L	0.000095 ⁽¹⁾	0.000075	<0.000075	0.000075	7425261
Benzo[e]pyrene	mg/L	<0.000050 ⁽¹⁾	0.000050	<0.000050	0.000050	7425261
Chrysene	mg/L	0.000025 ⁽¹⁾	0.000085	<0.000085	0.000085	7425261
Dibenz(a,h)anthracene	mg/L	<0.000075 ⁽¹⁾	0.000075	<0.000075	0.000075	7425261
Fluoranthene	mg/L	0.0016	0.00010	0.00018	0.00010	7425261
Fluorene	mg/L	0.015	0.000050	0.00024	0.000050	7425261
Indeno(1,2,3-cd)pyrene	mg/L	<0.000085 ⁽¹⁾	0.000085	<0.000085	0.000085	7425261
2-Methylnaphthalene	mg/L	0.026	0.00010	0.00033	0.00010	7425261
Naphthalene	mg/L	0.51 ⁽²⁾	0.0020	0.00089	0.00010	7425261
Phenanthrene	mg/L	0.0098	0.000050	0.00060	0.000050	7425261
Perylene	mg/L	<0.000050 ⁽¹⁾	0.000050	<0.000050	0.000050	7425261
Pyrene	mg/L	0.0010	0.000020	0.00013	0.000020	7425261
Quinoline	mg/L	0.00068	0.00020	<0.00020	0.00020	7425261
Surrogate Recovery (%)						
D10-ANTHRACENE (sur.)	%	99		89		7425261
D12-BENZO(A)PYRENE (sur.)	%	105		95		7425261
D8-ACENAPHTHYLENE (sur.)	%	103		96		7425261
TERPHENYL-D14 (sur.)	%	104		94		7425261

RDL = Reportable Detection Limit

(1) - Matrix Spike exceeds acceptance limits due to matrix interference. Reanalysis yields similar results.

(2) - Detection limits raised due to dilution to bring analyte within the calibrated range.



Success Through Science®

Maxxam Job #: B422737
Report Date: 2014/03/28

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: CANADA CREOSOTE NORTH
Sampler Initials: LLG

SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		JC4794		JC4795	JC4795	JC4811	JC4812		
Sampling Date		2014/03/20 14:30		2014/03/20 16:00	2014/03/20 16:00	2014/03/21 08:45	2014/03/19 09:00		
	UNITS	MW14-4A	RDL	MW14-5	MW14-5 Lab-Dup	MW14-2	MW10-01	RDL	QC Batch
Polycyclic Aromatics									
Benzo[a]pyrene equivalency	ug/L	1.2	0.010	0.045		0.055	0.064	0.010	7424769
Acenaphthene	mg/L	0.020	0.00010	0.00022	0.00022	0.00016	<0.00010	0.00010	7425261
Acenaphthylene	mg/L	0.00077	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	7425261
Acridine	mg/L	0.00099	0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	7425261
Anthracene	mg/L	0.013	0.000010	0.000088	0.000084	0.000065	0.000048	0.000010	7425261
Benzo(a)anthracene	mg/L	0.0039	0.0000085	0.000033	0.000016	0.000030	0.000044	0.0000085	7425261
Benzo(b&j)fluoranthene	mg/L	0.0010	0.0000085	0.000047	0.000020	0.000044	0.000062	0.0000085	7425261
Benzo(k)fluoranthene	mg/L	0.00033	0.0000085	0.000016	<0.0000085	0.000018	0.000018	0.0000085	7425261
Benzo(g,h,i)perylene	mg/L	0.000088	0.0000085	0.000023	0.000010	0.000023	0.000029	0.0000085	7425261
Benzo(c)phenanthrene	mg/L	<0.00086(1)	0.00086	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	7425261
Benzo(a)pyrene	mg/L	0.00057	0.0000075	0.000030	0.000016	0.000040	0.000038	0.0000075	7425261
Benzo[e]pyrene	mg/L	0.00056	0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	7425261
Chrysene	mg/L	0.0029	0.0000085	0.000026	0.000011	0.000022	0.000039	0.0000085	7425261
Dibenz(a,h)anthracene	mg/L	0.000031	0.0000075	<0.0000075	<0.0000075	<0.0000075	0.000011	0.0000075	7425261
Fluoranthene	mg/L	0.040	0.000010	0.00017	0.00014	0.00015	0.00014	0.000010	7425261
Fluorene	mg/L	0.019	0.000050	0.00030	0.00030	0.00019	<0.000050	0.000050	7425261
Indeno(1,2,3-cd)pyrene	mg/L	0.000085	0.0000085	0.00018	<0.0000085	0.000018	0.000027	0.0000085	7425261
2-Methylnaphthalene	mg/L	0.0091	0.00010	0.00035	0.00035	0.00027	<0.00010	0.00010	7425261
Naphthalene	mg/L	0.017	0.00010	0.00041	0.00039	0.00022	<0.00010	0.00010	7425261
Phenanthrene	mg/L	0.023	0.000050	0.00067	0.00070	0.00041	0.00024	0.000050	7425261
Perylene	mg/L	0.000087	0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	7425261
Pyrene	mg/L	0.029	0.000020	0.00014	0.00012	0.00012	0.00010	0.000020	7425261
Quinoline	mg/L	<0.00020	0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	7425261
Surrogate Recovery (%)									
D10-ANTHRACENE (sur.)	%	100		90	92	102	96		7425261
D12-BENZO(A)PYRENE (sur.)	%	110		99	102	113	104		7425261
D8-ACENAPHTHYLENE (sur.)	%	108		93	99	105	107		7425261
TERPHENYL-D14 (sur.)	%	108		98	100	111	102		7425261

RDL = Reportable Detection Limit
(1) - Detection limits raised due to matrix interference.



Success Through Science®

Maxxam Job #: B422737
Report Date: 2014/03/28

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: CANADA CREOSOTE NORTH
Sampler Initials: LLG

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		JC4792	JC4793	JC4794	JC4795	JC4796	JC4811	JC4813		
Sampling Date		2014/03/20 09:15	2014/03/20 13:30	2014/03/20 14:30	2014/03/20 16:00	2014/03/20 17:30	2014/03/21 08:45	2014/03/21 10:00		
	UNITS	MW14-1A	MW14-4B	MW14-4A	MW14-5	MW14-6A	MW14-2	MW10-01	RDL	QC Batch
Volatiles										
Total Trihalomethanes	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7428202
Bromodichloromethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
Bromoform	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
Bromomethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7428202
Carbon tetrachloride	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
Chlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
Chlorodibromomethane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	7428202
Chloroethane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	7428202
Chloroform	mg/L	0.0014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
Chloromethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7428202
1,2-dibromoethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
1,2-dichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
1,3-dichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
1,4-dichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
1,1-dichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
1,2-dichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
1,1-dichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
cis-1,2-dichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
trans-1,2-dichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
Dichloromethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7428202
1,2-dichloropropane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
cis-1,3-dichloropropene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
trans-1,3-dichloropropene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
Methyl methacrylate	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
Methyl-tert-butylether (MTBE)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
Styrene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
1,1,1,2-tetrachloroethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7428202
1,1,2,2-tetrachloroethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7428202
Tetrachloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
1,2,3-trichlorobenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	7428202
1,2,4-trichlorobenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	7428202
1,3,5-trichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
1,1,1-trichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
1,1,2-trichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
Trichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202

RDL = Reportable Detection Limit



Success Through Science®

Maxxam Job #: B422737
Report Date: 2014/03/28

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: CANADA CREOSOTE NORTH
Sampler Initials: LLG

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		JC4792	JC4793	JC4794	JC4795	JC4796	JC4811	JC4813		
Sampling Date		2014/03/20 09:15	2014/03/20 13:30	2014/03/20 14:30	2014/03/20 16:00	2014/03/20 17:30	2014/03/21 08:45	2014/03/21 10:00		
	UNITS	MW14-1A	MW14-4B	MW14-4A	MW14-5	MW14-6A	MW14-2	MW10-01	RDL	QC Batch
Trichlorofluoromethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
1,2,4-trimethylbenzene	mg/L	0.016	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
1,3,5-trimethylbenzene	mg/L	0.0051	<0.00050	0.0019	<0.00050	0.0055	<0.00050	<0.00050	0.00050	7428202
Vinyl chloride	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7428202
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	100	98	98	99	97	98	100		7428202
4-Bromofluorobenzene (sur.)	%	99	98	102	99	96	97	103		7428202
D4-1,2-Dichloroethane (sur.)	%	78	106	93	91	87	86	91		7428202

RDL = Reportable Detection Limit



Success Through Science®

Maxxam Job #: B422737
Report Date: 2014/03/28

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: CANADA CREOSOTE NORTH
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Package 1	-1.0°C
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Each temperature is the average of up to three cooler temperatures taken at receipt

General Comments



Success Through Science®

Maxxam Job #: B422737
Report Date: 2014/03/28

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: CANADA CREOSOTE NORTH
Sampler Initials: LLG

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7425259	O-TERPHENYL (sur.)	2014/03/26	103	50 - 130	103	50 - 130	100	%		
7425259	F2 (C10-C16 Hydrocarbons)	2014/03/26	100	50 - 130	94	70 - 130	<0.10	mg/L	NC	40
7425261	D10-ANTHRACENE (sur.)	2014/03/25	111	50 - 130	109	50 - 130	103	%		
7425261	D12-BENZO(A)PYRENE (sur.)	2014/03/25	118	50 - 130	116	50 - 130	109	%		
7425261	D8-ACENAPHTHYLENE (sur.)	2014/03/25	128	50 - 130	112	50 - 130	104	%		
7425261	TERPHENYL-D14 (sur.)	2014/03/25	117	50 - 130	113	50 - 130	108	%		
7425261	Acenaphthene	2014/03/25	NC	50 - 130	113	50 - 130	<0.00010	mg/L	NC	40
7425261	Acenaphthylene	2014/03/25	NC	50 - 130	109	50 - 130	<0.00010	mg/L	NC	40
7425261	Acridine	2014/03/25	72	50 - 130	80	50 - 130	<0.00020	mg/L	NC	40
7425261	Anthracene	2014/03/25	NC	50 - 130	97	50 - 130	<0.000010	mg/L	4.0	40
7425261	Benzo(a)anthracene	2014/03/25	33(r)	50 - 130	108	50 - 130	<0.0000085	mg/L	NC	40
7425261	Benzo(b&i)fluoranthene	2014/03/25	25(r)	50 - 130	120	50 - 130	<0.0000085	mg/L	NC	40
7425261	Benzo(k)fluoranthene	2014/03/25	24(r)	50 - 130	107	50 - 130	<0.0000085	mg/L	NC	40
7425261	Benzo(g,h,i)perylene	2014/03/25	23(r)	50 - 130	111	50 - 130	<0.0000085	mg/L	NC	40
7425261	Benzo(c)phenanthrene	2014/03/25	61	50 - 130	108	50 - 130	<0.000050	mg/L	NC	40
7425261	Benzo(a)pyrene	2014/03/25	24(r)	50 - 130	112	50 - 130	<0.0000075	mg/L	NC	40
7425261	Benzo[e]pyrene	2014/03/25	26(r)	50 - 130	117	50 - 130	<0.000050	mg/L	NC	40
7425261	Chrysene	2014/03/25	31(r)	50 - 130	114	50 - 130	<0.0000085	mg/L	NC	40
7425261	Dibenz(a,h)anthracene	2014/03/25	22(r)	50 - 130	105	50 - 130	<0.0000075	mg/L	NC	40
7425261	Fluoranthene	2014/03/25	NC	50 - 130	102	50 - 130	<0.000010	mg/L	15.7	40
7425261	Fluorene	2014/03/25	NC	50 - 130	116	50 - 130	<0.000050	mg/L	0.2	40
7425261	Indeno(1,2,3-cd)pyrene	2014/03/25	23(r)	50 - 130	110	50 - 130	<0.0000085	mg/L	NC	40
7425261	2-Methylnaphthalene	2014/03/25	NC	50 - 130	90	50 - 130	<0.00010	mg/L	NC	40
7425261	Naphthalene	2014/03/25	NC	50 - 130	105	50 - 130	<0.00010	mg/L	NC	40
7425261	Phenanthrene	2014/03/25	NC	50 - 130	106	50 - 130	<0.000050	mg/L	3.5	40
7425261	Perylene	2014/03/25	25(r)	50 - 130	115	50 - 130	<0.000050	mg/L	NC	40
7425261	Pyrene	2014/03/25	NC	50 - 130	108	50 - 130	<0.000020	mg/L	13.0	40
7425261	Quinoline	2014/03/25	86	50 - 130	93	50 - 130	<0.00020	mg/L	NC	40
7427589	1,4-Difluorobenzene (sur.)	2014/03/25	114	70 - 130	109	70 - 130	110	%		
7427589	4-Bromofluorobenzene (sur.)	2014/03/25	104	70 - 130	107	70 - 130	105	%		
7427589	D4-1,2-Dichloroethane (sur.)	2014/03/25	119	70 - 130	111	70 - 130	109	%		
7427589	Benzene	2014/03/26	NC	70 - 130	87	70 - 130	<0.00040	mg/L	0.8	40
7427589	Toluene	2014/03/26	NC	70 - 130	81	70 - 130	<0.00040	mg/L	0.4	40
7427589	Ethylbenzene	2014/03/26	NC	70 - 130	82	70 - 130	<0.00040	mg/L	5.5	40
7427589	m & p-Xylene	2014/03/26	NC	70 - 130	82	70 - 130	<0.00080	mg/L	0.8	40
7427589	o-Xylene	2014/03/26	NC	70 - 130	80	70 - 130	<0.00040	mg/L	0.1	40
7427589	(C6-C10)	2014/03/26	NC	70 - 130	90	70 - 130	<0.10	mg/L	15.6	40
7427589	Xylenes (Total)	2014/03/26					<0.00080	mg/L	0.5	40
7427589	F1 (C6-C10) - BTEX	2014/03/26					<0.10	mg/L	NC	40
7428202	1,4-Difluorobenzene (sur.)	2014/03/25	99	70 - 130	100	70 - 130	98	%		



Success Through Science®

Maxxam Job #: B422737
Report Date: 2014/03/28

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: CANADA CREOSOTE NORTH
Sampler Initials: LLG

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7428202	4-Bromofluorobenzene (sur.)	2014/03/25	99	70 - 130	104	70 - 130	101	%		
7428202	D4-1,2-Dichloroethane (sur.)	2014/03/25	104	70 - 130	97	70 - 130	93	%		
7428202	Bromodichloromethane	2014/03/26	92	70 - 130	97	70 - 130	<0.00050	mg/L	NC	40
7428202	Bromoform	2014/03/26	86	70 - 130	96	70 - 130	<0.00050	mg/L	NC	40
7428202	Bromomethane	2014/03/26	92	70 - 130	97	70 - 130	<0.0020	mg/L	NC	40
7428202	Carbon tetrachloride	2014/03/26	92	70 - 130	102	70 - 130	<0.00050	mg/L	NC	40
7428202	Chlorobenzene	2014/03/26	90	70 - 130	96	70 - 130	<0.00050	mg/L	NC	40
7428202	Chlorodibromomethane	2014/03/26	94	70 - 130	100	70 - 130	<0.0010	mg/L	NC	40
7428202	Chloroethane	2014/03/26	90	70 - 130	97	70 - 130	<0.0010	mg/L	NC	40
7428202	Chloroform	2014/03/26	90	70 - 130	98	70 - 130	<0.00050	mg/L	NC	40
7428202	Chloromethane	2014/03/26	72	70 - 130	80	70 - 130	<0.0020	mg/L	NC	40
7428202	1,2-dibromoethane	2014/03/26	92	70 - 130	92	70 - 130	<0.00050	mg/L	NC	40
7428202	1,2-dichlorobenzene	2014/03/26	92	70 - 130	97	70 - 130	<0.00050	mg/L	NC	40
7428202	1,3-dichlorobenzene	2014/03/26	88	70 - 130	98	70 - 130	<0.00050	mg/L	NC	40
7428202	1,4-dichlorobenzene	2014/03/26	91	70 - 130	95	70 - 130	<0.00050	mg/L	NC	40
7428202	1,1-dichloroethane	2014/03/26	94	70 - 130	96	70 - 130	<0.00050	mg/L	NC	40
7428202	1,2-dichloroethane	2014/03/26	90	70 - 130	89	70 - 130	<0.00050	mg/L	NC	40
7428202	1,1-dichloroethene	2014/03/26	91	70 - 130	100	70 - 130	<0.00050	mg/L	NC	40
7428202	cis-1,2-dichloroethene	2014/03/26	NC	70 - 130	92	70 - 130	<0.00050	mg/L	NC	40
7428202	trans-1,2-dichloroethene	2014/03/26	92	70 - 130	96	70 - 130	<0.00050	mg/L	NC	40
7428202	Dichloromethane	2014/03/26	94	70 - 130	97	70 - 130	<0.0020	mg/L	NC	40
7428202	1,2-dichloropropane	2014/03/26	95	70 - 130	98	70 - 130	<0.00050	mg/L	NC	40
7428202	cis-1,3-dichloropropene	2014/03/26	103	70 - 130	99	70 - 130	<0.00050	mg/L	NC	40
7428202	trans-1,3-dichloropropene	2014/03/26	110	70 - 130	94	70 - 130	<0.00050	mg/L	NC	40
7428202	Methylmethacrylate	2014/03/26	95	70 - 130	86	70 - 130	<0.00050	mg/L	NC	40
7428202	Methyl-tert-butylether (MTBE)	2014/03/26	92	70 - 130	91	70 - 130	<0.00050	mg/L	NC	40
7428202	Styrene	2014/03/26	79	70 - 130	97	70 - 130	<0.00050	mg/L	NC	40
7428202	1,1,1,2-tetrachloroethane	2014/03/26	92	70 - 130	99	70 - 130	<0.0020	mg/L	NC	40
7428202	1,1,2,2-tetrachloroethane	2014/03/26	79	70 - 130	89	70 - 130	<0.0020	mg/L	NC	40
7428202	Tetrachloroethene	2014/03/26	NC	70 - 130	100	70 - 130	<0.00050	mg/L	14.2	40
7428202	1,2,3-trichlorobenzene	2014/03/26	94	70 - 130	94	70 - 130	<0.0010	mg/L	NC	40
7428202	1,2,4-trichlorobenzene	2014/03/26	93	70 - 130	96	70 - 130	<0.0010	mg/L	NC	40
7428202	1,3,5-trichlorobenzene	2014/03/26	94	70 - 130	99	70 - 130	<0.00050	mg/L	NC	40
7428202	1,1,1-trichloroethane	2014/03/26	88	70 - 130	95	70 - 130	<0.00050	mg/L	NC	40
7428202	1,1,2-trichloroethane	2014/03/26	94	70 - 130	93	70 - 130	<0.00050	mg/L	NC	40
7428202	Trichloroethene	2014/03/26	NC	70 - 130	92	70 - 130	<0.00050	mg/L	NC	40
7428202	Trichlorofluoromethane	2014/03/26	84	70 - 130	93	70 - 130	<0.00050	mg/L	NC	40
7428202	1,2,4-trimethylbenzene	2014/03/26	91	70 - 130	100	70 - 130	<0.00050	mg/L	NC	40



Success Through Science®

Maxxam Job #: B422737
Report Date: 2014/03/28

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: CANADA CREOSOTE NORTH
Sampler Initials: LLG

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7428202	1,3,5-trimethylbenzene	2014/03/26	94	70 - 130	105	70 - 130	<0.00050	mg/L	NC	40
7428202	Vinyl chloride	2014/03/26	64 ⁽¹⁾	70 - 130	88	70 - 130	<0.00050	mg/L	NC	40

N/A = Not Applicable

RPD = Relative Percent Difference

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 spiked amount was not sufficiently significant to permit a reliable recovery calculation.

NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

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

Validation Signature Page

Maxxam Job #: B422737

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



Janet Gao, Senior Analyst, Organics Department

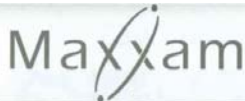


Luba Shymushovska, Senior Analyst, Organic Department



Michael Sheppard, Organics Supervisor

=====
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Calgary: 4000 11st St. NE, T2E 6P6 Ph: (403) 291-3077, Fax: (403) 735-2240, Toll free: (800) 366-7247
 Edmonton: 9331 - 48 Street, T6B 2R4 Ph: (780) 577-7100, Fax: (780) 450-4187, Toll free: (877) 465-8889
 www.maxxamanalytics.com

Chain of Custody **A018979**

Page: 2 of 2

Company: **GOLDER ASSOCIATES LTD**
 Contact: **JULIE BURGHARDT**
 Address: **102, 2535 3rd AVE SE, CALGARY**
 Prov: **ALBERTA** PC: **T2A 7W5**
 Contact #: Ph: **403 299 5600** Cell: **—**

Report To: **Same as Invoice**
 Report Distribution (E-Mail):
Julie.Burghardt@golder.com
CSNDataQuality@golder.com

REGULATORY GUIDELINES:
 AT1
 CCME
 Regulated Drinking Water
 Other:

All samples are held for 60 calendar days after sample receipt, unless specified otherwise.
 PO #: **13-1324-0204**
 Project # / Name: **CANADA CREOSOTE NORTH**
 Site Location: **NORTH BOW**
 Quote #:
 Sampled By: **LORENA LA OSA GOMEZ**
 SERVICE REQUESTED: RUSH (Contact lab to reserve)
 REGULAR (5 to 7 Days)
 Date Required:

Sample ID	Depth (unit)	Matrix GW / SW Soil	Date/Time Sampled YY/MM/DD 24:00	SOIL				WATER				Other Analysis	HOLD - Do not Analyze	# of Containers Submitted	
				BTEX F1-F4	Sieve (75 micron)	Regulated Metals (CCME / AT1)	Salinity 4	Assessment ICP Metals	Basic Class II Landfill	BTEX F1	BTEX F1-F2				BTEX F1-F4
1 MW14-2	6W		14/03/21 8:45 am												4
2 MW10-01	6W		14/03/19 9:00 am												1
3 MW10-01	6W		14/03/21 10:00 am												3
4															
5															
6															
7															
8															
9															
10															
11															
12															

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

Relinquished By (Signature/Print): **Lorena La Osa Gomez** Date (YY/MM/DD): **14/03/21** Time (24:00): **4:10 PM**

LAB USE ONLY

Received By: **Jasenski** Date: **2014/03/21** Time: **1318** Maxxam Job #:
 Custody Seal: **Yes** Temperature: Ice: **4**

Special Instructions: **NW14-2 → Limited quantity of water. (only 1x 250L)**
Priority PAH above F2. Please analyse @ PAH @ F2.
Limited quantity of water → Please analyse @ PAH @ F2.
 # of Jars Used & Not Submitted: **4**
 Page 14 of 14

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Your Project #: 13-1324-0204
 Site Location: ESRO NORTH BOW
 Your C.O.C. #: A145184

Attention: Julie Burghardt

GOLDER ASSOCIATES LTD.
 CALGARY - NATIONAL CONTRACT
 102, 2535 - 3rd Avenue SE
 CALGARY, AB
 CANADA T2A 7W5

Report Date: 2014/06/16
Report #: R1586548
Version: 1

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B447865

Received: 2014/06/10, 10:25

Sample Matrix: Water
 # Samples Received: 1

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
BTEX/F1 in Water by HS GC/MS	1	N/A	2014/06/15	AB SOP-00039	CCME, EPA 8260C
CCME Hydrocarbons in Water (F2; C10-C16)	1	2014/06/13	2014/06/14	AB SOP-00040 AB SOP-00037	EPA3510C/CCME PHCCWS
Benzo[a]pyrene Equivalency	1	N/A	2014/06/16	AB SOP-00003	EPA 8270D
PAH in Water by GC/MS (1)	1	2014/06/13	2014/06/14	AB SOP-00003 AB SOP-00037	EPA 3510C/8270D
Total Trihalomethanes Calculation	1	N/A	2014/06/16	CAL SOP-00104	EPA 8260 C
VOCs in Water by HS GC/MS (Std List)	1	N/A	2014/06/12	CAL SOP-00227	EPA 8260 C

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
 * Results relate only to the items tested.

(1) 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

 Wendy Sears
 17 Jun 2014 17:21:54 -06:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Wendy Sears, Project manager
 Email: WSears@maxxam.ca
 Phone# (403) 291-3077

=====
 Maxxam 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.

Total cover pages: 1



Success Through Science®

Maxxam Job #: B447865
Report Date: 2014/06/16

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: ESRO NORTH BOW
Sampler Initials: JL

AT1 BTEX AND F1-F2 (WATER)

Maxxam ID		JU7703	JU7703		
Sampling Date		2014/06/06 14:00	2014/06/06 14:00		
	UNITS	MW14-8	MW14-8 Lab-Dup	RDL	QC Batch
Hydrocarbons					
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10		0.10	7523251
Surrogate Recovery (%)					
O-TERPHENYL (sur.)	%	100			7523251
Volatiles					
Benzene	mg/L	<0.00040	<0.00040	0.00040	7524961
Toluene	mg/L	<0.00040	<0.00040	0.00040	7524961
Ethylbenzene	mg/L	<0.00040	<0.00040	0.00040	7524961
m & p-Xylene	mg/L	<0.00080	<0.00080	0.00080	7524961
o-Xylene	mg/L	<0.00040	<0.00040	0.00040	7524961
Xylenes (Total)	mg/L	<0.00080	<0.00080	0.00080	7524961
F1 (C6-C10) - BTEX	mg/L	<0.10	<0.10	0.10	7524961
(C6-C10)	mg/L	<0.10	<0.10	0.10	7524961
Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	107	107		7524961
4-Bromofluorobenzene (sur.)	%	102	101		7524961
D4-1,2-Dichloroethane (sur.)	%	89	90		7524961

RDL = Reportable Detection Limit



Success Through Science®

Maxxam Job #: B447865
Report Date: 2014/06/16

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: ESRO NORTH BOW
Sampler Initials: JL

SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		JU7703		
Sampling Date		2014/06/06 14:00		
	UNITS	MW14-8	RDL	QC Batch
Polycyclic Aromatics				
Benzo[a]pyrene equivalency	ug/L	0.034	0.010	7520691
Acenaphthene	mg/L	<0.00010	0.00010	7523243
Acenaphthylene	mg/L	<0.00010	0.00010	7523243
Acridine	mg/L	<0.00020	0.00020	7523243
Anthracene	mg/L	0.00027	0.00010	7523243
Benzo(a)anthracene	mg/L	0.00026	0.000085	7523243
Benzo(b&i)fluoranthene	mg/L	0.00041	0.000085	7523243
Benzo(k)fluoranthene	mg/L	0.00011	0.000085	7523243
Benzo(g,h,i)perylene	mg/L	0.00023	0.000085	7523243
Benzo(c)phenanthrene	mg/L	<0.00050	0.00050	7523243
Benzo(a)pyrene	mg/L	0.00021	0.000075	7523243
Benzo[e]pyrene	mg/L	<0.00050	0.00050	7523243
Chrysene	mg/L	0.00034	0.000085	7523243
Dibenz(a,h)anthracene	mg/L	<0.000075	0.000075	7523243
Fluoranthene	mg/L	0.00020	0.00010	7523243
Fluorene	mg/L	<0.00050	0.00050	7523243
Indeno(1,2,3-cd)pyrene	mg/L	0.00014	0.000085	7523243
2-Methylnaphthalene	mg/L	<0.00010	0.00010	7523243
Naphthalene	mg/L	<0.00010	0.00010	7523243
Phenanthrene	mg/L	0.00028	0.00050	7523243
Perylene	mg/L	<0.00050	0.00050	7523243
Pyrene	mg/L	0.00017	0.00020	7523243
Quinoline	mg/L	<0.00020	0.00020	7523243
Surrogate Recovery (%)				
D10-ANTHRACENE (sur.)	%	103		7523243
D12-BENZO(A)PYRENE (sur.)	%	105		7523243
D8-ACENAPHTHYLENE (sur.)	%	98		7523243
TERPHENYL-D14 (sur.)	%	109		7523243

RDL = Reportable Detection Limit



Success Through Science®

Maxxam Job #: B447865
Report Date: 2014/06/16

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: ESRO NORTH BOW
Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		JU7703		
Sampling Date		2014/06/06 14:00		
	UNITS	MW14-8	RDL	QC Batch
Volatiles				
Total Trihalomethanes	mg/L	<0.0020	0.0020	7520645
Bromodichloromethane	mg/L	<0.00050	0.00050	7522357
Bromoform	mg/L	<0.00050	0.00050	7522357
Bromomethane	mg/L	<0.0020	0.0020	7522357
Carbon tetrachloride	mg/L	<0.00050	0.00050	7522357
Chlorobenzene	mg/L	<0.00050	0.00050	7522357
Chlorodibromomethane	mg/L	<0.0010	0.0010	7522357
Chloroethane	mg/L	<0.0010	0.0010	7522357
Chloroform	mg/L	<0.00050	0.00050	7522357
Chloromethane	mg/L	<0.0020	0.0020	7522357
1,2-dibromoethane	mg/L	<0.00050	0.00050	7522357
1,2-dichlorobenzene	mg/L	<0.00050	0.00050	7522357
1,3-dichlorobenzene	mg/L	<0.00050	0.00050	7522357
1,4-dichlorobenzene	mg/L	<0.00050	0.00050	7522357
1,1-dichloroethane	mg/L	<0.00050	0.00050	7522357
1,2-dichloroethane	mg/L	<0.00050	0.00050	7522357
1,1-dichloroethene	mg/L	<0.00050	0.00050	7522357
cis-1,2-dichloroethene	mg/L	<0.00050	0.00050	7522357
trans-1,2-dichloroethene	mg/L	<0.00050	0.00050	7522357
Dichloromethane	mg/L	<0.0020	0.0020	7522357
1,2-dichloropropane	mg/L	<0.00050	0.00050	7522357
cis-1,3-dichloropropene	mg/L	<0.00050	0.00050	7522357
trans-1,3-dichloropropene	mg/L	<0.00050	0.00050	7522357
Methyl methacrylate	mg/L	<0.00050	0.00050	7522357
Methyl-tert-butylether (MTBE)	mg/L	<0.00050	0.00050	7522357
Styrene	mg/L	<0.00050	0.00050	7522357
1,1,1,2-tetrachloroethane	mg/L	<0.0020	0.0020	7522357
1,1,2,2-tetrachloroethane	mg/L	<0.0020	0.0020	7522357
Tetrachloroethene	mg/L	<0.00050	0.00050	7522357
1,2,3-trichlorobenzene	mg/L	<0.0010	0.0010	7522357
1,2,4-trichlorobenzene	mg/L	<0.0010	0.0010	7522357
1,3,5-trichlorobenzene	mg/L	<0.00050	0.00050	7522357
1,1,1-trichloroethane	mg/L	<0.00050	0.00050	7522357
1,1,2-trichloroethane	mg/L	<0.00050	0.00050	7522357
Trichloroethene	mg/L	<0.00050	0.00050	7522357
Trichlorofluoromethane	mg/L	<0.00050	0.00050	7522357

RDL = Reportable Detection Limit



Success Through Science®

Maxxam Job #: B447865
Report Date: 2014/06/16

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: ESRO NORTH BOW
Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		JU7703		
Sampling Date		2014/06/06 14:00		
	UNITS	MW14-8	RDL	QC Batch
1,2,4-trimethylbenzene	mg/L	<0.00050	0.00050	7522357
1,3,5-trimethylbenzene	mg/L	<0.00050	0.00050	7522357
Vinyl chloride	mg/L	<0.00050	0.00050	7522357
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	99		7522357
4-Bromofluorobenzene (sur.)	%	98		7522357
D4-1,2-Dichloroethane (sur.)	%	95		7522357

RDL = Reportable Detection Limit



Success Through Science®

Maxxam Job #: B447865
Report Date: 2014/06/16

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: ESRO NORTH BOW
Sampler Initials: JL

Package 1	4.7°C
-----------	-------

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

General Comments



Success Through Science®

Maxxam Job #: B447865
Report Date: 2014/06/16

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: ESRO NORTH BOW
Sampler Initials: JL

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7522357	1,4-Difluorobenzene (sur.)	2014/06/12	108	70 - 130	110	70 - 130	97	%		
7522357	4-Bromofluorobenzene (sur.)	2014/06/12	103	70 - 130	103	70 - 130	97	%		
7522357	D4-1,2-Dichloroethane (sur.)	2014/06/12	126	70 - 130	110	70 - 130	98	%		
7522357	Bromodichloromethane	2014/06/12	108	70 - 130	108	70 - 130	<0.00050	mg/L	NC	40
7522357	Bromoform	2014/06/12	101	70 - 130	98	70 - 130	<0.00050	mg/L	NC	40
7522357	Bromomethane	2014/06/12	97	70 - 130	87	70 - 130	<0.0020	mg/L	NC	40
7522357	Carbon tetrachloride	2014/06/12	97	70 - 130	96	70 - 130	<0.00050	mg/L	NC	40
7522357	Chlorobenzene	2014/06/12	94	70 - 130	95	70 - 130	<0.00050	mg/L	NC	40
7522357	Chlorodibromomethane	2014/06/12	102	70 - 130	101	70 - 130	<0.0010	mg/L	NC	40
7522357	Chloroethane	2014/06/12	96	70 - 130	98	70 - 130	<0.0010	mg/L	NC	40
7522357	Chloroform	2014/06/12	102	70 - 130	104	70 - 130	<0.00050	mg/L	NC	40
7522357	Chloromethane	2014/06/12	87	70 - 130	88	70 - 130	<0.0020	mg/L	NC	40
7522357	1,2-dibromoethane	2014/06/12	95	70 - 130	95	70 - 130	<0.00050	mg/L	NC	40
7522357	1,2-dichlorobenzene	2014/06/12	93	70 - 130	94	70 - 130	<0.00050	mg/L	NC	40
7522357	1,3-dichlorobenzene	2014/06/12	89	70 - 130	90	70 - 130	<0.00050	mg/L	NC	40
7522357	1,4-dichlorobenzene	2014/06/12	94	70 - 130	94	70 - 130	<0.00050	mg/L	NC	40
7522357	1,1-dichloroethane	2014/06/12	96	70 - 130	97	70 - 130	<0.00050	mg/L	NC	40
7522357	1,2-dichloroethane	2014/06/12	103	70 - 130	105	70 - 130	<0.00050	mg/L	NC	40
7522357	1,1-dichloroethene	2014/06/12	96	70 - 130	98	70 - 130	<0.00050	mg/L	NC	40
7522357	cis-1,2-dichloroethene	2014/06/12	99	70 - 130	100	70 - 130	<0.00050	mg/L	NC	40
7522357	trans-1,2-dichloroethene	2014/06/12	95	70 - 130	97	70 - 130	<0.00050	mg/L	NC	40
7522357	Dichloromethane	2014/06/12	94	70 - 130	95	70 - 130	<0.0020	mg/L	NC	40
7522357	1,2-dichloropropane	2014/06/12	101	70 - 130	103	70 - 130	<0.00050	mg/L	NC	40
7522357	cis-1,3-dichloropropene	2014/06/12	124	70 - 130	104	70 - 130	<0.00050	mg/L	NC	40
7522357	trans-1,3-dichloropropene	2014/06/12	126	70 - 130	95	70 - 130	<0.00050	mg/L	NC	40
7522357	Methylmethacrylate	2014/06/12	99	70 - 130	101	70 - 130	<0.00050	mg/L	NC	40
7522357	Methyl-tert-butylether (MTBE)	2014/06/12	95	70 - 130	97	70 - 130	<0.00050	mg/L	NC	40
7522357	Styrene	2014/06/12	95	70 - 130	95	70 - 130	<0.00050	mg/L	NC	40
7522357	1,1,1,2-tetrachloroethane	2014/06/12	96	70 - 130	94	70 - 130	<0.0020	mg/L	NC	40
7522357	1,1,2,2-tetrachloroethane	2014/06/12	95	70 - 130	96	70 - 130	<0.0020	mg/L	NC	40
7522357	Tetrachloroethene	2014/06/12	89	70 - 130	89	70 - 130	<0.00050	mg/L	NC	40
7522357	1,2,3-trichlorobenzene	2014/06/12	89	70 - 130	92	70 - 130	<0.0010	mg/L	NC	40
7522357	1,2,4-trichlorobenzene	2014/06/12	87	70 - 130	90	70 - 130	<0.0010	mg/L	NC	40
7522357	1,3,5-trichlorobenzene	2014/06/12	87	70 - 130	90	70 - 130	<0.00050	mg/L	NC	40
7522357	1,1,1-trichloroethane	2014/06/12	95	70 - 130	95	70 - 130	<0.00050	mg/L	NC	40
7522357	1,1,2-trichloroethane	2014/06/12	104	70 - 130	105	70 - 130	<0.00050	mg/L	NC	40
7522357	Trichloroethene	2014/06/12	92	70 - 130	93	70 - 130	<0.00050	mg/L	NC	40
7522357	Trichlorofluoromethane	2014/06/12	86	70 - 130	87	70 - 130	<0.00050	mg/L	NC	40
7522357	1,2,4-trimethylbenzene	2014/06/12	89	70 - 130	89	70 - 130	<0.00050	mg/L	NC	40
7522357	1,3,5-trimethylbenzene	2014/06/12	93	70 - 130	92	70 - 130	<0.00050	mg/L	NC	40



Success Through Science®

Maxxam Job #: B447865
Report Date: 2014/06/16

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: ESRO NORTH BOW
Sampler Initials: JL

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7522357	Vinyl chloride	2014/06/12	68 ⁽¹⁾	70 - 130	69 ⁽¹⁾	70 - 130	<0.00050	mg/L	NC	40
7523243	D10-ANTHRACENE (sur.)	2014/06/14	108	50 - 130	108	50 - 130	109	%		
7523243	D12-BENZO(A)PYRENE (sur.)	2014/06/14	110	50 - 130	111	50 - 130	105	%		
7523243	D8-ACENAPHTHYLENE (sur.)	2014/06/14	103	50 - 130	102	50 - 130	104	%		
7523243	TERPHENYL-D14 (sur.)	2014/06/14	111	50 - 130	111	50 - 130	111	%		
7523243	Acenaphthene	2014/06/14	100	50 - 130	98	50 - 130	<0.00010	mg/L	NC	40
7523243	Acenaphthylene	2014/06/14	103	50 - 130	102	50 - 130	<0.00010	mg/L	NC	40
7523243	Acridine	2014/06/14	51	50 - 130	81	50 - 130	<0.00020	mg/L	NC	40
7523243	Anthracene	2014/06/14	92	50 - 130	95	50 - 130	<0.000010	mg/L	NC	40
7523243	Benzo(a)anthracene	2014/06/14	63	50 - 130	101	50 - 130	<0.0000085	mg/L	NC	40
7523243	Benzo(b&j)fluoranthene	2014/06/14	59	50 - 130	102	50 - 130	<0.0000085	mg/L	NC	40
7523243	Benzo(k)fluoranthene	2014/06/14	63	50 - 130	107	50 - 130	<0.0000085	mg/L	NC	40
7523243	Benzo(g,h,i)perylene	2014/06/14	61	50 - 130	104	50 - 130	<0.0000085	mg/L	NC	40
7523243	Benzo(c)phenanthrene	2014/06/14	73	50 - 130	101	50 - 130	<0.000050	mg/L	NC	40
7523243	Benzo(a)pyrene	2014/06/14	63	50 - 130	107	50 - 130	<0.0000075	mg/L	NC	40
7523243	Benzo(e)pyrene	2014/06/14	66	50 - 130	111	50 - 130	<0.000050	mg/L	NC	40
7523243	Chrysene	2014/06/14	65	50 - 130	107	50 - 130	<0.0000085	mg/L	NC	40
7523243	Dibenz(a,h)anthracene	2014/06/14	60	50 - 130	101	50 - 130	<0.0000075	mg/L	NC	40
7523243	Fluoranthene	2014/06/14	88	50 - 130	108	50 - 130	<0.000010	mg/L	NC	40
7523243	Fluorene	2014/06/14	100	50 - 130	97	50 - 130	<0.000050	mg/L	NC	40
7523243	Indeno(1,2,3-cd)pyrene	2014/06/14	61	50 - 130	103	50 - 130	<0.0000085	mg/L	NC	40
7523243	2-Methylnaphthalene	2014/06/14	95	50 - 130	85	50 - 130	<0.00010	mg/L	NC	40
7523243	Naphthalene	2014/06/14	95	50 - 130	86	50 - 130	<0.00010	mg/L	NC	40
7523243	Phenanthrene	2014/06/14	90	50 - 130	98	50 - 130	<0.000050	mg/L	NC	40
7523243	Perylene	2014/06/14	64	50 - 130	108	50 - 130	<0.000050	mg/L	NC	40
7523243	Pyrene	2014/06/14	91	50 - 130	114	50 - 130	<0.000020	mg/L	NC	40
7523243	Quinoline	2014/06/14	80	50 - 130	84	50 - 130	<0.00020	mg/L	NC	40
7523251	O-TERPHENYL (sur.)	2014/06/14	103	50 - 130	94	50 - 130	98	%		
7523251	F2 (C10-C16 Hydrocarbons)	2014/06/14	100	50 - 130	94	70 - 130	<0.10	mg/L	NC	40
7524961	1,4-Difluorobenzene (sur.)	2014/06/15	107	70 - 130	108	70 - 130	110	%		
7524961	4-Bromofluorobenzene (sur.)	2014/06/15	102	70 - 130	101	70 - 130	102	%		
7524961	D4-1,2-Dichloroethane (sur.)	2014/06/15	90	70 - 130	89	70 - 130	90	%		
7524961	Benzene	2014/06/15	89	70 - 130	82	70 - 130	<0.00040	mg/L	NC	40
7524961	Toluene	2014/06/15	87	70 - 130	81	70 - 130	<0.00040	mg/L	NC	40
7524961	Ethylbenzene	2014/06/15	89	70 - 130	83	70 - 130	<0.00040	mg/L	NC	40
7524961	m & p-Xylene	2014/06/15	89	70 - 130	83	70 - 130	<0.00080	mg/L	NC	40
7524961	o-Xylene	2014/06/15	90	70 - 130	84	70 - 130	<0.00040	mg/L	NC	40
7524961	(C6-C10)	2014/06/15	86	70 - 130	81	70 - 130	<0.10	mg/L	NC	40



Success Through Science®

Maxxam Job #: B447865
Report Date: 2014/06/16

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: ESRO NORTH BOW
Sampler Initials: JL

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7524961	Xylenes (Total)	2014/06/15					<0.00080	mg/L	NC	40
7524961	F1 (C6-C10) - BTEX	2014/06/15					<0.10	mg/L	NC	40

N/A = Not Applicable

RPD = Relative Percent Difference

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 (one or both samples < 5x RDL).

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



Validation Signature Page

Maxxam Job #: B447865

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

Janet Gao, Senior Analyst, Organics Department

Michael Sheppard, Organics Supervisor

=====
Maxxam 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.



Category: 4000 19th St. NE, T2E 8P8. Ph: (403) 291-3077, Fax: (403) 735-2240, Toll free: (800) 386-7247
 Edmonton: 9331 - 48 Street, T6B 2R4. Ph: (780) 577-7100, Fax: (780) 450-4187, Toll free: (877) 465-8889
 www.maxxamanalytics.com

Chain of Custody **A145184**
 Page: 1 of 1

Company:	Invoice To: <u>Golder</u> <input type="checkbox"/> C/O Report Address	Report To:	Same as Invoice <input checked="" type="checkbox"/>	Report Distribution (E-Mail):	REGULATORY GUIDELINES: <input checked="" type="checkbox"/> AT1 <input type="checkbox"/> CCME <input type="checkbox"/> Regulated Drinking Water <input type="checkbox"/> Other:
Contact:	<u>Julie Burchardt</u>			<u>john.holt@golder.com</u>	
Address:	<u>102, 2535 - 3rd Ave SE Calgary</u>			<u>maxxam@golder.com</u>	
Contact #s:	Prov: <u>AB</u> PC: <u>QA7WS</u> Cell: <u>403-299-5600</u>			<u>csauditquality@golder.com</u>	

All samples are held for 60 calendar days after sample receipt, unless specified otherwise.

PO #:	Project # / Name:	Site Location:	Quote #:	Sampled By:
	<u>ESRO North Bay 13-1324-0204</u>	<u>Golder 2014</u>	<u>26</u>	<u>JL</u>

SERVICE REQUESTED:	<input type="checkbox"/> RUSH (Contact lab to reserve) Date Required:
	<input checked="" type="checkbox"/> REGULAR (5 to 7 Days)

Sample ID	Depth (unit)	Matrix GW / SW / Soil	Date/Time Sampled YY/MM/DD 24:00	SOIL				WATER				Other Analysis		# of Containers Submitted	
				BTEX F1-F4	Sieve (75 micron)	Regulated Metals (CCME / AT1)	Selenium 4	Assessment ICP Metals	Basic Class II Landfill	BTEX F1	BTEX F1-F2	Regulated Metals (CCME / AT1)	Mercury		PAH
1 <u>MW14-8</u>	<u>-</u>	<u>GW</u>	<u>Jun 6 14:00</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<u>10</u>
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															

10-Jun-14 10:25
 Wendy Sears
 B447865
 HT4
 INS-0063

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

Relinquished By (Signature/Print): <u>Jon Lewis</u>	Date (YY/MM/DD): <u>June 10 2014</u>	Time (24:00): <u>10:24</u>	LAB USE ONLY
Relinquished By (Signature/Print):	Date (YY/MM/DD):	Time (24:00):	Received By: <u>Sane Muisonda</u> Date: <u>2014/06/10</u> Time: <u>10:25</u>
Special Instructions:	Page 11 of 11 of Jars Used & Not Submitted	Maxxam Job #:	Custody Seal: <u>Y</u> Temperature: <u>4,4,6</u> Ice: <u>Y</u>

Your Project #: 13-1324-0204
 Site Location: 3000, CREOSOTE NORTH Q2
 Your C.O.C. #: A145185

Attention: Julie Burghardt

GOLDER ASSOCIATES LTD.
 CALGARY - NATIONAL CONTRACT
 102, 2535 - 3rd Avenue SE
 CALGARY, AB
 CANADA T2A 7W5

Report Date: 2014/06/18
Report #: R1588181
Version: 1

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B448375

Received: 2014/06/11, 12:27


Sample Matrix: Water
 # Samples Received: 7

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
BTEX/F1 in Water by HS GC/MS	6	N/A	2014/06/17	AB SOP-00039	CCME, EPA 8260C
CCME Hydrocarbons in Water (F2; C10-C16)	6	2014/06/15	2014/06/17	AB SOP-00040 AB SOP-00037	EPA3510C/CCME PHCCWS
Benzo[a]pyrene Equivalency	6	N/A	2014/06/18	AB SOP-00003	EPA 8270D
PAH in Water by GC/MS (1)	5	2014/06/15	2014/06/17	AB SOP-00003 AB SOP-00037	EPA 3510C/8270D
PAH in Water by GC/MS (1)	1	2014/06/15	2014/06/18	AB SOP-00003 AB SOP-00037	EPA 3510C/8270D
Total Trihalomethanes Calculation	2	N/A	2014/06/16	CAL SOP-00104	EPA 8260 C
Total Trihalomethanes Calculation	4	N/A	2014/06/17	CAL SOP-00104	EPA 8260 C
VOCs in Water by HS GC/MS (Std List)	6	N/A	2014/06/13	CAL SOP-00227	EPA 8260 C

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
 * Results relate only to the items tested.

(1) 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

 Wendy Sears
 18 Jun 2014 18:50:25 -06:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Wendy Sears, Project manager
 Email: WSears@maxxam.ca
 Phone# (403) 291-3077

Maxxam 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.

Total cover pages: 1



Success Through Science®

Maxxam Job #: B448375
Report Date: 2014/06/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: 3000, CREOSOTE NORTH Q2
Sampler Initials: JL

AT1 BTEX AND F1-F2 (WATER)

Maxxam ID		JV1000	JV1001	JV1002	JV1003	JV1004		
Sampling Date		2014/06/11 10:00	2014/06/11 10:45	2014/06/11 11:00	2014/06/11 09:30	2014/06/11 10:20		
	UNITS	MW14-4A	MW14-6A	MW14-2	MW1	FIELD BLANK	RDL	QC Batch
Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	mg/L	5.2	0.22	<0.10	5.1	<0.10	0.10	7524682
Surrogate Recovery (%)								
O-TERPHENYL (sur.)	%	103	94	97	109	101		7524682
Volatiles								
Benzene	mg/L	0.0041	0.0014	<0.00040	0.0041	<0.00040	0.00040	7526689
Toluene	mg/L	0.013	<0.00040	<0.00040	0.013	<0.00040	0.00040	7526689
Ethylbenzene	mg/L	0.027	<0.00040	<0.00040	0.028	<0.00040	0.00040	7526689
m & p-Xylene	mg/L	0.088	<0.00080	<0.00080	0.090	<0.00080	0.00080	7526689
o-Xylene	mg/L	0.089	0.00051	<0.00040	0.091	<0.00040	0.00040	7526689
Xylenes (Total)	mg/L	0.18	<0.00080	<0.00080	0.18	<0.00080	0.00080	7526689
F1 (C6-C10) - BTEX	mg/L	0.42	<0.10	<0.10	0.47	<0.10	0.10	7526689
(C6-C10)	mg/L	0.65	<0.10	<0.10	0.70	<0.10	0.10	7526689
Surrogate Recovery (%)								
1,4-Difluorobenzene (sur.)	%	101	103	103	102	103		7526689
4-Bromofluorobenzene (sur.)	%	104	100	100	105	101		7526689
D4-1,2-Dichloroethane (sur.)	%	101	99	100	99	99		7526689

RDL = Reportable Detection Limit



Success Through Science®

Maxxam Job #: B448375
 Report Date: 2014/06/18

GOLDER ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 3000, CREOSOTE NORTH Q2
 Sampler Initials: JL

AT1 BTEX AND F1 (WATER)

Maxxam ID		JV1006		
Sampling Date		2014/06/09 10:00		
	UNITS	MW14-7	RDL	QC Batch
Volatiles				
Benzene	mg/L	<0.00040	0.00040	7526689
Toluene	mg/L	<0.00040	0.00040	7526689
Ethylbenzene	mg/L	<0.00040	0.00040	7526689
m & p-Xylene	mg/L	<0.00080	0.00080	7526689
o-Xylene	mg/L	<0.00040	0.00040	7526689
Xylenes (Total)	mg/L	<0.00080	0.00080	7526689
F1 (C6-C10) - BTEX	mg/L	<0.10	0.10	7526689
(C6-C10)	mg/L	<0.10	0.10	7526689
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	104		7526689
4-Bromofluorobenzene (sur.)	%	101		7526689
D4-1,2-Dichloroethane (sur.)	%	98		7526689

AT1 F2 (WATER)

Maxxam ID		JV1005		
Sampling Date		2014/06/10 09:00		
	UNITS	MW14-7	RDL	QC Batch
Hydrocarbons				
F2 (C10-C16 Hydrocarbons)	mg/L	<0.30	0.30	7524682
Surrogate Recovery (%)				
O-TERPHENYL (sur.)	%	93		7524682

RDL = Reportable Detection Limit



Success Through Science®

Maxxam Job #: B448375
Report Date: 2014/06/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: 3000, CREOSOTE NORTH Q2
Sampler Initials: JL

SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		JV1000		JV1001		
Sampling Date		2014/06/11 10:00		2014/06/11 10:45		
	UNITS	MW14-4A	RDL	MW14-6A	RDL	QC Batch
Polycyclic Aromatics						
Benzo[a]pyrene equivalency	ug/L	12	0.010	0.19	0.010	7522460
Acenaphthene	mg/L	0.13 ⁽¹⁾	0.010	0.020	0.00010	7524676
Acenaphthylene	mg/L	0.0069	0.00010	0.00031	0.00010	7524676
Acridine	mg/L	0.0044	0.00020	<0.00020	0.00020	7524676
Anthracene	mg/L	0.037	0.00010	0.0019	0.00010	7524676
Benzo(a)anthracene	mg/L	0.017	0.000085	0.00066	0.000085	7524676
Benzo(b&j)fluoranthene	mg/L	0.011	0.000085	0.00018	0.000085	7524676
Benzo(k)fluoranthene	mg/L	0.0036	0.000085	0.000053	0.000085	7524676
Benzo(g,h,i)perylene	mg/L	0.0027	0.000085	0.000015	0.000085	7524676
Benzo(c)phenanthrene	mg/L	<0.0027 ⁽²⁾	0.0027	<0.00016 ⁽²⁾	0.00016	7524676
Benzo(a)pyrene	mg/L	0.0071	0.000075	0.000091	0.000075	7524676
Benzo[e]pyrene	mg/L	0.0059	0.000050	0.000099	0.000050	7524676
Chrysene	mg/L	0.0097	0.000085	0.00042	0.000085	7524676
Dibenz(a,h)anthracene	mg/L	0.00086	0.000075	<0.000075	0.000075	7524676
Fluoranthene	mg/L	0.075 ⁽¹⁾	0.0010	0.0051	0.000010	7524676
Fluorene	mg/L	0.095 ⁽¹⁾	0.0050	0.0097	0.000050	7524676
Indeno(1,2,3-cd)pyrene	mg/L	0.0028	0.000085	0.000013	0.000085	7524676
2-Methylnaphthalene	mg/L	0.23 ⁽¹⁾	0.010	0.015	0.00010	7524676
Naphthalene	mg/L	1.7 ⁽¹⁾	0.010	0.049 ⁽¹⁾	0.0010	7524676
Phenanthrene	mg/L	0.19 ⁽¹⁾	0.0050	0.010	0.000050	7524676
Perylene	mg/L	0.0016	0.000050	<0.000050	0.000050	7524676
Pyrene	mg/L	0.053 ⁽¹⁾	0.0020	0.0038	0.000020	7524676
Quinoline	mg/L	0.0021	0.00020	<0.00020	0.00020	7524676
Surrogate Recovery (%)						
D10-ANTHRACENE (sur.)	%	100		104		7524676
D12-BENZO(A)PYRENE (sur.)	%	109		120		7524676
D8-ACENAPHTHYLENE (sur.)	%	91		87		7524676
TERPHENYL-D14 (sur.)	%	98		101		7524676

RDL = Reportable Detection Limit

(1) - Detection limits raised due to dilution to bring analyte within the calibrated range.

(2) - Detection limits raised due to matrix interference.



Success Through Science®

Maxxam Job #: B448375
Report Date: 2014/06/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: 3000, CREOSOTE NORTH Q2
Sampler Initials: JL

SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		JV1002		JV1003		JV1004		JV1005		
Sampling Date		2014/06/11 11:00		2014/06/11 09:30		2014/06/11 10:20		2014/06/10 09:00		
	UNITS	MW14-2	RDL	MW1	RDL	FIELD BLANK	RDL	MW14-7	RDL	QC Batch
Polycyclic Aromatics										
Benzo[a]pyrene equivalency	ug/L	0.010	0.010	2.2	0.010	<0.010	0.010	0.095	0.010	7522460
Acenaphthene	mg/L	<0.00010	0.00010	0.11 ⁽¹⁾	0.010	<0.00010	0.00010	<0.00030	0.00030	7524676
Acenaphthylene	mg/L	<0.00010	0.00010	0.0059	0.00010	<0.00010	0.00010	<0.00030	0.00030	7524676
Acridine	mg/L	<0.00020	0.00020	0.0017	0.00020	<0.00020	0.00020	<0.00060	0.00060	7524676
Anthracene	mg/L	<0.000010	0.000010	0.014	0.000010	<0.000010	0.000010	0.00015	0.00030	7524676
Benzo(a)anthracene	mg/L	<0.000085	0.000085	0.0041	0.000085	<0.000085	0.000085	0.00064	0.00026	7524676
Benzo(b&j)fluoranthene	mg/L	<0.000085	0.000085	0.0020	0.000085	<0.000085	0.000085	0.00098	0.00026	7524676
Benzo(k)fluoranthene	mg/L	<0.000021 ⁽²⁾	0.000021	0.00059	0.000085	<0.000085	0.000085	0.00026	0.00026	7524676
Benzo(g,h,i)perylene	mg/L	<0.000085	0.000085	0.0042	0.000085	<0.000085	0.000085	<0.00058 ⁽²⁾	0.00058	7524676
Benzo(c)phenanthrene	mg/L	<0.000050	0.000050	<0.00065 ⁽²⁾	0.00065	<0.000050	0.000050	<0.00015	0.00015	7524676
Benzo(a)pyrene	mg/L	<0.000075	0.000075	0.0013	0.000075	<0.000075	0.000075	0.00060	0.00023	7524676
Benzo[e]pyrene	mg/L	<0.000050	0.000050	0.0011	0.000050	<0.000050	0.000050	<0.00015	0.00015	7524676
Chrysene	mg/L	<0.000085	0.000085	0.0024	0.000085	<0.000085	0.000085	0.00055	0.00026	7524676
Dibenz(a,h)anthracene	mg/L	<0.000075	0.000075	0.0014	0.000075	<0.000075	0.000075	<0.00023	0.00023	7524676
Fluoranthene	mg/L	<0.000010	0.000010	0.027	0.000010	<0.000010	0.000010	0.00044	0.00030	7524676
Fluorene	mg/L	<0.000050	0.000050	0.066 ⁽¹⁾	0.0050	<0.000050	0.000050	0.00034	0.00015	7524676
Indeno(1,2,3-cd)pyrene	mg/L	<0.000085	0.000085	0.0043	0.000085	<0.000085	0.000085	0.00046	0.00026	7524676
2-Methylnaphthalene	mg/L	<0.00010	0.00010	0.19 ⁽¹⁾	0.010	<0.00010	0.00010	0.00094	0.00030	7524676
Naphthalene	mg/L	<0.00010	0.00010	1.9 ⁽¹⁾	0.010	<0.00010	0.00010	0.00080	0.00030	7524676
Phenanthrene	mg/L	<0.000050	0.000050	0.091 ⁽¹⁾	0.0050	<0.000050	0.000050	0.0012	0.00015	7524676
Perylene	mg/L	<0.000050	0.000050	0.0029	0.000050	<0.000050	0.000050	<0.00015	0.00015	7524676
Pyrene	mg/L	<0.000020	0.000020	0.018	0.000020	<0.000020	0.000020	0.00035	0.00060	7524676
Quinoline	mg/L	<0.00020	0.00020	0.0023	0.00020	<0.00020	0.00020	<0.00060	0.00060	7524676
Surrogate Recovery (%)										
D10-ANTHRACENE (sur.)	%	107		78		116		108		7524676
D12-BENZO(A)PYRENE (sur.)	%	112		97		128		113		7524676
D8-ACENAPHTHYLENE (sur.)	%	96		79		128		97		7524676
TERPHENYL-D14 (sur.)	%	101		85		126		112		7524676

RDL = Reportable Detection Limit

(1) - Detection limits raised due to dilution to bring analyte within the calibrated range.

(2) - Detection limits raised due to matrix interference.



Success Through Science®

Maxxam Job #: B448375
Report Date: 2014/06/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: 300, CREOSOTE NORTH Q2
Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		JV1000	JV1000	JV1001	JV1002		JV1003		JV1004		JV1006		
Sampling Date		2014/06/11 10:00	2014/06/11 10:00	2014/06/11 10:45	2014/06/11 11:00		2014/06/11 09:30		2014/06/11 10:20		2014/06/09 10:00		
	UNITS	MW14-4A	MW14-4A Lab-Dup	MW14-6A	MW14-2	RDL	MW1	RDL	FIELD BLANK	RDL	MW14-7	RDL	QC Batch
Volatiles													
Total Trihalomethanes	mg/L	<0.0020		<0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	7522656
Bromodichloromethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
Bromoform	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
Bromomethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	7525036
Carbon tetrachloride	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
Chlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
Chlorodibromomethane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	7525036
Chloroethane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	7525036
Chloroform	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
Chloromethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	7525036
1,2-dibromoethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
1,2-dichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
1,3-dichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
1,4-dichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
1,1-dichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
1,2-dichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
1,1-dichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
cis-1,2-dichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
trans-1,2-dichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
Dichloromethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	7525036
1,2-dichloropropane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
cis-1,3-dichloropropene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
trans-1,3-dichloropropene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
Methyl methacrylate	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
Methyl-tert-butylether (MTBE)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
Styrene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
1,1,1,2-tetrachloroethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	7525036
1,1,2,2-tetrachloroethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	7525036
Tetrachloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
1,2,3-trichlorobenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	<0.0010	0.0010	7525036
1,2,4-trichlorobenzene	mg/L	<0.0010	0.0014	<0.0010	<0.0010	0.0010	<0.0015 ⁽¹⁾	0.0015	<0.0010	0.0010	<0.0015 ⁽¹⁾	0.0015	7525036
1,3,5-trichlorobenzene	mg/L	<0.00050	0.0013	<0.00050	<0.00050	0.00050	<0.0015 ⁽¹⁾	0.0015	<0.00050	0.00050	<0.0015 ⁽¹⁾	0.0015	7525036
1,1,1-trichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
1,1,2-trichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036

RDL = Reportable Detection Limit
(1) - Detection limit raised due to matrix interference.



Success Through Science®

Maxxam Job #: B448375
Report Date: 2014/06/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: 3000, CREOSOTE NORTH Q2
Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		JV1000	JV1000	JV1001	JV1002		JV1003		JV1004		JV1006		
Sampling Date		2014/06/11 10:00	2014/06/11 10:00	2014/06/11 10:45	2014/06/11 11:00		2014/06/11 09:30		2014/06/11 10:20		2014/06/09 10:00		
	UNITS	MW14-4A	MW14-4A Lab-Dup	MW14-6A	MW14-2	RDL	MW1	RDL	FIELD BLANK	RDL	MW14-7	RDL	QC Batch
Trichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
Trichlorofluoromethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
1,2,4-trimethylbenzene	mg/L	0.083	0.084	0.0011	<0.00050	0.00050	0.085	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
1,3,5-trimethylbenzene	mg/L	0.063	0.065	0.0014	<0.00050	0.00050	0.066	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
Vinyl chloride	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	<0.00050	0.00050	7525036
Surrogate Recovery (%)													
1,4-Difluorobenzene (sur.)	%	101	100	100	100		100		99		101		7525036
4-Bromofluorobenzene (sur.)	%	95	96	98	97		94		97		98		7525036
D4-1,2-Dichloroethane (sur.)	%	96	100	100	96		95		98		95		7525036

RDL = Reportable Detection Limit



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Package 1	8.7°C
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Each temperature is the average of up to three cooler temperatures taken at receipt

AT1 F2 (WATER) Comments

Sample JV1005-01 CCME Hydrocarbons in Water (F2; C10-C16): Detection limit raised based on sample volume used for analysis

SEMIVOLATILE ORGANICS BY GC-MS (WATER) Comments

Sample JV1005-01 PAH in Water by GC/MS: Detection limit raised based on sample volume used for analysis.



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Maxxam Job #: B448375
Report Date: 2014/06/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: 3000, CREOSOTE NORTH Q2
Sampler Initials: JL

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7524676	D10-ANTHRACENE (sur.)	2014/06/17	118	50 - 130	111	50 - 130	105	%		
7524676	D12-BENZO(A)PYRENE (sur.)	2014/06/17	126	50 - 130	115	50 - 130	110	%		
7524676	D8-ACENAPHTHYLENE (sur.)	2014/06/17	107	50 - 130	94	50 - 130	90	%		
7524676	TERPHENYL-D14 (sur.)	2014/06/17	115	50 - 130	104	50 - 130	100	%		
7524676	Acenaphthene	2014/06/17	NC	50 - 130	95	50 - 130	<0.00010	mg/L	NC	40
7524676	Acenaphthylene	2014/06/17	NC	50 - 130	101	50 - 130	<0.00010	mg/L	NC	40
7524676	Acridine	2014/06/17	NC	50 - 130	84	50 - 130	<0.00020	mg/L	NC	40
7524676	Anthracene	2014/06/17	NC	50 - 130	98	50 - 130	<0.00010	mg/L	NC	40
7524676	Benzo(a)anthracene	2014/06/17	NC	50 - 130	104	50 - 130	<0.0000085	mg/L	NC	40
7524676	Benzo(b&i)fluoranthene	2014/06/17	NC	50 - 130	98	50 - 130	<0.0000085	mg/L	NC	40
7524676	Benzo(k)fluoranthene	2014/06/17	NC	50 - 130	100	50 - 130	<0.0000085	mg/L	NC	40
7524676	Benzo(g,h,i)perylene	2014/06/17	NC	50 - 130	96	50 - 130	<0.0000085	mg/L	NC	40
7524676	Benzo(c)phenanthrene	2014/06/17	NC	50 - 130	103	50 - 130	<0.0000050	mg/L	NC	40
7524676	Benzo(a)pyrene	2014/06/17	NC	50 - 130	102	50 - 130	<0.0000075	mg/L	NC	40
7524676	Benzo(e)pyrene	2014/06/17	NC	50 - 130	105	50 - 130	<0.000050	mg/L	NC	40
7524676	Chrysene	2014/06/17	NC	50 - 130	109	50 - 130	<0.0000085	mg/L	NC	40
7524676	Dibenz(a,h)anthracene	2014/06/17	61	50 - 130	97	50 - 130	<0.0000075	mg/L	NC	40
7524676	Fluoranthene	2014/06/17	NC	50 - 130	100	50 - 130	<0.000010	mg/L	NC	40
7524676	Fluorene	2014/06/17	NC	50 - 130	95	50 - 130	<0.000050	mg/L	NC	40
7524676	Indeno(1,2,3-cd)pyrene	2014/06/17	NC	50 - 130	97	50 - 130	<0.0000085	mg/L	NC	40
7524676	2-Methylnaphthalene	2014/06/17	NC	50 - 130	97	50 - 130	<0.00010	mg/L	NC	40
7524676	Naphthalene	2014/06/17	NC	50 - 130	105	50 - 130	<0.00010	mg/L	NC	40
7524676	Phenanthrene	2014/06/17	NC	50 - 130	105	50 - 130	<0.000050	mg/L	NC	40
7524676	Perylene	2014/06/17	NC	50 - 130	105	50 - 130	<0.000050	mg/L	NC	40
7524676	Pyrene	2014/06/17	NC	50 - 130	106	50 - 130	<0.000020	mg/L	NC	40
7524676	Quinoline	2014/06/17	NC	50 - 130	88	50 - 130	<0.00020	mg/L	NC	40
7524682	O-TERPHENYL (sur.)	2014/06/17	105	50 - 130	108	50 - 130	104	%		
7524682	F2 (C10-C16 Hydrocarbons)	2014/06/17	98	50 - 130	106	70 - 130	<0.10	mg/L	NC	40
7525036	1,4-Difluorobenzene (sur.)	2014/06/13	100	70 - 130	101	70 - 130	98	%		
7525036	4-Bromofluorobenzene (sur.)	2014/06/13	103	70 - 130	105	70 - 130	99	%		
7525036	D4-1,2-Dichloroethane (sur.)	2014/06/13	96	70 - 130	101	70 - 130	96	%		
7525036	Bromodichloromethane	2014/06/13	98	70 - 130	103	70 - 130	<0.00050	mg/L	NC	40
7525036	Bromoform	2014/06/13	94	70 - 130	101	70 - 130	<0.00050	mg/L	NC	40
7525036	Bromomethane	2014/06/13	84	70 - 130	95	70 - 130	<0.0020	mg/L	NC	40
7525036	Carbon tetrachloride	2014/06/13	94	70 - 130	93	70 - 130	<0.00050	mg/L	NC	40
7525036	Chlorobenzene	2014/06/13	92	70 - 130	91	70 - 130	<0.00050	mg/L	NC	40
7525036	Chlorodibromomethane	2014/06/13	98	70 - 130	102	70 - 130	<0.0010	mg/L	NC	40
7525036	Chloroethane	2014/06/13	85	70 - 130	86	70 - 130	<0.0010	mg/L	NC	40
7525036	Chloroform	2014/06/13	93	70 - 130	95	70 - 130	<0.00050	mg/L	NC	40
7525036	Chloromethane	2014/06/13	83	70 - 130	83	70 - 130	<0.0020	mg/L	NC	40



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Maxxam Job #: B448375
Report Date: 2014/06/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: 3000, CREOSOTE NORTH Q2
Sampler Initials: JL

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7525036	1,2-dibromoethane	2014/06/13	91	70 - 130	97	70 - 130	<0.00050	mg/L	NC	40
7525036	1,2-dichlorobenzene	2014/06/13	94	70 - 130	96	70 - 130	<0.00050	mg/L	NC	40
7525036	1,3-dichlorobenzene	2014/06/13	92	70 - 130	93	70 - 130	<0.00050	mg/L	NC	40
7525036	1,4-dichlorobenzene	2014/06/13	93	70 - 130	93	70 - 130	<0.00050	mg/L	NC	40
7525036	1,1-dichloroethane	2014/06/13	88	70 - 130	90	70 - 130	<0.00050	mg/L	NC	40
7525036	1,2-dichloroethane	2014/06/13	91	70 - 130	97	70 - 130	<0.00050	mg/L	NC	40
7525036	1,1-dichloroethene	2014/06/13	91	70 - 130	90	70 - 130	<0.00050	mg/L	NC	40
7525036	cis-1,2-dichloroethene	2014/06/13	88	70 - 130	89	70 - 130	<0.00050	mg/L	NC	40
7525036	trans-1,2-dichloroethene	2014/06/13	90	70 - 130	90	70 - 130	<0.00050	mg/L	NC	40
7525036	Dichloromethane	2014/06/13	87	70 - 130	90	70 - 130	<0.0020	mg/L	NC	40
7525036	1,2-dichloropropane	2014/06/13	89	70 - 130	91	70 - 130	<0.00050	mg/L	NC	40
7525036	cis-1,3-dichloropropene	2014/06/13	95	70 - 130	113	70 - 130	<0.00050	mg/L	NC	40
7525036	trans-1,3-dichloropropene	2014/06/13	92	70 - 130	120	70 - 130	<0.00050	mg/L	NC	40
7525036	Methylmethacrylate	2014/06/13	88	70 - 130	98	70 - 130	<0.00050	mg/L	NC	40
7525036	Methyl-tert-butylether(MTBE)	2014/06/13	88	70 - 130	91	70 - 130	<0.00050	mg/L	NC	40
7525036	Styrene	2014/06/13	97	70 - 130	97	70 - 130	<0.00050	mg/L	NC	40
7525036	1,1,1,2-tetrachloroethane	2014/06/13	98	70 - 130	99	70 - 130	<0.0020	mg/L	NC	40
7525036	1,1,2,2-tetrachloroethane	2014/06/13	88	70 - 130	94	70 - 130	<0.0020	mg/L	NC	40
7525036	Tetrachloroethene	2014/06/13	92	70 - 130	88	70 - 130	<0.00050	mg/L	NC	40
7525036	1,2,3-trichlorobenzene	2014/06/13	90	70 - 130	90	70 - 130	<0.0010	mg/L	NC	40
7525036	1,2,4-trichlorobenzene	2014/06/13	91	70 - 130	89	70 - 130	<0.0010	mg/L	NC	40
7525036	1,3,5-trichlorobenzene	2014/06/13	93	70 - 130	91	70 - 130	<0.00050	mg/L	NC	40
7525036	1,1,1-trichloroethane	2014/06/13	93	70 - 130	93	70 - 130	<0.00050	mg/L	NC	40
7525036	1,1,2-trichloroethane	2014/06/13	90	70 - 130	96	70 - 130	<0.00050	mg/L	NC	40
7525036	Trichloroethene	2014/06/13	87	70 - 130	87	70 - 130	<0.00050	mg/L	NC	40
7525036	Trichlorofluoromethane	2014/06/13	84	70 - 130	82	70 - 130	<0.00050	mg/L	NC	40
7525036	1,2,4-trimethylbenzene	2014/06/13	96	70 - 130	94	70 - 130	<0.00050	mg/L	1.1	40
7525036	1,3,5-trimethylbenzene	2014/06/13	101	70 - 130	98	70 - 130	<0.00050	mg/L	2.5	40
7525036	Vinyl chloride	2014/06/13	80	70 - 130	112	70 - 130	<0.00050	mg/L	NC	40
7526689	1,4-Difluorobenzene (sur.)	2014/06/16	101	70 - 130	101	70 - 130	105	%		
7526689	4-Bromofluorobenzene (sur.)	2014/06/16	104	70 - 130	105	70 - 130	101	%		
7526689	D4-1,2-Dichloroethane (sur.)	2014/06/16	97	70 - 130	98	70 - 130	99	%		
7526689	Benzene	2014/06/16	85	70 - 130	75	70 - 130	<0.00040	mg/L	NC	40
7526689	Toluene	2014/06/16	86	70 - 130	75	70 - 130	<0.00040	mg/L	NC	40
7526689	Ethylbenzene	2014/06/16	88	70 - 130	76	70 - 130	<0.00040	mg/L	NC	40
7526689	m & p-Xylene	2014/06/16	91	70 - 130	77	70 - 130	<0.00080	mg/L	NC	40
7526689	o-Xylene	2014/06/16	89	70 - 130	77	70 - 130	<0.00040	mg/L	NC	40
7526689	(C6-C10)	2014/06/16	70	70 - 130	89	70 - 130	<0.10	mg/L	NC	40



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Maxxam Job #: B448375
Report Date: 2014/06/18

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: 3000, CREOSOTE NORTH Q2
Sampler Initials: JL

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7526689	Xylenes (Total)	2014/06/16					<0.00080	mg/L	NC	40
7526689	F1 (C6-C10) - BTEX	2014/06/16					<0.10	mg/L	NC	40

N/A = Not Applicable

RPD = Relative Percent Difference

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 spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of 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 (one or both samples < 5x RDL).



Validation Signature Page

Maxxam Job #: B448375

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

Luba Shymushovska, Senior Analyst, Organic Department

Michael Sheppard, Organics Supervisor

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Maxxam 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.

Maxxam

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 Page: 1 of 1


Company: **Golden** C/O Report Address
 Contact: **Julie Burghardt**
 Address: **102 2535 - 3rd Ave SE**
 City: **Calgary AB** PC: **T2A 7W5**
 Contact #s: **403 299 5800** Cell:

Report To: Same as Invoice
 Report Distribution (E-Mail):
jburghardt@golden.com
n.baumann@golden.com
asm.data.quality@golden.com

REGULATORY GUIDELINES:
 AT1
 CCME
 Regulated Drinking Water
 Other:

All samples are held for 60 calendar days after sample receipt, unless specified otherwise.
 PO #: **13-1324-0204/3000**
 Project #/Name: **Creosote Mth 02**
 Site Location: **Oldham 2014**
 Quote #: **JL**
 Sampled By: **JL**
 SERVICE REQUESTED: RUSH (Contact lab to reserve) Date Required: _____
 REGULAR (5 to 7 Days)

Sample ID	Depth (unit)	Matrix GW / SW Soil	Date/Time Sampled YY/MM/DD 24:00	SOIL				WATER				Other Analysis		HOLD - Do not Analyze # of Containers Submitted		
				BTEX F1-F4	Sieve (75 micron)	Regulated Metals (CCME / AT1)	Salinity 4	Assessment ICP Metals	Basic Class II Landfill	BTEX F1	BTEX F1-F4	Routine Water Turb	DOC		Regulated Metals (CCME / AT1)	Total
1 MW14-4A	✓	GW	June 11 10:00	X				X	X	X	X	X	X	X		10
2 MW14-6A	✓	GW	June 11 10:45	X				X	X	X	X	X	X	X		10
3 MW14-2	✓	GW	June 11 11:00	X				X	X	X	X	X	X	X		10
4 MW1	✓	GW	June 11 9:30	X				X	X	X	X	X	X	X		10
5 Field Blank	✓	GW	June 11 10:20	X				X	X	X	X	X	X	X		1
6 MW14-7	✓	GW	June 10 9:00	X				X	X	X	X	X	X	X		2
7 MW14-7	✓	GW	June 9 10:00	X				X	X	X	X	X	X	X		2
8																
9																
10																
11																
12																

11-Jun-14 12:27
 Wendy Sears

 B448375
 MAK INS-0090

Reinquished By (Signature/Print): **John Lewis** Date (YY/MM/DD): **June 11 2014** Time (24:00): **12:24**
 Reinquished By (Signature/Print): _____ Date (YY/MM/DD): _____ Time (24:00): _____

LAB USE ONLY
 Received By: **Jane Musonda** Date: **2014/06/11** Time: **12:27** Maxxam Job #: _____
 Lab Comments: _____
 Custody Seal: **Y** Temperature: _____ Ice: _____

Special Instructions: **MW14-7 - Very limited sample vol. Run BTEX F1 + VOC (2x 40ml vials). Limited 250ml Bottle, Run F2 + PAH if possible**

Your Project #: 13-1324-0204
 Site Location: 4000/CAR GEO SITE Q3
 Your C.O.C. #: A094725

Attention: Julie Burghardt

GOLDER ASSOCIATES LTD.
 CALGARY - NATIONAL CONTRACT
 102, 2535 - 3rd Avenue SE
 CALGARY, AB
 CANADA T2A 7W5

Report Date: 2014/08/12

Report #: R1620302

Version: 1

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B466892

Received: 2014/08/05, 16:36

Sample Matrix: Water
 # Samples Received: 7

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
BTEX/F1 in Water by HS GC/MS	4	N/A	2014/08/07	AB SOP-00039	CCME, EPA 8260C
BTEX/F1 in Water by HS GC/MS	2	N/A	2014/08/11	AB SOP-00039	CCME, EPA 8260C
BTEX/F1 in Water by HS GC/MS	1	N/A	2014/08/12	AB SOP-00039	CCME, EPA 8260C
CCME Hydrocarbons in Water (F2; C10-C16)	3	2014/08/07	2014/08/07	AB SOP-00040 AB SOP-00037	EPA3510C/CCME PHCCWS
CCME Hydrocarbons in Water (F2; C10-C16)	4	2014/08/07	2014/08/08	AB SOP-00040 AB SOP-00037	EPA3510C/CCME PHCCWS
Benzo[a]pyrene Equivalency	1	N/A	2014/08/08	AB SOP-00003	Auto Calc
Benzo[a]pyrene Equivalency	6	N/A	2014/08/12	AB SOP-00003	Auto Calc
PAH in Water by GC/MS (1)	1	2014/08/07	2014/08/07	AB SOP-00037 / AB SOP-00003	EPA 8270D m
PAH in Water by GC/MS (1)	5	2014/08/07	2014/08/08	AB SOP-00037 / AB SOP-00003	EPA 8270D m
PAH in Water by GC/MS (1)	1	2014/08/07	2014/08/11	AB SOP-00037 / AB SOP-00003	EPA 8270D m
Total Trihalomethanes Calculation	5	N/A	2014/08/08	CAL SOP-00104	EPA 8260 C
Total Trihalomethanes Calculation	2	N/A	2014/08/12	CAL SOP-00104	EPA 8260 C
VOCs in Water by HS GC/MS (Std List)	4	N/A	2014/08/07	CAL SOP-00227	EPA 8260 C
VOCs in Water by HS GC/MS (Std List)	3	N/A	2014/08/08	CAL SOP-00227	EPA 8260 C

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

(1) 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.

Your Project #: 13-1324-0204
Site Location: 4000/CAR GEO SITE Q3
Your C.O.C. #: A094725

Attention: Julie Burghardt

GOLDER ASSOCIATES LTD.
CALGARY - NATIONAL CONTRACT
102, 2535 - 3rd Avenue SE
CALGARY, AB
CANADA T2A 7W5

Report Date: 2014/08/12
Report #: R1620302
Version: 1

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B466892

Received: 2014/08/05, 16:36

Encryption Key  Wendy Sears
13 Aug 2014 17:00:19 -06:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Wendy Sears, Project manager
Email: WSears@maxxam.ca
Phone# (403) 291-3077

=====
Maxxam 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.

Maxxam Job #: B466892
 Report Date: 2014/08/12

 GOLDER ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 4000/CAR GEO SITE Q3
 Sampler Initials: JL

AT1 BTEX AND F1-F2 (WATER)

Maxxam ID		KG5858	KG5858	KG5859	KG5860	KG5861		KG5862		
Sampling Date		2014/08/05 10:55	2014/08/05 10:55	2014/08/05 11:45	2014/08/05 13:15	2014/08/05 14:00		2014/08/05 15:00		
COC Number		A094725	A094725	A094725	A094725	A094725		A094725		
	Units	MW14-1A	MW14-1A Lab-Dup	MW14-8	MW11-01A	MW10-07A	RDL	MW11-6	RDL	QC Batch

Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	mg/L	2.7	N/A	<0.10	1.4	7.2	0.10	24	0.10	7591052
Volatiles										
Benzene	mg/L	0.0046	0.0045	<0.00040	0.041	0.082	0.00040	0.77	0.0020	7591364
Toluene	mg/L	0.0027	0.0027	<0.00040	0.013	0.013	0.00040	1.8	0.0020	7591364
Ethylbenzene	mg/L	0.018	0.018	<0.00040	0.045	0.15	0.00040	0.51	0.0020	7591364
m & p-Xylene	mg/L	0.032	0.032	<0.00080	0.049	0.12	0.00080	1.5	0.0040	7591364
o-Xylene	mg/L	0.033	0.033	<0.00040	0.041	0.14	0.00040	0.70	0.0020	7591364
Xylenes (Total)	mg/L	0.065	0.064	<0.00080	0.090	0.26	0.00080	2.2	0.0040	7591364
F1 (C6-C10) - BTEX	mg/L	<0.10	<0.10	<0.10	<0.10	0.13	0.10	2.1	0.50	7591364
(C6-C10)	mg/L	0.13	<0.10	<0.10	0.25	0.64	0.10	7.3	0.50	7591364
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	106	106	106	106	109	N/A	107	N/A	7591364
4-Bromofluorobenzene (sur.)	%	107	107	109	108	106	N/A	108	N/A	7591364
D4-1,2-Dichloroethane (sur.)	%	102	103	104	104	102	N/A	112	N/A	7591364
O-TERPHENYL (sur.)	%	96	N/A	106	95	95	N/A	106	N/A	7591052

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

Maxxam Job #: B466892
 Report Date: 2014/08/12

 GOLDR ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 4000/CAR GEO SITE Q3
 Sampler Initials: JL

AT1 BTEX AND F1-F2 (WATER)

Maxxam ID		KG5863		KG5864		
Sampling Date		2014/08/05 15:15		2014/08/05 15:45		
COC Number		A094725		A094725		
	Units	DUP-1	RDL	FIELD BLANK	RDL	QC Batch
Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	mg/L	26	0.10	<0.10	0.10	7591052
Volatiles						
Benzene	mg/L	0.76	0.0020	<0.00040	0.00040	7591364
Toluene	mg/L	1.8	0.0020	<0.00040	0.00040	7591364
Ethylbenzene	mg/L	0.52	0.0020	<0.00040	0.00040	7591364
m & p-Xylene	mg/L	1.5	0.0040	<0.00080	0.00080	7591364
o-Xylene	mg/L	0.72	0.0020	<0.00040	0.00040	7591364
Xylenes (Total)	mg/L	2.2	0.0040	<0.00080	0.00080	7591364
F1 (C6-C10) - BTEX	mg/L	2.3	0.50	<0.10	0.10	7591364
(C6-C10)	mg/L	7.6	0.50	<0.10	0.10	7591364
Surrogate Recovery (%)						
1,4-Difluorobenzene (sur.)	%	105	N/A	106	N/A	7591364
4-Bromofluorobenzene (sur.)	%	108	N/A	111	N/A	7591364
D4-1,2-Dichloroethane (sur.)	%	106	N/A	105	N/A	7591364
O-TERPHENYL (sur.)	%	115	N/A	109	N/A	7591052
RDL = Reportable Detection Limit						
N/A = Not Applicable						

Maxxam Job #: B466892
 Report Date: 2014/08/12

 GOLDER ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 4000/CAR GEO SITE Q3
 Sampler Initials: JL

SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		KG5858		KG5859		KG5860		
Sampling Date		2014/08/05 10:55		2014/08/05 11:45		2014/08/05 13:15		
COC Number		A094725		A094725		A094725		
	Units	MW14-1A	RDL	MW14-8	RDL	MW11-01A	RDL	QC Batch

Polycyclic Aromatics

Benzo[a]pyrene equivalency	ug/L	0.013	0.010	0.018	0.010	1.7	0.010	7589200
Acenaphthene	mg/L	0.064 (1)	0.010	<0.00010	0.00010	0.019	0.00010	7591045
Acenaphthylene	mg/L	0.0024	0.00010	<0.00010	0.00010	0.00097	0.00010	7591045
Acridine	mg/L	0.00025	0.00020	<0.00020	0.00020	0.00035	0.00020	7591045
Anthracene	mg/L	0.0043	0.000010	0.000011	0.000010	0.0037	0.000010	7591045
Benzo(a)anthracene	mg/L	0.000029	0.0000085	0.000015	0.0000085	0.0022	0.0000085	7591045
Benzo(b&j)fluoranthene	mg/L	0.000011	0.0000085	0.000020	0.0000085	0.0017	0.0000085	7591045
Benzo(k)fluoranthene	mg/L	<0.0000085	0.0000085	<0.0000085	0.0000085	0.00055	0.0000085	7591045
Benzo(g,h,i)perylene	mg/L	<0.0000085	0.0000085	0.000011	0.0000085	0.00033	0.0000085	7591045
Benzo(c)phenanthrene	mg/L	<0.000050	0.000050	<0.000050	0.000050	<0.00037 (2)	0.00037	7591045
Benzo(a)pyrene	mg/L	<0.0000075	0.0000075	0.0000098	0.0000075	0.0011	0.0000075	7591045
Benzo[e]pyrene	mg/L	<0.000050	0.000050	<0.000050	0.000050	0.00088	0.000050	7591045
Chrysene	mg/L	0.000019	0.0000085	0.000017	0.0000085	0.0019	0.0000085	7591045
Dibenz(a,h)anthracene	mg/L	<0.0000075	0.0000075	<0.0000075	0.0000075	0.00011	0.0000075	7591045
Fluoranthene	mg/L	0.0044	0.000010	0.000080	0.000010	0.0091	0.000010	7591045
Fluorene	mg/L	0.035	0.000050	<0.000050	0.000050	0.011	0.000050	7591045
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	0.0000085	<0.0000085	0.0000085	0.00035	0.0000085	7591045
2-Methylnaphthalene	mg/L	0.054 (1)	0.010	<0.00010	0.00010	0.038	0.00010	7591045
Naphthalene	mg/L	1.4 (1)	0.010	<0.00010	0.00010	0.71 (1)	0.010	7591045
Phenanthrene	mg/L	0.029	0.000050	0.00010	0.000050	0.019	0.000050	7591045
Perylene	mg/L	<0.000050	0.000050	<0.000050	0.000050	0.00025	0.000050	7591045
Pyrene	mg/L	0.0025	0.000020	0.000080	0.000020	0.0068	0.000020	7591045
Quinoline	mg/L	0.0011 (2)	0.0011	<0.00020	0.00020	0.00078	0.00020	7591045

Surrogate Recovery (%)

D10-ANTHRACENE (sur.)	%	98	N/A	99	N/A	99	N/A	7591045
D12-BENZO(A)PYRENE (sur.)	%	101	N/A	102	N/A	103	N/A	7591045
D8-ACENAPHTHYLENE (sur.)	%	93	N/A	90	N/A	91	N/A	7591045
TERPHENYL-D14 (sur.)	%	98	N/A	97	N/A	97	N/A	7591045

RDL = Reportable Detection Limit

N/A = Not Applicable

(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

(2) Detection limits raised due to matrix interference.

Maxxam Job #: B466892
 Report Date: 2014/08/12

 GOLDR ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 4000/CAR GEO SITE Q3
 Sampler Initials: JL

SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		KG5861		KG5862		KG5863		
Sampling Date		2014/08/05 14:00		2014/08/05 15:00		2014/08/05 15:15		
COC Number		A094725		A094725		A094725		
	Units	MW10-07A	RDL	MW11-6	RDL	DUP-1	RDL	QC Batch
Polycyclic Aromatics								
Benzo[a]pyrene equivalency	ug/L	<0.010	0.010	2.0	0.010	1.9	0.010	7589200
Acenaphthene	mg/L	0.038	0.00010	0.21 (1)	0.10	0.18 (1)	0.10	7591045
Acenaphthylene	mg/L	0.0026	0.00010	0.017	0.00010	0.016	0.00010	7591045
Acridine	mg/L	<0.00020	0.00020	0.0092	0.00020	0.0092	0.00020	7591045
Anthracene	mg/L	0.00025	0.00010	0.016	0.00010	0.015	0.00010	7591045
Benzo(a)anthracene	mg/L	<0.0000085	0.0000085	0.0024	0.0000085	0.0021	0.0000085	7591045
Benzo(b&j)fluoranthene	mg/L	<0.0000085	0.0000085	0.0019	0.0000085	0.0018	0.0000085	7591045
Benzo(k)fluoranthene	mg/L	<0.0000085	0.0000085	0.00064	0.0000085	0.00059	0.0000085	7591045
Benzo(g,h,i)perylene	mg/L	<0.0000085	0.0000085	0.00051	0.0000085	0.00048	0.0000085	7591045
Benzo(c)phenanthrene	mg/L	<0.000050	0.000050	<0.00052 (2)	0.00052	<0.00048 (2)	0.00048	7591045
Benzo(a)pyrene	mg/L	<0.0000075	0.0000075	0.0013	0.0000075	0.0012	0.0000075	7591045
Benzo[e]pyrene	mg/L	<0.000050	0.000050	0.0010	0.000050	0.00093	0.000050	7591045
Chrysene	mg/L	<0.0000085	0.0000085	0.0021	0.0000085	0.0018	0.0000085	7591045
Dibenz(a,h)anthracene	mg/L	<0.0000075	0.0000075	0.00017	0.0000075	0.00016	0.0000075	7591045
Fluoranthene	mg/L	0.000075	0.000010	0.018	0.000010	0.017	0.000010	7591045
Fluorene	mg/L	0.010	0.000050	0.10 (1)	0.050	0.090 (1)	0.050	7591045
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	0.0000085	0.00052	0.0000085	0.00049	0.0000085	7591045
2-Methylnaphthalene	mg/L	0.071 (1)	0.010	0.78 (1)	0.10	0.69 (1)	0.10	7591045
Naphthalene	mg/L	4.0 (1)	0.010	12 (1)	0.10	10 (1)	0.10	7591045
Phenanthrene	mg/L	0.0027	0.000050	0.11 (1)	0.050	0.094 (1)	0.050	7591045
Perylene	mg/L	<0.000050	0.000050	0.00029	0.000050	0.00028	0.000050	7591045
Pyrene	mg/L	0.000055	0.000020	0.013	0.000020	0.012	0.000020	7591045
Quinoline	mg/L	0.0027	0.00020	NC (3)	0.00020	NC (3)	0.00020	7591045
Surrogate Recovery (%)								
D10-ANTHRACENE (sur.)	%	102	N/A	96	N/A	93	N/A	7591045
D12-BENZO(A)PYRENE (sur.)	%	100	N/A	105	N/A	102	N/A	7591045
D8-ACENAPHTHYLENE (sur.)	%	94	N/A	91	N/A	88	N/A	7591045
TERPHENYL-D14 (sur.)	%	98	N/A	100	N/A	98	N/A	7591045
RDL = Reportable Detection Limit N/A = Not Applicable (1) Detection limits raised due to dilution to bring analyte within the calibrated range. (2) Detection limits raised due to matrix interference. (3) Quinoline recovery non calculable due to matrix interference.								

Maxxam Job #: B466892
 Report Date: 2014/08/12

 GOLDR ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 4000/CAR GEO SITE Q3
 Sampler Initials: JL

SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		KG5864		
Sampling Date		2014/08/05 15:45		
COC Number		A094725		
	Units	FIELD BLANK	RDL	QC Batch
Polycyclic Aromatics				
Benzo[a]pyrene equivalency	ug/L	<0.010	0.010	7589200
Acenaphthene	mg/L	<0.00010	0.00010	7591045
Acenaphthylene	mg/L	<0.00010	0.00010	7591045
Acridine	mg/L	<0.00020	0.00020	7591045
Anthracene	mg/L	<0.00010	0.00010	7591045
Benzo(a)anthracene	mg/L	<0.000085	0.000085	7591045
Benzo(b&j)fluoranthene	mg/L	<0.000085	0.000085	7591045
Benzo(k)fluoranthene	mg/L	<0.000085	0.000085	7591045
Benzo(g,h,i)perylene	mg/L	<0.000085	0.000085	7591045
Benzo(c)phenanthrene	mg/L	<0.000050	0.000050	7591045
Benzo(a)pyrene	mg/L	<0.000075	0.000075	7591045
Benzo[e]pyrene	mg/L	<0.000050	0.000050	7591045
Chrysene	mg/L	<0.000085	0.000085	7591045
Dibenz(a,h)anthracene	mg/L	<0.000075	0.000075	7591045
Fluoranthene	mg/L	<0.00010	0.00010	7591045
Fluorene	mg/L	<0.000050	0.000050	7591045
Indeno(1,2,3-cd)pyrene	mg/L	<0.000085	0.000085	7591045
2-Methylnaphthalene	mg/L	<0.00010	0.00010	7591045
Naphthalene	mg/L	<0.00010	0.00010	7591045
Phenanthrene	mg/L	<0.000050	0.000050	7591045
Perylene	mg/L	<0.000050	0.000050	7591045
Pyrene	mg/L	<0.000020	0.000020	7591045
Quinoline	mg/L	<0.00020	0.00020	7591045
Surrogate Recovery (%)				
D10-ANTHRACENE (sur.)	%	101	N/A	7591045
D12-BENZO(A)PYRENE (sur.)	%	97	N/A	7591045
D8-ACENAPHTHYLENE (sur.)	%	91	N/A	7591045
TERPHENYL-D14 (sur.)	%	95	N/A	7591045
RDL = Reportable Detection Limit N/A = Not Applicable				

Maxxam Job #: B466892
 Report Date: 2014/08/12

 GOLDR ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 4000/CAR GEO SITE Q3
 Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		KG5858	KG5859	KG5860	KG5861		KG5862		
Sampling Date		2014/08/05 10:55	2014/08/05 11:45	2014/08/05 13:15	2014/08/05 14:00		2014/08/05 15:00		
COC Number		A094725	A094725	A094725	A094725		A094725		
	Units	MW14-1A	MW14-8	MW11-01A	MW10-07A	RDL	MW11-6	RDL	QC Batch
Volatiles									
Total Trihalomethanes	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	<0.0020	0.0020	7589201
Bromodichloromethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
Bromoform	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
Bromomethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	<0.010	0.010	7591211
Carbon tetrachloride	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
Chlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
Chlorodibromomethane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0050	0.0050	7591211
Chloroethane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0050	0.0050	7591211
Chloroform	mg/L	0.00082	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
Chloromethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	<0.010	0.010	7591211
1,2-dibromoethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
1,2-dichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
1,3-dichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
1,4-dichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
1,1-dichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
1,2-dichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
1,1-dichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
cis-1,2-dichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
trans-1,2-dichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
Dichloromethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	<0.010	0.010	7591211
1,2-dichloropropane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
cis-1,3-dichloropropene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
trans-1,3-dichloropropene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
Methyl methacrylate	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
Methyl-tert-butylether (MTBE)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
Styrene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	0.21	0.0025	7591211
1,1,1,2-tetrachloroethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	<0.010	0.010	7591211
1,1,2,2-tetrachloroethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	<0.010	0.010	7591211
Tetrachloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
1,2,3-trichlorobenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0050	0.0050	7591211
1,2,4-trichlorobenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	<0.0050	0.0050	7591211
1,3,5-trichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
1,1,1-trichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
1,1,2-trichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
RDL = Reportable Detection Limit									

Maxxam Job #: B466892
 Report Date: 2014/08/12

 GOLDER ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 4000/CAR GEO SITE Q3
 Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		KG5858	KG5859	KG5860	KG5861		KG5862		
Sampling Date		2014/08/05 10:55	2014/08/05 11:45	2014/08/05 13:15	2014/08/05 14:00		2014/08/05 15:00		
COC Number		A094725	A094725	A094725	A094725		A094725		
	Units	MW14-1A	MW14-8	MW11-01A	MW10-07A	RDL	MW11-6	RDL	QC Batch
Trichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
Trichlorofluoromethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
1,2,4-trimethylbenzene	mg/L	0.039	<0.00050	0.034	0.070	0.00050	0.43	0.0025	7591211
1,3,5-trimethylbenzene	mg/L	0.012	<0.00050	0.0089	0.010	0.00050	0.18	0.0025	7591211
Vinyl chloride	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	7591211
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	101	100	101	102	N/A	101	N/A	7591211
4-Bromofluorobenzene (sur.)	%	102	111	100	100	N/A	98	N/A	7591211
D4-1,2-Dichloroethane (sur.)	%	97	92	93	97	N/A	101	N/A	7591211
RDL = Reportable Detection Limit N/A = Not Applicable									

Maxxam Job #: B466892
 Report Date: 2014/08/12

GOLDER ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 4000/CAR GEO SITE Q3
 Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		KG5863		KG5864		
Sampling Date		2014/08/05 15:15		2014/08/05 15:45		
COC Number		A094725		A094725		
	Units	DUP-1	RDL	FIELD BLANK	RDL	QC Batch
Volatiles						
Total Trihalomethanes	mg/L	<0.0020	0.0020	<0.0020	0.0020	7589201
Bromodichloromethane	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
Bromoform	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
Bromomethane	mg/L	<0.010	0.010	<0.0020	0.0020	7592792
Carbon tetrachloride	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
Chlorobenzene	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
Chlorodibromomethane	mg/L	<0.0050	0.0050	<0.0010	0.0010	7592792
Chloroethane	mg/L	<0.0050	0.0050	<0.0010	0.0010	7592792
Chloroform	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
Chloromethane	mg/L	<0.010	0.010	<0.0020	0.0020	7592792
1,2-dibromoethane	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
1,2-dichlorobenzene	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
1,3-dichlorobenzene	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
1,4-dichlorobenzene	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
1,1-dichloroethane	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
1,2-dichloroethane	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
1,1-dichloroethene	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
cis-1,2-dichloroethene	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
trans-1,2-dichloroethene	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
Dichloromethane	mg/L	<0.010	0.010	<0.0020	0.0020	7592792
1,2-dichloropropane	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
cis-1,3-dichloropropene	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
trans-1,3-dichloropropene	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
Methyl methacrylate	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
Methyl-tert-butylether (MTBE)	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
Styrene	mg/L	0.22	0.0025	<0.00050	0.00050	7592792
1,1,1,2-tetrachloroethane	mg/L	<0.010	0.010	<0.0020	0.0020	7592792
1,1,2,2-tetrachloroethane	mg/L	<0.010	0.010	<0.0020	0.0020	7592792
Tetrachloroethene	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
1,2,3-trichlorobenzene	mg/L	<0.0050	0.0050	<0.0010	0.0010	7592792
1,2,4-trichlorobenzene	mg/L	<0.0050	0.0050	<0.0010	0.0010	7592792
1,3,5-trichlorobenzene	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
1,1,1-trichloroethane	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
1,1,2-trichloroethane	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
RDL = Reportable Detection Limit						

Maxxam Job #: B466892
 Report Date: 2014/08/12

GOLDER ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 4000/CAR GEO SITE Q3
 Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		KG5863		KG5864		
Sampling Date		2014/08/05 15:15		2014/08/05 15:45		
COC Number		A094725		A094725		
	Units	DUP-1	RDL	FIELD BLANK	RDL	QC Batch
Trichloroethene	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
Trichlorofluoromethane	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
1,2,4-trimethylbenzene	mg/L	0.39	0.0025	<0.00050	0.00050	7592792
1,3,5-trimethylbenzene	mg/L	0.16	0.0025	<0.00050	0.00050	7592792
Vinyl chloride	mg/L	<0.0025	0.0025	<0.00050	0.00050	7592792
Surrogate Recovery (%)						
1,4-Difluorobenzene (sur.)	%	103	N/A	103	N/A	7592792
4-Bromofluorobenzene (sur.)	%	98	N/A	96	N/A	7592792
D4-1,2-Dichloroethane (sur.)	%	97	N/A	89	N/A	7592792
RDL = Reportable Detection Limit N/A = Not Applicable						

Maxxam Job #: B466892
Report Date: 2014/08/12

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: 4000/CAR GEO SITE Q3
Sampler Initials: JL

GENERAL COMMENTS

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

Package 1	14.3°C
Package 2	12.0°C

AT1 BTEX AND F1-F2 (WATER) Comments

Sample KG5862-02 BTEX/F1 in Water by HS GC/MS: Detection limits raised due to dilution to bring analyte within the calibrated range.
Sample KG5863-02 BTEX/F1 in Water by HS GC/MS: Detection limits raised due to dilution to bring analyte within the calibrated range.

VOLATILE ORGANICS BY GC-MS (WATER) Comments

Sample KG5862-02 VOCs in Water by HS GC/MS (Std List): Detection limits raised due to sample matrix.
Sample KG5863-02 VOCs in Water by HS GC/MS (Std List): Detection limits raised due to sample matrix.

Results relate only to the items tested.

Maxxam Job #: B466892
 Report Date: 2014/08/12

 GOLDER ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 4000/CAR GEO SITE Q3
 Sampler Initials: JL

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
7591045	JC7	Matrix Spike [KG5858-01]	D10-ANTHRACENE (sur.)	2014/08/07		97	%	50 - 130
			D12-BENZO(A)PYRENE (sur.)	2014/08/07		101	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2014/08/07		90	%	50 - 130
			TERPHENYL-D14 (sur.)	2014/08/07		96	%	50 - 130
			Acenaphthene	2014/08/07		NC	%	50 - 130
			Acenaphthylene	2014/08/07		NC	%	50 - 130
			Acridine	2014/08/07		79	%	50 - 130
			Anthracene	2014/08/07		NC	%	50 - 130
			Benzo(a)anthracene	2014/08/07		73	%	50 - 130
			Benzo(b&j)fluoranthene	2014/08/07		65	%	50 - 130
			Benzo(k)fluoranthene	2014/08/07		67	%	50 - 130
			Benzo(g,h,i)perylene	2014/08/07		64	%	50 - 130
			Benzo(c)phenanthrene	2014/08/07		75	%	50 - 130
			Benzo(a)pyrene	2014/08/07		68	%	50 - 130
			Benzo[e]pyrene	2014/08/07		69	%	50 - 130
			Chrysene	2014/08/07		73	%	50 - 130
			Dibenz(a,h)anthracene	2014/08/07		64	%	50 - 130
			Fluoranthene	2014/08/07		NC	%	50 - 130
			Fluorene	2014/08/07		NC	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2014/08/07		66	%	50 - 130
			2-Methylnaphthalene	2014/08/07		NC	%	50 - 130
			Naphthalene	2014/08/07		NC	%	50 - 130
			Phenanthrene	2014/08/07		NC	%	50 - 130
			Perylene	2014/08/07		67	%	50 - 130
			Pyrene	2014/08/07		NC	%	50 - 130
			Quinoline	2014/08/07		NC	%	50 - 130
			7591045	JC7	Spiked Blank	D10-ANTHRACENE (sur.)	2014/08/07	
D12-BENZO(A)PYRENE (sur.)	2014/08/07					99	%	50 - 130
D8-ACENAPHTHYLENE (sur.)	2014/08/07					89	%	50 - 130
TERPHENYL-D14 (sur.)	2014/08/07					96	%	50 - 130
Acenaphthene	2014/08/07					94	%	50 - 130
Acenaphthylene	2014/08/07					97	%	50 - 130
Acridine	2014/08/07					85	%	50 - 130
Anthracene	2014/08/07					90	%	50 - 130
Benzo(a)anthracene	2014/08/07					94	%	50 - 130
Benzo(b&j)fluoranthene	2014/08/07					82	%	50 - 130
Benzo(k)fluoranthene	2014/08/07					85	%	50 - 130
Benzo(g,h,i)perylene	2014/08/07					78	%	50 - 130
Benzo(c)phenanthrene	2014/08/07					96	%	50 - 130
Benzo(a)pyrene	2014/08/07					86	%	50 - 130
Benzo[e]pyrene	2014/08/07					88	%	50 - 130
Chrysene	2014/08/07					93	%	50 - 130
Dibenz(a,h)anthracene	2014/08/07					78	%	50 - 130
Fluoranthene	2014/08/07					100	%	50 - 130
Fluorene	2014/08/07					97	%	50 - 130
Indeno(1,2,3-cd)pyrene	2014/08/07					81	%	50 - 130
2-Methylnaphthalene	2014/08/07					85	%	50 - 130
Naphthalene	2014/08/07					91	%	50 - 130
Phenanthrene	2014/08/07					98	%	50 - 130
Perylene	2014/08/07					84	%	50 - 130
Pyrene	2014/08/07					103	%	50 - 130
Quinoline	2014/08/07					101	%	50 - 130

Maxxam Job #: B466892
 Report Date: 2014/08/12

 GOLDER ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 4000/CAR GEO SITE Q3
 Sampler Initials: JL

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits	
7591045	JC7	Method Blank	D10-ANTHRACENE (sur.)	2014/08/07		102	%	50 - 130	
			D12-BENZO(A)PYRENE (sur.)	2014/08/07		98	%	50 - 130	
			D8-ACENAPHTHYLENE (sur.)	2014/08/07		90	%	50 - 130	
			TERPHENYL-D14 (sur.)	2014/08/07		96	%	50 - 130	
			Acenaphthene	2014/08/07	<0.00010		mg/L		
			Acenaphthylene	2014/08/07	<0.00010		mg/L		
			Acridine	2014/08/07	<0.00020		mg/L		
			Anthracene	2014/08/07	<0.000010		mg/L		
			Benzo(a)anthracene	2014/08/07	<0.0000085		mg/L		
			Benzo(b&j)fluoranthene	2014/08/07	<0.0000085		mg/L		
			Benzo(k)fluoranthene	2014/08/07	<0.0000085		mg/L		
			Benzo(g,h,i)perylene	2014/08/07	<0.0000085		mg/L		
			Benzo(c)phenanthrene	2014/08/07	<0.000050		mg/L		
			Benzo(a)pyrene	2014/08/07	<0.0000075		mg/L		
			Benzo[e]pyrene	2014/08/07	<0.000050		mg/L		
			Chrysene	2014/08/07	<0.0000085		mg/L		
			Dibenz(a,h)anthracene	2014/08/07	<0.0000075		mg/L		
			Fluoranthene	2014/08/07	<0.000010		mg/L		
			Fluorene	2014/08/07	<0.000050		mg/L		
			Indeno(1,2,3-cd)pyrene	2014/08/07	<0.0000085		mg/L		
			2-Methylnaphthalene	2014/08/07	<0.00010		mg/L		
			Naphthalene	2014/08/07	<0.00010		mg/L		
			Phenanthrene	2014/08/07	<0.000050		mg/L		
			Perylene	2014/08/07	<0.000050		mg/L		
Pyrene	2014/08/07	<0.000020		mg/L					
Quinoline	2014/08/07	<0.00020		mg/L					
7591052	VP4	Matrix Spike [KG5859-01]	O-TERPHENYL (sur.)	2014/08/07		97	%	50 - 130	
			F2 (C10-C16 Hydrocarbons)	2014/08/07		81	%	50 - 130	
7591052	VP4	Spiked Blank	O-TERPHENYL (sur.)	2014/08/07		99	%	50 - 130	
			F2 (C10-C16 Hydrocarbons)	2014/08/07		76	%	70 - 130	
7591052	VP4	Method Blank	O-TERPHENYL (sur.)	2014/08/07		98	%	50 - 130	
			F2 (C10-C16 Hydrocarbons)	2014/08/07	<0.10		mg/L		
7591211	SLZ	Matrix Spike	1,4-Difluorobenzene (sur.)	2014/08/07		101	%	70 - 130	
			4-Bromofluorobenzene (sur.)	2014/08/07		90	%	70 - 130	
			D4-1,2-Dichloroethane (sur.)	2014/08/07		100	%	70 - 130	
			Bromodichloromethane	2014/08/07		104	%	70 - 130	
			Bromoform	2014/08/07		125	%	70 - 130	
			Bromomethane	2014/08/07		101	%	70 - 130	
			Carbon tetrachloride	2014/08/07		92	%	70 - 130	
			Chlorobenzene	2014/08/07		107	%	70 - 130	
			Chlorodibromomethane	2014/08/07		120	%	70 - 130	
			Chloroethane	2014/08/07		90	%	70 - 130	
			Chloroform	2014/08/07		98	%	70 - 130	
			Chloromethane	2014/08/07		77	%	70 - 130	
			1,2-dibromoethane	2014/08/07		117	%	70 - 130	
			1,2-dichlorobenzene	2014/08/07		97	%	70 - 130	
			1,3-dichlorobenzene	2014/08/07		92	%	70 - 130	
			1,4-dichlorobenzene	2014/08/07		92	%	70 - 130	
			1,1-dichloroethane	2014/08/07		88	%	70 - 130	
			1,2-dichloroethane	2014/08/07		100	%	70 - 130	
			1,1-dichloroethene	2014/08/07		91	%	70 - 130	
			cis-1,2-dichloroethene	2014/08/07		93	%	70 - 130	

Maxxam Job #: B466892
 Report Date: 2014/08/12

GOLDER ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 4000/CAR GEO SITE Q3
 Sampler Initials: JL

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			trans-1,2-dichloroethene	2014/08/07		92	%	70 - 130
			Dichloromethane	2014/08/07		89	%	70 - 130
			1,2-dichloropropane	2014/08/07		94	%	70 - 130
			cis-1,3-dichloropropene	2014/08/07		103	%	70 - 130
			trans-1,3-dichloropropene	2014/08/07		115	%	70 - 130
			Methyl methacrylate	2014/08/07		111	%	70 - 130
			Methyl-tert-butylether (MTBE)	2014/08/07		93	%	70 - 130
			Styrene	2014/08/07		115	%	70 - 130
			1,1,1,2-tetrachloroethane	2014/08/07		116	%	70 - 130
			1,1,2,2-tetrachloroethane	2014/08/07		109	%	70 - 130
			Tetrachloroethene	2014/08/07		105	%	70 - 130
			1,2,3-trichlorobenzene	2014/08/07		117	%	70 - 130
			1,2,4-trichlorobenzene	2014/08/07		109	%	70 - 130
			1,3,5-trichlorobenzene	2014/08/07		101	%	70 - 130
			1,1,1-trichloroethane	2014/08/07		95	%	70 - 130
			1,1,2-trichloroethane	2014/08/07		105	%	70 - 130
			Trichloroethene	2014/08/07		95	%	70 - 130
			Trichlorofluoromethane	2014/08/07		80	%	70 - 130
			1,2,4-trimethylbenzene	2014/08/07		NC	%	70 - 130
			1,3,5-trimethylbenzene	2014/08/07		88	%	70 - 130
			Vinyl chloride	2014/08/07		87	%	70 - 130
7591211	SLZ	Spiked Blank	1,4-Difluorobenzene (sur.)	2014/08/07		100	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/08/07		120	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2014/08/07		93	%	70 - 130
			Bromodichloromethane	2014/08/07		102	%	70 - 130
			Bromoform	2014/08/07		108	%	70 - 130
			Bromomethane	2014/08/07		77	%	70 - 130
			Carbon tetrachloride	2014/08/07		89	%	70 - 130
			Chlorobenzene	2014/08/07		98	%	70 - 130
			Chlorodibromomethane	2014/08/07		106	%	70 - 130
			Chloroethane	2014/08/07		74	%	70 - 130
			Chloroform	2014/08/07		82	%	70 - 130
			Chloromethane	2014/08/07		65 (1)	%	70 - 130
			1,2-dibromoethane	2014/08/07		105	%	70 - 130
			1,2-dichlorobenzene	2014/08/07		111	%	70 - 130
			1,3-dichlorobenzene	2014/08/07		101	%	70 - 130
			1,4-dichlorobenzene	2014/08/07		103	%	70 - 130
			1,1-dichloroethane	2014/08/07		84	%	70 - 130
			1,2-dichloroethane	2014/08/07		92	%	70 - 130
			1,1-dichloroethene	2014/08/07		82	%	70 - 130
			cis-1,2-dichloroethene	2014/08/07		77	%	70 - 130
			trans-1,2-dichloroethene	2014/08/07		84	%	70 - 130
			Dichloromethane	2014/08/07		76	%	70 - 130
			1,2-dichloropropane	2014/08/07		95	%	70 - 130
			cis-1,3-dichloropropene	2014/08/07		90	%	70 - 130
			trans-1,3-dichloropropene	2014/08/07		94	%	70 - 130
			Methyl methacrylate	2014/08/07		107	%	70 - 130
			Methyl-tert-butylether (MTBE)	2014/08/07		85	%	70 - 130
			Styrene	2014/08/07		105	%	70 - 130
			1,1,1,2-tetrachloroethane	2014/08/07		106	%	70 - 130
			1,1,2,2-tetrachloroethane	2014/08/07		99	%	70 - 130
			Tetrachloroethene	2014/08/07		96	%	70 - 130

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 Client Project #: 13-1324-0204
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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			1,2,3-trichlorobenzene	2014/08/07		97	%	70 - 130
			1,2,4-trichlorobenzene	2014/08/07		99	%	70 - 130
			1,3,5-trichlorobenzene	2014/08/07		105	%	70 - 130
			1,1,1-trichloroethane	2014/08/07		90	%	70 - 130
			1,1,2-trichloroethane	2014/08/07		94	%	70 - 130
			Trichloroethene	2014/08/07		90	%	70 - 130
			Trichlorofluoromethane	2014/08/07		69 (1)	%	70 - 130
			1,2,4-trimethylbenzene	2014/08/07		107	%	70 - 130
			1,3,5-trimethylbenzene	2014/08/07		117	%	70 - 130
			Vinyl chloride	2014/08/07		73	%	70 - 130
7591211	SLZ	Method Blank	1,4-Difluorobenzene (sur.)	2014/08/07		98	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/08/07		112	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2014/08/07		92	%	70 - 130
			Bromodichloromethane	2014/08/07	<0.00050		mg/L	
			Bromoform	2014/08/07	<0.00050		mg/L	
			Bromomethane	2014/08/07	<0.0020		mg/L	
			Carbon tetrachloride	2014/08/07	<0.00050		mg/L	
			Chlorobenzene	2014/08/07	<0.00050		mg/L	
			Chlorodibromomethane	2014/08/07	<0.0010		mg/L	
			Chloroethane	2014/08/07	<0.0010		mg/L	
			Chloroform	2014/08/07	<0.00050		mg/L	
			Chloromethane	2014/08/07	<0.0020		mg/L	
			1,2-dibromoethane	2014/08/07	<0.00050		mg/L	
			1,2-dichlorobenzene	2014/08/07	<0.00050		mg/L	
			1,3-dichlorobenzene	2014/08/07	<0.00050		mg/L	
			1,4-dichlorobenzene	2014/08/07	<0.00050		mg/L	
			1,1-dichloroethane	2014/08/07	<0.00050		mg/L	
			1,2-dichloroethane	2014/08/07	<0.00050		mg/L	
			1,1-dichloroethene	2014/08/07	<0.00050		mg/L	
			cis-1,2-dichloroethene	2014/08/07	<0.00050		mg/L	
			trans-1,2-dichloroethene	2014/08/07	<0.00050		mg/L	
			Dichloromethane	2014/08/07	<0.0020		mg/L	
			1,2-dichloropropane	2014/08/07	<0.00050		mg/L	
			cis-1,3-dichloropropene	2014/08/07	<0.00050		mg/L	
			trans-1,3-dichloropropene	2014/08/07	<0.00050		mg/L	
			Methyl methacrylate	2014/08/07	<0.00050		mg/L	
			Methyl-tert-butylether (MTBE)	2014/08/07	<0.00050		mg/L	
			Styrene	2014/08/07	<0.00050		mg/L	
			1,1,1,2-tetrachloroethane	2014/08/07	<0.0020		mg/L	
			1,1,2,2-tetrachloroethane	2014/08/07	<0.0020		mg/L	
			Tetrachloroethene	2014/08/07	<0.00050		mg/L	
			1,2,3-trichlorobenzene	2014/08/07	<0.0010		mg/L	
			1,2,4-trichlorobenzene	2014/08/07	<0.0010		mg/L	
			1,3,5-trichlorobenzene	2014/08/07	0.00087 ,		mg/L	
					RDL=0.00050			
			1,1,1-trichloroethane	2014/08/07	<0.00050		mg/L	
			1,1,2-trichloroethane	2014/08/07	<0.00050		mg/L	
			Trichloroethene	2014/08/07	<0.00050		mg/L	
			Trichlorofluoromethane	2014/08/07	<0.00050		mg/L	
			1,2,4-trimethylbenzene	2014/08/07	<0.00050		mg/L	
			1,3,5-trimethylbenzene	2014/08/07	<0.00050		mg/L	
			Vinyl chloride	2014/08/07	<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			
7591364	ARA	Matrix Spike [KG5859-02]	1,4-Difluorobenzene (sur.)	2014/08/07		105	%	70 - 130			
			4-Bromofluorobenzene (sur.)	2014/08/07		109	%	70 - 130			
			D4-1,2-Dichloroethane (sur.)	2014/08/07		105	%	70 - 130			
			Benzene	2014/08/07		96	%	70 - 130			
			Toluene	2014/08/07		92	%	70 - 130			
			Ethylbenzene	2014/08/07		97	%	70 - 130			
			m & p-Xylene	2014/08/07		97	%	70 - 130			
			o-Xylene	2014/08/07		96	%	70 - 130			
			(C6-C10)	2014/08/07		76	%	70 - 130			
			7591364	ARA	Spiked Blank	1,4-Difluorobenzene (sur.)	2014/08/07		104	%	70 - 130
4-Bromofluorobenzene (sur.)	2014/08/07					107	%	70 - 130			
D4-1,2-Dichloroethane (sur.)	2014/08/07					104	%	70 - 130			
Benzene	2014/08/07					96	%	70 - 130			
Toluene	2014/08/07					90	%	70 - 130			
Ethylbenzene	2014/08/07					94	%	70 - 130			
m & p-Xylene	2014/08/07					94	%	70 - 130			
o-Xylene	2014/08/07					94	%	70 - 130			
(C6-C10)	2014/08/07					79	%	70 - 130			
7591364	ARA	Method Blank				1,4-Difluorobenzene (sur.)	2014/08/07		107	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/08/07		108	%	70 - 130			
			D4-1,2-Dichloroethane (sur.)	2014/08/07		103	%	70 - 130			
			Benzene	2014/08/07	<0.00040		mg/L				
			Toluene	2014/08/07	<0.00040		mg/L				
			Ethylbenzene	2014/08/07	<0.00040		mg/L				
			m & p-Xylene	2014/08/07	<0.00080		mg/L				
			o-Xylene	2014/08/07	<0.00040		mg/L				
			Xylenes (Total)	2014/08/07	<0.00080		mg/L				
			F1 (C6-C10) - BTEX	2014/08/07	<0.10		mg/L				
			(C6-C10)	2014/08/07	<0.10		mg/L				
			7591364	ARA	RPD [KG5858-02]	Benzene	2014/08/07	1.5		%	40
						Toluene	2014/08/07	1.5		%	40
Ethylbenzene	2014/08/07	0.9					%	40			
m & p-Xylene	2014/08/07	2.5					%	40			
o-Xylene	2014/08/07	1.2					%	40			
Xylenes (Total)	2014/08/07	1.8					%	40			
F1 (C6-C10) - BTEX	2014/08/07	NC					%	40			
(C6-C10)	2014/08/07	NC					%	40			
7592792	SLZ	Matrix Spike	1,4-Difluorobenzene (sur.)	2014/08/08		101	%	70 - 130			
			4-Bromofluorobenzene (sur.)	2014/08/08		106	%	70 - 130			
			D4-1,2-Dichloroethane (sur.)	2014/08/08		86	%	70 - 130			
			Bromodichloromethane	2014/08/08		106	%	70 - 130			
			Bromoform	2014/08/08		109	%	70 - 130			
			Bromomethane	2014/08/08		81	%	70 - 130			
			Carbon tetrachloride	2014/08/08		88	%	70 - 130			
			Chlorobenzene	2014/08/08		99	%	70 - 130			
			Chlorodibromomethane	2014/08/08		107	%	70 - 130			
			Chloroethane	2014/08/08		70 (1)	%	70 - 130			
			Chloroform	2014/08/08		86	%	70 - 130			
			Chloromethane	2014/08/08		65 (1)	%	70 - 130			
			1,2-dibromoethane	2014/08/08		103	%	70 - 130			
			1,2-dichlorobenzene	2014/08/08		99	%	70 - 130			
1,3-dichlorobenzene	2014/08/08		98	%	70 - 130						

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			1,4-dichlorobenzene	2014/08/08		97	%	70 - 130
			1,1-dichloroethane	2014/08/08		75	%	70 - 130
			1,2-dichloroethane	2014/08/08		86	%	70 - 130
			1,1-dichloroethene	2014/08/08		79	%	70 - 130
			cis-1,2-dichloroethene	2014/08/08		81	%	70 - 130
			trans-1,2-dichloroethene	2014/08/08		80	%	70 - 130
			Dichloromethane	2014/08/08		74	%	70 - 130
			1,2-dichloropropane	2014/08/08		98	%	70 - 130
			cis-1,3-dichloropropene	2014/08/08		107	%	70 - 130
			trans-1,3-dichloropropene	2014/08/08		109	%	70 - 130
			Methyl methacrylate	2014/08/08		109	%	70 - 130
			Methyl-tert-butylether (MTBE)	2014/08/08		79	%	70 - 130
			Styrene	2014/08/08		107	%	70 - 130
			1,1,1,2-tetrachloroethane	2014/08/08		106	%	70 - 130
			1,1,2,2-tetrachloroethane	2014/08/08		100	%	70 - 130
			Tetrachloroethene	2014/08/08		95	%	70 - 130
			1,2,3-trichlorobenzene	2014/08/08		99	%	70 - 130
			1,2,4-trichlorobenzene	2014/08/08		98	%	70 - 130
			1,3,5-trichlorobenzene	2014/08/08		100	%	70 - 130
			1,1,1-trichloroethane	2014/08/08		87	%	70 - 130
			1,1,2-trichloroethane	2014/08/08		99	%	70 - 130
			Trichloroethene	2014/08/08		95	%	70 - 130
			Trichlorofluoromethane	2014/08/08		69 (1)	%	70 - 130
			1,2,4-trimethylbenzene	2014/08/08		98	%	70 - 130
			1,3,5-trimethylbenzene	2014/08/08		105	%	70 - 130
			Vinyl chloride	2014/08/08		77	%	70 - 130
7592792	SLZ	Spiked Blank	1,4-Difluorobenzene (sur.)	2014/08/08		101	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/08/08		104	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2014/08/08		102	%	70 - 130
			Bromodichloromethane	2014/08/08		87	%	70 - 130
			Bromoform	2014/08/08		109	%	70 - 130
			Bromomethane	2014/08/08		78	%	70 - 130
			Carbon tetrachloride	2014/08/08		86	%	70 - 130
			Chlorobenzene	2014/08/08		96	%	70 - 130
			Chlorodibromomethane	2014/08/08		114	%	70 - 130
			Chloroethane	2014/08/08		69 (1)	%	70 - 130
			Chloroform	2014/08/08		84	%	70 - 130
			Chloromethane	2014/08/08		68 (1)	%	70 - 130
			1,2-dibromoethane	2014/08/08		110	%	70 - 130
			1,2-dichlorobenzene	2014/08/08		98	%	70 - 130
			1,3-dichlorobenzene	2014/08/08		92	%	70 - 130
			1,4-dichlorobenzene	2014/08/08		93	%	70 - 130
			1,1-dichloroethane	2014/08/08		77	%	70 - 130
			1,2-dichloroethane	2014/08/08		83	%	70 - 130
			1,1-dichloroethene	2014/08/08		78	%	70 - 130
			cis-1,2-dichloroethene	2014/08/08		78	%	70 - 130
			trans-1,2-dichloroethene	2014/08/08		81	%	70 - 130
			Dichloromethane	2014/08/08		74	%	70 - 130
			1,2-dichloropropane	2014/08/08		78	%	70 - 130
			cis-1,3-dichloropropene	2014/08/08		101	%	70 - 130
			trans-1,3-dichloropropene	2014/08/08		112	%	70 - 130
			Methyl methacrylate	2014/08/08		87	%	70 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			Methyl-tert-butylether (MTBE)	2014/08/08		78	%	70 - 130
			Styrene	2014/08/08		106	%	70 - 130
			1,1,1,2-tetrachloroethane	2014/08/08		103	%	70 - 130
			1,1,2,2-tetrachloroethane	2014/08/08		91	%	70 - 130
			Tetrachloroethene	2014/08/08		101	%	70 - 130
			1,2,3-trichlorobenzene	2014/08/08		91	%	70 - 130
			1,2,4-trichlorobenzene	2014/08/08		93	%	70 - 130
			1,3,5-trichlorobenzene	2014/08/08		97	%	70 - 130
			1,1,1-trichloroethane	2014/08/08		83	%	70 - 130
			1,1,2-trichloroethane	2014/08/08		95	%	70 - 130
			Trichloroethene	2014/08/08		80	%	70 - 130
			Trichlorofluoromethane	2014/08/08		69 (1)	%	70 - 130
			1,2,4-trimethylbenzene	2014/08/08		88	%	70 - 130
			1,3,5-trimethylbenzene	2014/08/08		91	%	70 - 130
			Vinyl chloride	2014/08/08		78	%	70 - 130
7592792	SLZ	Method Blank	1,4-Difluorobenzene (sur.)	2014/08/08		102	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/08/08		87	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2014/08/08		88	%	70 - 130
			Bromodichloromethane	2014/08/08	<0.00050		mg/L	
			Bromoform	2014/08/08	<0.00050		mg/L	
			Bromomethane	2014/08/08	<0.0020		mg/L	
			Carbon tetrachloride	2014/08/08	<0.00050		mg/L	
			Chlorobenzene	2014/08/08	<0.00050		mg/L	
			Chlorodibromomethane	2014/08/08	<0.0010		mg/L	
			Chloroethane	2014/08/08	<0.0010		mg/L	
			Chloroform	2014/08/08	<0.00050		mg/L	
			Chloromethane	2014/08/08	<0.0020		mg/L	
			1,2-dibromoethane	2014/08/08	<0.00050		mg/L	
			1,2-dichlorobenzene	2014/08/08	<0.00050		mg/L	
			1,3-dichlorobenzene	2014/08/08	<0.00050		mg/L	
			1,4-dichlorobenzene	2014/08/08	<0.00050		mg/L	
			1,1-dichloroethane	2014/08/08	<0.00050		mg/L	
			1,2-dichloroethane	2014/08/08	<0.00050		mg/L	
			1,1-dichloroethene	2014/08/08	<0.00050		mg/L	
			cis-1,2-dichloroethene	2014/08/08	<0.00050		mg/L	
			trans-1,2-dichloroethene	2014/08/08	<0.00050		mg/L	
			Dichloromethane	2014/08/08	<0.0020		mg/L	
			1,2-dichloropropane	2014/08/08	<0.00050		mg/L	
			cis-1,3-dichloropropene	2014/08/08	<0.00050		mg/L	
			trans-1,3-dichloropropene	2014/08/08	<0.00050		mg/L	
			Methyl methacrylate	2014/08/08	<0.00050		mg/L	
			Methyl-tert-butylether (MTBE)	2014/08/08	<0.00050		mg/L	
			Styrene	2014/08/08	<0.00050		mg/L	
			1,1,1,2-tetrachloroethane	2014/08/08	<0.0020		mg/L	
			1,1,2,2-tetrachloroethane	2014/08/08	<0.0020		mg/L	
			Tetrachloroethene	2014/08/08	<0.00050		mg/L	
			1,2,3-trichlorobenzene	2014/08/08	<0.0010		mg/L	
			1,2,4-trichlorobenzene	2014/08/08	<0.0010		mg/L	
			1,3,5-trichlorobenzene	2014/08/08	<0.00050		mg/L	
			1,1,1-trichloroethane	2014/08/08	<0.00050		mg/L	
			1,1,2-trichloroethane	2014/08/08	<0.00050		mg/L	
			Trichloroethene	2014/08/08	<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
			Trichlorofluoromethane	2014/08/08	<0.00050		mg/L	
			1,2,4-trimethylbenzene	2014/08/08	<0.00050		mg/L	
			1,3,5-trimethylbenzene	2014/08/08	<0.00050		mg/L	
			Vinyl chloride	2014/08/08	<0.00050		mg/L	

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 spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of 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 (one or both samples < 5x 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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VALIDATION SIGNATURE PAGE

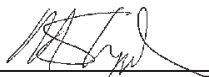
The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Janet Gao, Senior Analyst, Organics Department



Luba Shymushovska, Senior Analyst, Organic Department



Michael Sheppard, Organics Supervisor

Maxxam 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.

Maxxam

Category: 4000 19th St. NE, T2E 6P8, Ph: (403) 291-2077, Fax: (403) 730-2240, Toll free: (800) 389-7247
 Edmonton: 9331 - 48 Street, T6B 2P4, Ph: (780) 577-7100, Fax: (780) 490-4187, Toll free: (877) 465-8888
 www.maxxamanalytics.com

105 2 weeks

Chain of Custody **A094725**
 Page: 1 of 1


Company:	Invoice To: <input type="checkbox"/> C/O Report Address Golder Associates Julie Burghard E	Report To:	Same as Invoice <input checked="" type="checkbox"/>	Report Distribution (E-Mail):	REGULATORY GUIDELINES:
Contact:	102 2575 - 3rd Ave SE Calgary AB T2A 7W5			jburghardt@golder.com julie.burghard@golder.com simon.hughes@golder.com	<input checked="" type="checkbox"/> AT1 <input type="checkbox"/> CCME <input type="checkbox"/> Regulated Drinking Water <input type="checkbox"/> Other:
Address:	Ph: 403 299 5600	Prov:	PC:		
Contact #:		Ph:	Cell:		

All samples are held for 90 calendar days after sample receipt, unless specified otherwise.

PO #:
 Project # / Name: 13-1724-0204_4000
 Site Location: Can Green Site Q3
 Quote #: Golder 2013
 Sampled By: JLC

SERVICE REQUESTED: RUSH (Contact lab to reserve)
 Date Required: REGULAR (5 to 7 Days)

Sample ID	Depth (unit)	Matrix (GW / SW / Soil)	Date/Time Sampled (YYMMDD 24:00)	SOIL				WATER				Other Analysis		HOLD - Do not Analyze	# of Containers Submitted				
				BTEX F1-F4	Sieve (75 micron)	Regulated Metals (CCME / AT1)	Salinity & Assessment (CP Metals)	Basic Class II Landfill	BTEX F1	BTEX F1-F4	Routine Water	Turb	DOC			TOC	Regulated Metals (CCME / AT1)	Mercury	Total
1 MW14-1A	—	GW	Aug 5/14 10:55																
2 MW14-8	—	GW	11:45																
3 MW11-01A	—		13:15																
4 MW10-07A	—		14:00																
5 MW11-6	—		15:00																
6 Dye-1	—		15:15																
7 Field Blank	—		15:45																
8																			
9																			
10																			
11																			
12																			

05-Aug-14 16:36
 Wendy Sears

 B466892 NB
 MHL INS-0070

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

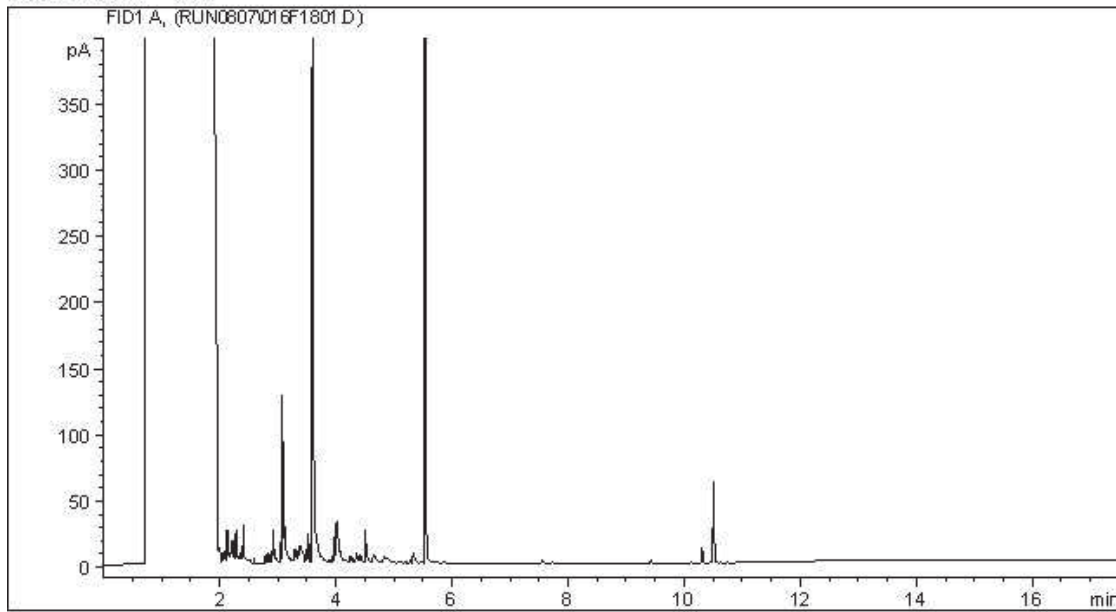
Requisitioned By (Signature/Print): Jon Lewis	Date (YYMMDD): Aug 5 2014	Time (24:00): 16:34	LAB USE ONLY
Requisitioned By (Signature/Print):	Date (YYMMDD):	Time (24:00):	Received By: H. Arce Light H. Lopez Llano
Special Instructions:	# of Jars Used & Not Submitted:	Date: 2014/08/05	Time: 16:36
		Maxxam Job #:	Custody Seal: Yes
		Temperature: 14, 18, 11	Maxxam Job #:
		Lab Comments:	13, 12, 11

AB FCD-00331 Rev3 2010/05

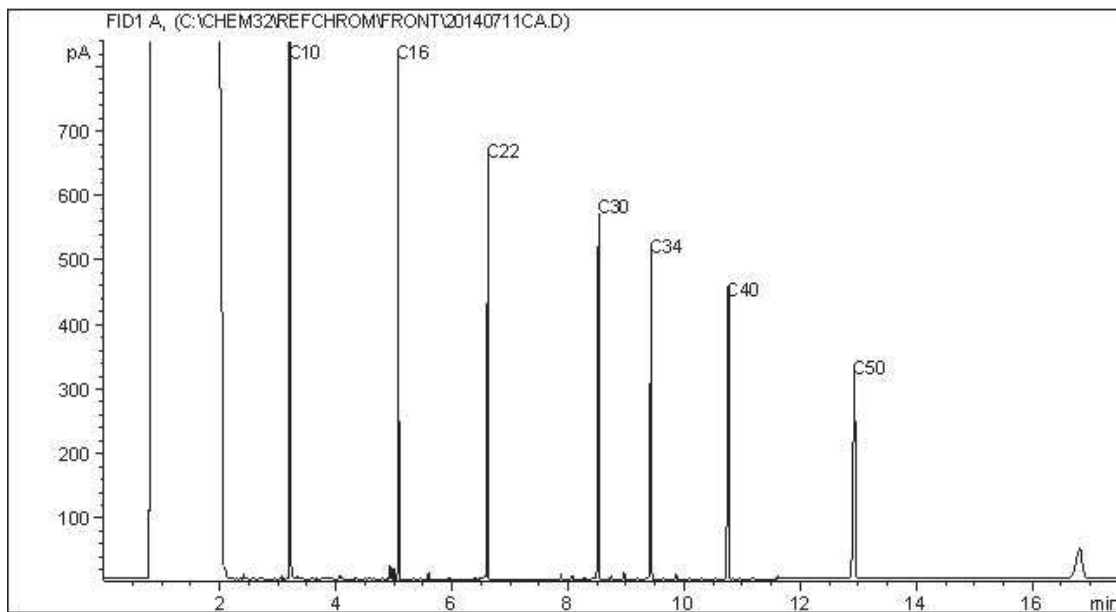
Maxxam Analytics International Corporation o/a Maxxam Analytics

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC 6



Carbon Range Distribution - Reference Chromatogram



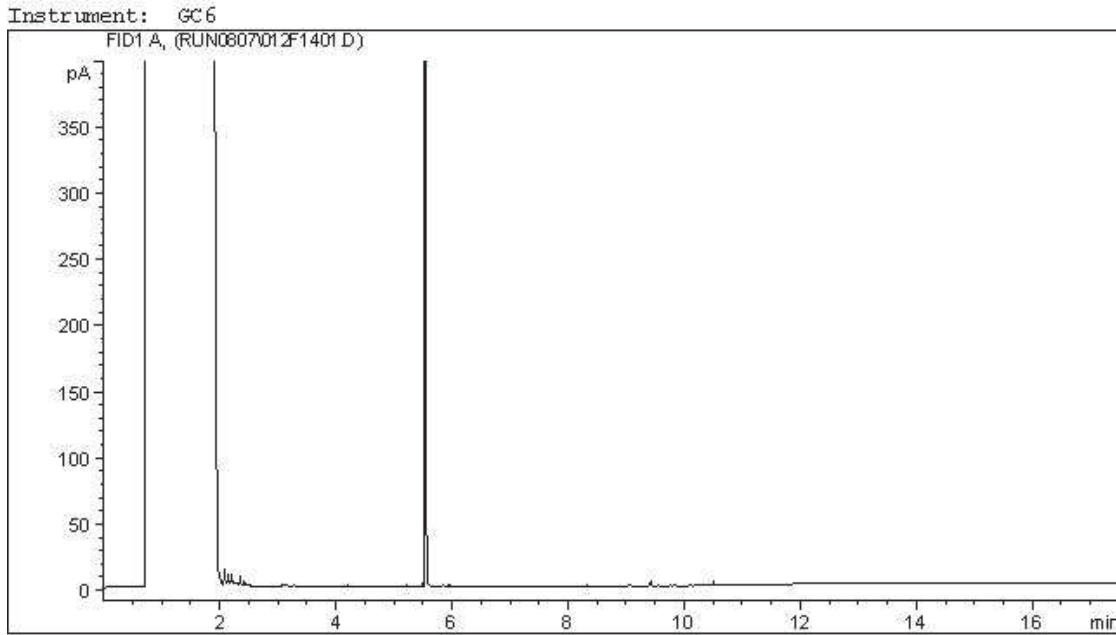
TYPICAL PRODUCT CARBON NUMBER RANGES

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

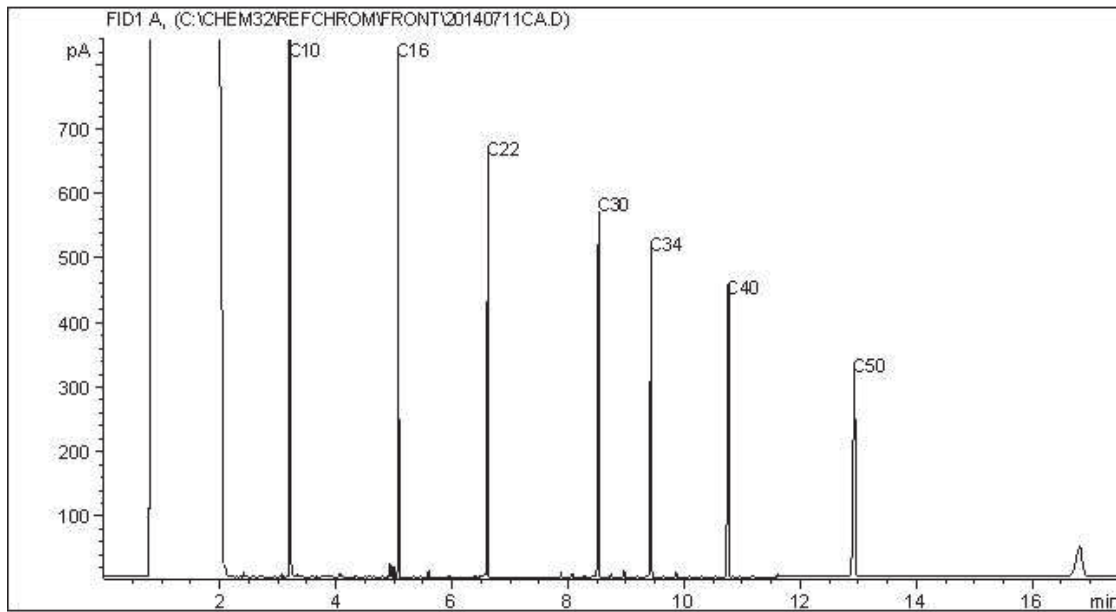
Page 1 of 1

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



Carbon Range Distribution - Reference Chromatogram

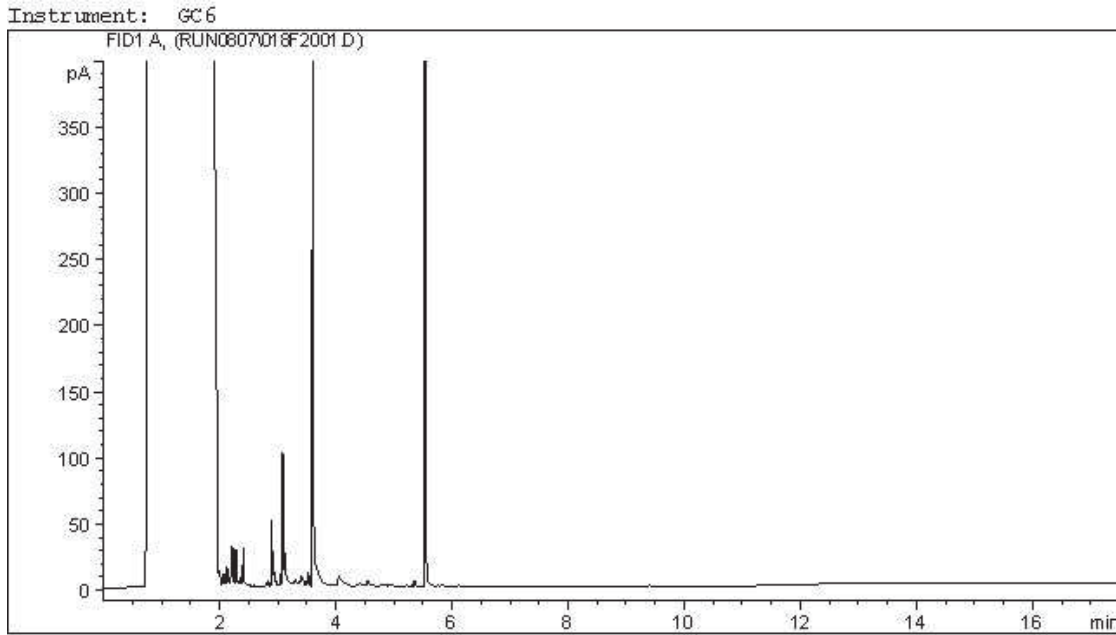


TYPICAL PRODUCT CARBON NUMBER RANGES

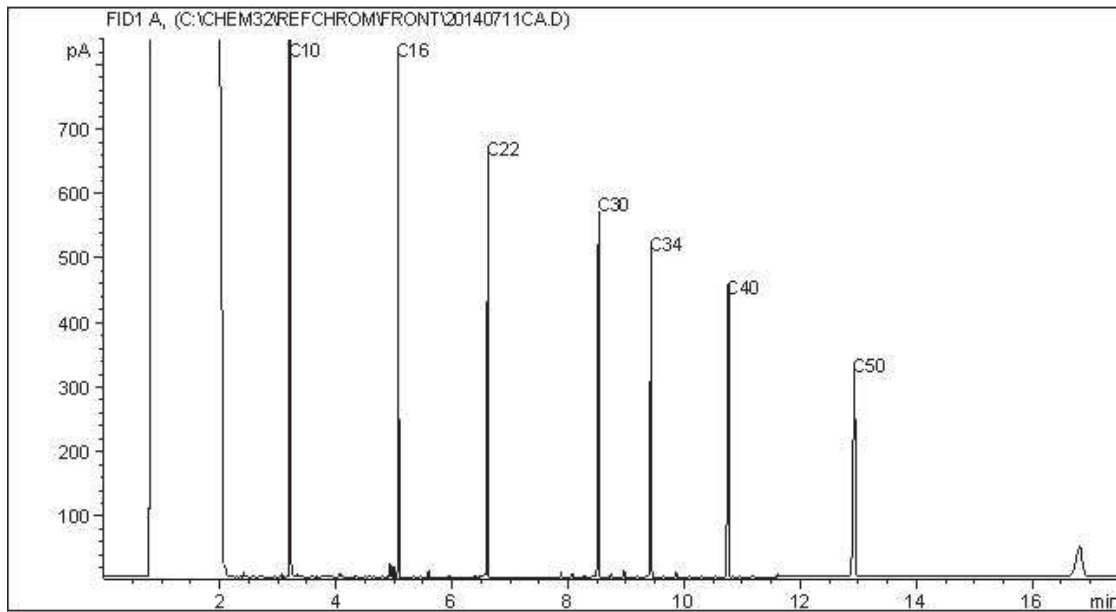
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

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



Carbon Range Distribution - Reference Chromatogram

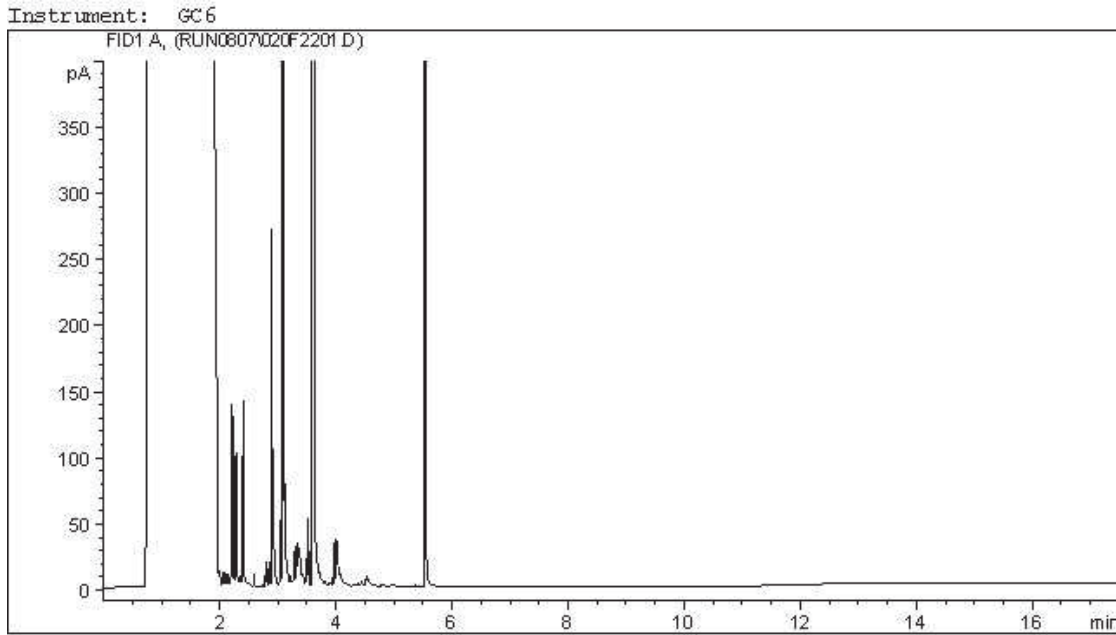


TYPICAL PRODUCT CARBON NUMBER RANGES

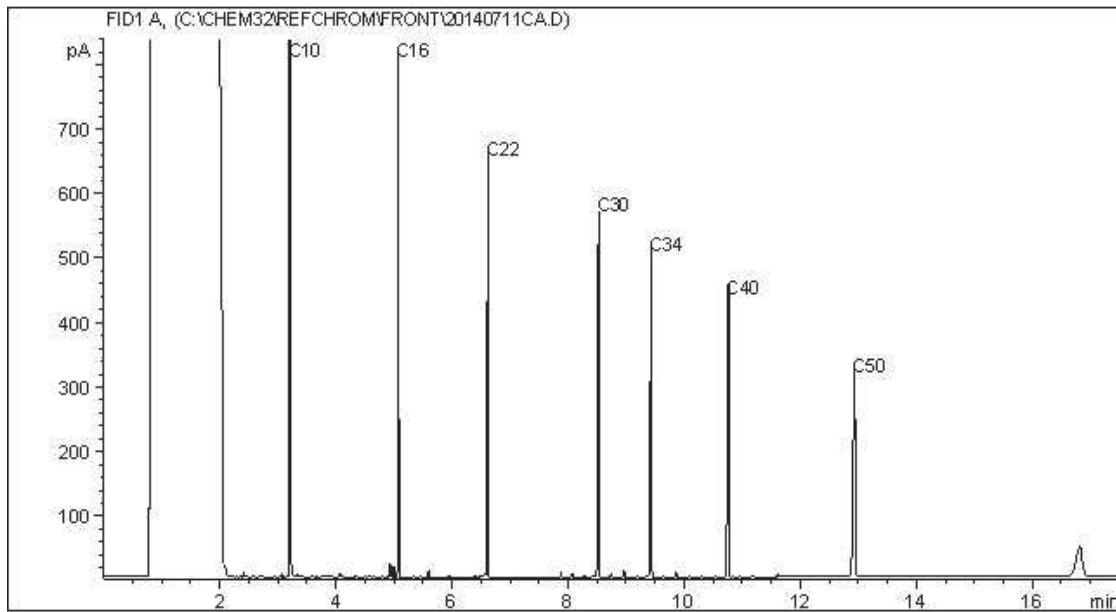
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

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



Carbon Range Distribution - Reference Chromatogram



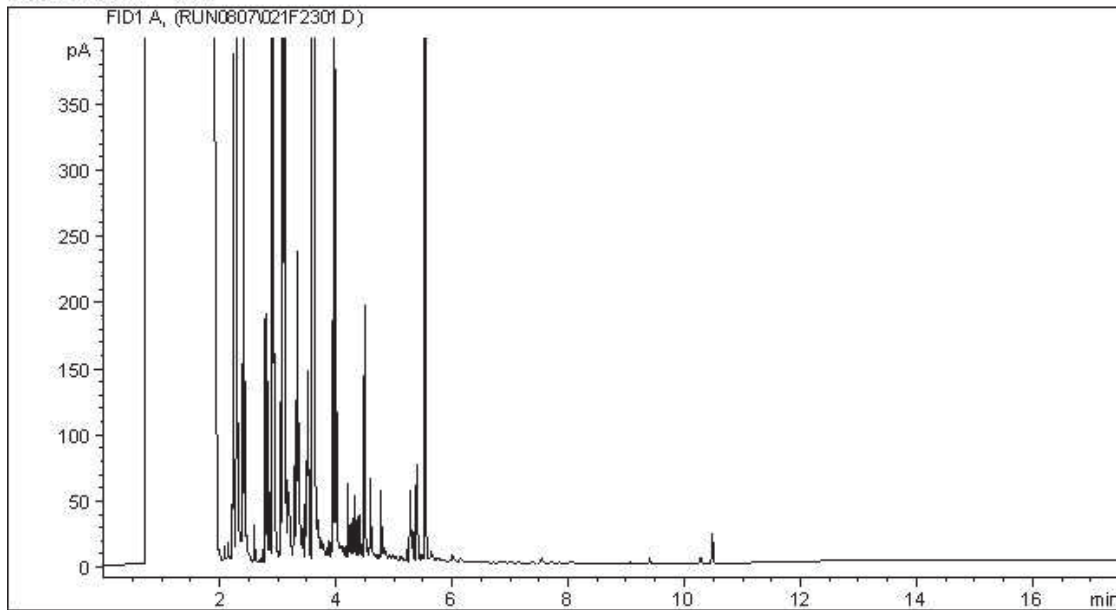
TYPICAL PRODUCT CARBON NUMBER RANGES

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

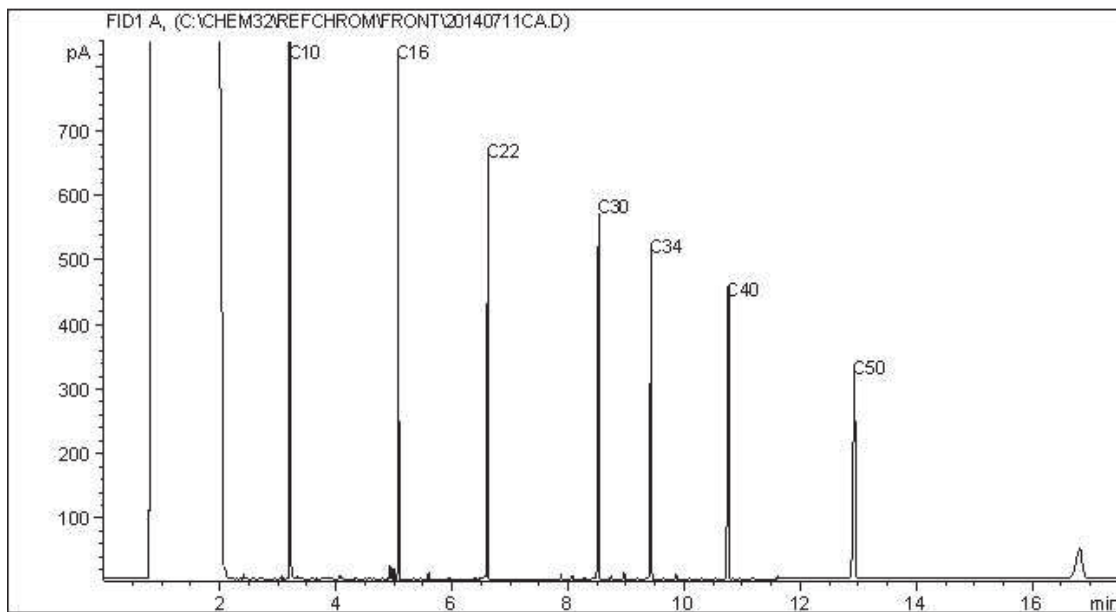
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC 6



Carbon Range Distribution - Reference Chromatogram



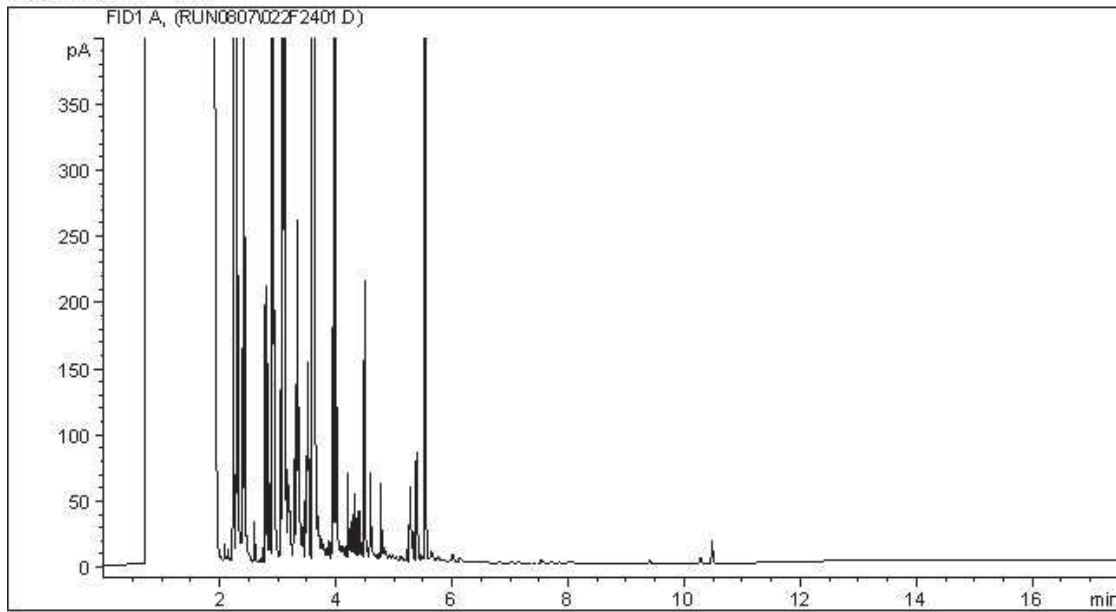
TYPICAL PRODUCT CARBON NUMBER RANGES

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

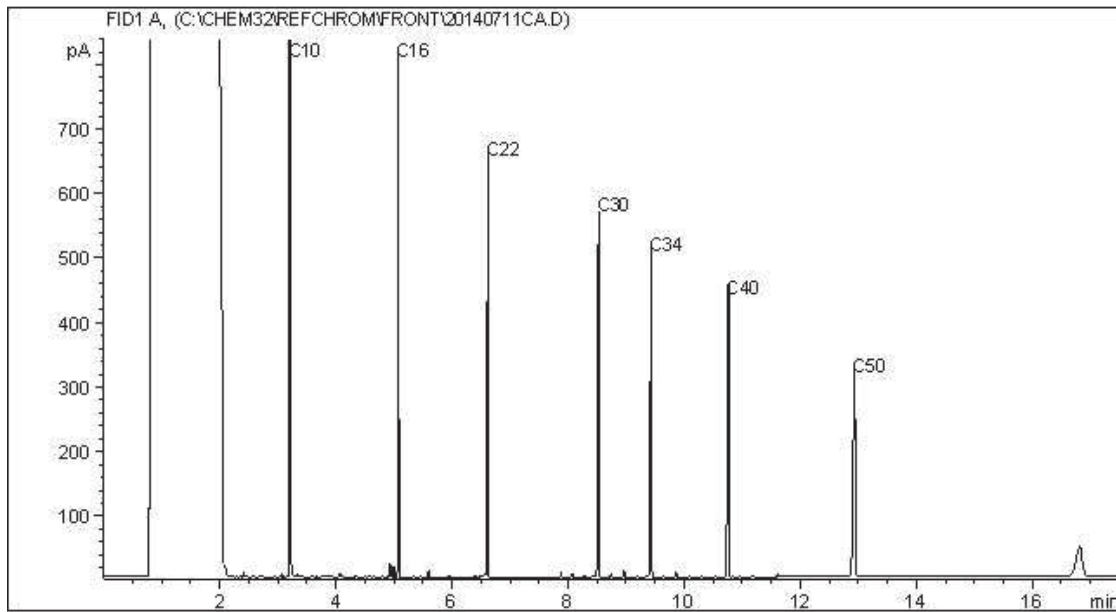
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC 6



Carbon Range Distribution - Reference Chromatogram



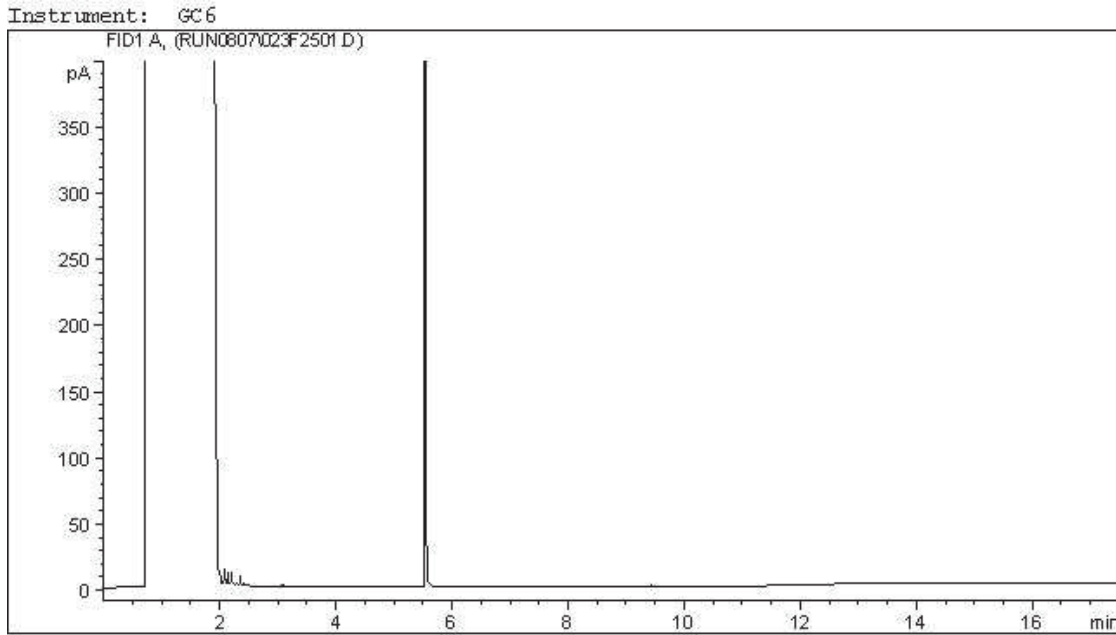
TYPICAL PRODUCT CARBON NUMBER RANGES

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

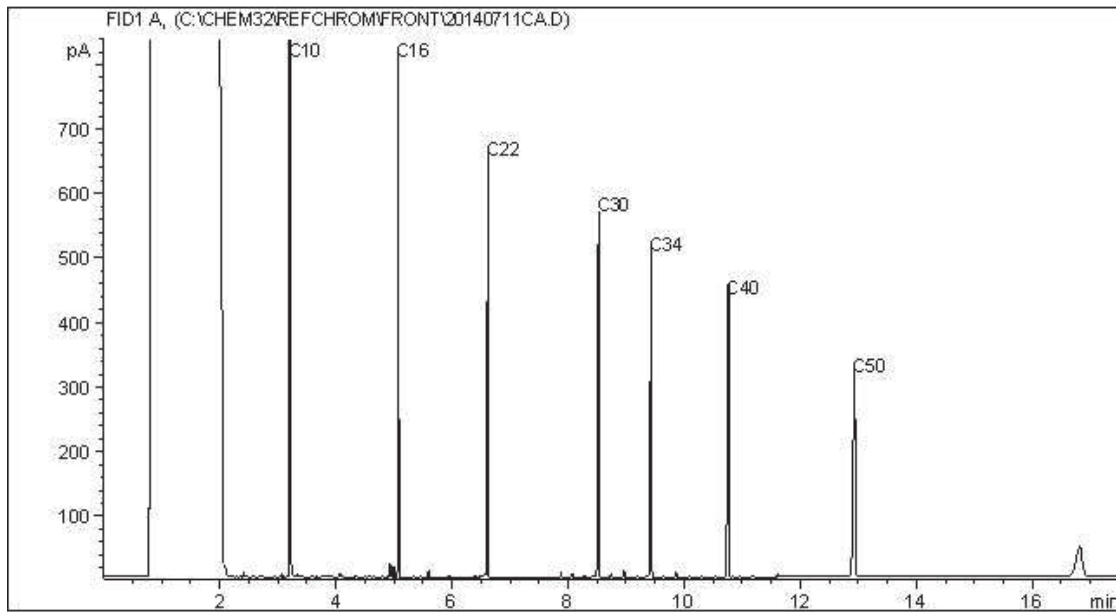
Page 1 of 1

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CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram



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 #: 13-1324-0204
 Site Location: 4000 CAN CREOSOTE Q3
 Your C.O.C. #: A094724

Attention: Julie Burghardt

GOLDER ASSOCIATES LTD.
 CALGARY - NATIONAL CONTRACT
 102, 2535 - 3rd Avenue SE
 CALGARY, AB
 CANADA T2A 7W5

Report Date: 2014/08/13
 Report #: R1620973
 Version: 1

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B467370

Received: 2014/08/06, 13:45

Sample Matrix: Water
 # Samples Received: 7

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
BTEX/F1 in Water by HS GC/MS	7	N/A	2014/08/07	AB SOP-00039	CCME, EPA 8260C
CCME Hydrocarbons in Water (F2; C10-C16)	7	2014/08/09	2014/08/09	AB SOP-00040 AB SOP-00037	EPA3510C/CCME PHCCWS
Benzo[a]pyrene Equivalency	7	N/A	2014/08/13	AB SOP-00003	Auto Calc
PAH in Water by GC/MS (1)	7	2014/08/09	2014/08/09	AB SOP-00037 / AB SOP-00003	EPA 8270D m
Total Trihalomethanes Calculation	7	N/A	2014/08/12	CAL SOP-00104	EPA 8260 C
VOCs in Water by HS GC/MS (Std List)	7	N/A	2014/08/08	CAL SOP-00227	EPA 8260 C

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

(1) 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  Wendy Sears
 13 Aug 2014 16:55:35 -06:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Wendy Sears, Project manager
 Email: WSears@maxxam.ca
 Phone# (403) 291-3077

=====

Maxxam 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.

Maxxam Job #: B467370
 Report Date: 2014/08/13

 GOLDER ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 4000 CAN CREOSOTE Q3
 Sampler Initials: JL

AT1 BTEX AND F1-F2 (WATER)

Maxxam ID		KG8039	KG8039	KG8040	KG8041	KG8042	KG8043		
Sampling Date		2014/08/06 08:20	2014/08/06 08:20	2014/08/06 09:30	2014/08/06 09:45	2014/08/06 10:35	2014/08/06 11:00		
COC Number		A094724	A094724	A094724	A094724	A094724	A094724		
	Units	MW10-01	MW10-01 Lab-Dup	MW14-4B	MW14-4A	MW14-6B	MW14-6A	RDL	QC Batch

Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	N/A	<0.10	2.0	4.1	<0.10	0.10	7592428
Volatiles									
Benzene	mg/L	<0.00040	<0.00040	<0.00040	0.0023	<0.00040	<0.00040	0.00040	7591382
Toluene	mg/L	<0.00040	<0.00040	<0.00040	0.0040	<0.00040	<0.00040	0.00040	7591382
Ethylbenzene	mg/L	<0.00040	<0.00040	<0.00040	0.0065	<0.00040	<0.00040	0.00040	7591382
m & p-Xylene	mg/L	<0.00080	<0.00080	<0.00080	0.023	<0.00080	<0.00080	0.00080	7591382
o-Xylene	mg/L	<0.00040	<0.00040	<0.00040	0.037	0.00045	0.00055	0.00040	7591382
Xylenes (Total)	mg/L	<0.00080	<0.00080	<0.00080	0.060	<0.00080	<0.00080	0.00080	7591382
F1 (C6-C10) - BTEX	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7591382
(C6-C10)	mg/L	<0.10	<0.10	<0.10	0.17	<0.10	<0.10	0.10	7591382
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	106	106	106	107	106	106	N/A	7591382
4-Bromofluorobenzene (sur.)	%	101	102	100	102	101	101	N/A	7591382
D4-1,2-Dichloroethane (sur.)	%	100	101	101	99	100	101	N/A	7591382
O-TERPHENYL (sur.)	%	93	N/A	100	101	88	102	N/A	7592428
RDL = Reportable Detection Limit									
Lab-Dup = Laboratory Initiated Duplicate									
N/A = Not Applicable									

Maxxam Job #: B467370
 Report Date: 2014/08/13

 GOLDR ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 4000 CAN CREOSOTE Q3
 Sampler Initials: JL

AT1 BTEX AND F1-F2 (WATER)

Maxxam ID		KG8044	KG8045	KG8045		
Sampling Date		2014/08/06 11:30	2014/08/06 11:50	2014/08/06 11:50		
COC Number		A094724	A094724	A094724		
	Units	MW14-2	MW14-5	MW14-5 Lab-Dup	RDL	QC Batch
Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	<0.10	<0.10	0.10	7592428
Volatiles						
Benzene	mg/L	<0.00040	<0.00040	N/A	0.00040	7591382
Toluene	mg/L	<0.00040	<0.00040	N/A	0.00040	7591382
Ethylbenzene	mg/L	<0.00040	<0.00040	N/A	0.00040	7591382
m & p-Xylene	mg/L	<0.00080	<0.00080	N/A	0.00080	7591382
o-Xylene	mg/L	<0.00040	<0.00040	N/A	0.00040	7591382
Xylenes (Total)	mg/L	<0.00080	<0.00080	N/A	0.00080	7591382
F1 (C6-C10) - BTEX	mg/L	<0.10	<0.10	N/A	0.10	7591382
(C6-C10)	mg/L	<0.10	<0.10	N/A	0.10	7591382
Surrogate Recovery (%)						
1,4-Difluorobenzene (sur.)	%	107	107	N/A	N/A	7591382
4-Bromofluorobenzene (sur.)	%	102	101	N/A	N/A	7591382
D4-1,2-Dichloroethane (sur.)	%	101	100	N/A	N/A	7591382
O-TERPHENYL (sur.)	%	109	103	104	N/A	7592428
RDL = Reportable Detection Limit						
Lab-Dup = Laboratory Initiated Duplicate						
N/A = Not Applicable						

Maxxam Job #: B467370
 Report Date: 2014/08/13

 GOLDER ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 4000 CAN CREOSOTE Q3
 Sampler Initials: JL

SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		KG8039		KG8040		KG8041		
Sampling Date		2014/08/06 08:20		2014/08/06 09:30		2014/08/06 09:45		
COC Number		A094724		A094724		A094724		
	Units	MW10-01	RDL	MW14-4B	RDL	MW14-4A	RDL	QC Batch

Polycyclic Aromatics								
Benzo[a]pyrene equivalency	ug/L	<0.010	0.010	0.015	0.010	5.7	0.010	7590348
Acenaphthene	mg/L	<0.00010	0.00010	<0.00010	0.00010	0.12 (1)	0.010	7592426
Acenaphthylene	mg/L	<0.00010	0.00010	<0.00010	0.00010	0.0049	0.00010	7592426
Acridine	mg/L	<0.00020	0.00020	<0.00020	0.00020	0.0013	0.00020	7592426
Anthracene	mg/L	<0.000010	0.000010	0.000022	0.000010	0.024	0.000010	7592426
Benzo(a)anthracene	mg/L	<0.0000085	0.0000085	0.000011	0.0000085	0.0095	0.0000085	7592426
Benzo(b&j)fluoranthene	mg/L	<0.0000085	0.0000085	<0.0000085	0.0000085	0.0056	0.0000085	7592426
Benzo(k)fluoranthene	mg/L	<0.0000085	0.0000085	<0.0000085	0.0000085	0.0018	0.0000085	7592426
Benzo(g,h,i)perylene	mg/L	<0.0000085	0.0000085	<0.0000085	0.0000085	0.0011	0.0000085	7592426
Benzo(c)phenanthrene	mg/L	<0.000050	0.000050	<0.000050	0.000050	<0.0017 (2)	0.0017	7592426
Benzo(a)pyrene	mg/L	<0.0000075	0.0000075	<0.0000075	0.0000075	0.0035	0.0000075	7592426
Benzo[e]pyrene	mg/L	<0.000050	0.000050	<0.000050	0.000050	0.0030	0.000050	7592426
Chrysene	mg/L	<0.0000085	0.0000085	0.000012	0.0000085	0.0064	0.0000085	7592426
Dibenz(a,h)anthracene	mg/L	<0.0000075	0.0000075	<0.000018 (2)	0.000018	0.00036	0.0000075	7592426
Fluoranthene	mg/L	<0.000010	0.000010	0.00011	0.000010	0.078 (1)	0.0010	7592426
Fluorene	mg/L	<0.000050	0.000050	<0.000050	0.000050	0.081 (1)	0.0050	7592426
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	0.0000085	<0.0000085	0.0000085	0.0011	0.0000085	7592426
2-Methylnaphthalene	mg/L	<0.00010	0.00010	<0.00010	0.00010	0.11 (1)	0.010	7592426
Naphthalene	mg/L	0.0010	0.00010	<0.00010	0.00010	0.82 (1)	0.010	7592426
Phenanthrene	mg/L	<0.000050	0.000050	0.00019	0.000050	0.16 (1)	0.0050	7592426
Perylene	mg/L	<0.000050	0.000050	<0.000050	0.000050	0.00074	0.000050	7592426
Pyrene	mg/L	<0.000020	0.000020	0.00011	0.000020	0.058 (1)	0.0020	7592426
Quinoline	mg/L	<0.00020	0.00020	<0.00020	0.00020	<0.0014 (2)	0.0014	7592426

Surrogate Recovery (%)								
D10-ANTHRACENE (sur.)	%	116	N/A	113	N/A	105	N/A	7592426
D12-BENZO(A)PYRENE (sur.)	%	108	N/A	110	N/A	113	N/A	7592426
D8-ACENAPHTHYLENE (sur.)	%	88	N/A	92	N/A	93	N/A	7592426
TERPHENYL-D14 (sur.)	%	104	N/A	104	N/A	107	N/A	7592426

RDL = Reportable Detection Limit

N/A = Not Applicable

(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

(2) Detection limits raised due to matrix interference.

Maxxam Job #: B467370
 Report Date: 2014/08/13

 GOLDER ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 4000 CAN CREOSOTE Q3
 Sampler Initials: JL

SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		KG8042		KG8043	KG8044	KG8045		
Sampling Date		2014/08/06 10:35		2014/08/06 11:00	2014/08/06 11:30	2014/08/06 11:50		
COC Number		A094724		A094724	A094724	A094724		
	Units	MW14-6B	RDL	MW14-6A	MW14-2	MW14-5	RDL	QC Batch

Polycyclic Aromatics								
Benzo[a]pyrene equivalency	ug/L	100	0.010	0.097	<0.010	0.010	0.010	7590348
Acenaphthene	mg/L	0.60 (1)	0.010	0.011	<0.00010	<0.00010	0.00010	7592426
Acenaphthylene	mg/L	0.0090	0.00010	0.00024	<0.00010	<0.00010	0.00010	7592426
Acridine	mg/L	0.013	0.00020	<0.00020	<0.00020	<0.00020	0.00020	7592426
Anthracene	mg/L	0.28 (1)	0.0010	0.00095	0.00013	0.00010	0.00010	7592426
Benzo(a)anthracene	mg/L	0.15 (1)	0.00085	0.00020	<0.000085	<0.000085	0.000085	7592426
Benzo(b&j)fluoranthene	mg/L	0.11 (1)	0.00085	0.00010	<0.000085	0.000091	0.000085	7592426
Benzo(k)fluoranthene	mg/L	0.023	0.000085	0.000033	<0.000085	<0.000085	0.000085	7592426
Benzo(g,h,i)perylene	mg/L	0.017	0.000085	0.000010	<0.000085	<0.000085	0.000085	7592426
Benzo(c)phenanthrene	mg/L	0.016 (2)	0.016	<0.000050	<0.000050	<0.000050	0.000050	7592426
Benzo(a)pyrene	mg/L	0.064 (1)	0.00075	0.000057	<0.000075	<0.000075	0.000075	7592426
Benzo[e]pyrene	mg/L	0.036	0.000050	0.000056	<0.000050	<0.000050	0.000050	7592426
Chrysene	mg/L	0.094 (1)	0.00085	0.00011	<0.000085	<0.000085	0.000085	7592426
Dibenz(a,h)anthracene	mg/L	0.0064	0.0000075	<0.0000075	<0.0000075	<0.0000075	0.0000075	7592426
Fluoranthene	mg/L	0.72 (1)	0.0010	0.0018	0.000041	0.000038	0.000010	7592426
Fluorene	mg/L	0.61 (1)	0.0050	0.0058	<0.000050	<0.000050	0.000050	7592426
Indeno(1,2,3-cd)pyrene	mg/L	0.019	0.0000085	0.0000099	<0.000085	<0.000085	0.000085	7592426
2-Methylnaphthalene	mg/L	0.40 (1)	0.010	0.0063	<0.00010	<0.00010	0.00010	7592426
Naphthalene	mg/L	0.23 (1)	0.010	0.0095	<0.00010	<0.00010	0.00010	7592426
Phenanthrene	mg/L	1.5 (1)	0.0050	0.0046	0.000053	0.000055	0.000050	7592426
Perylene	mg/L	0.011	0.000050	<0.000050	<0.000050	<0.000050	0.000050	7592426
Pyrene	mg/L	0.49 (1)	0.0020	0.0013	0.000049	0.000033	0.000020	7592426
Quinoline	mg/L	<0.0013 (2)	0.0013	<0.00020	<0.00020	<0.00020	0.00020	7592426

Surrogate Recovery (%)								
D10-ANTHRACENE (sur.)	%	100	N/A	109	113	111	N/A	7592426
D12-BENZO(A)PYRENE (sur.)	%	114	N/A	112	112	109	N/A	7592426
D8-ACENAPHTHYLENE (sur.)	%	89	N/A	98	96	84	N/A	7592426
TERPHENYL-D14 (sur.)	%	107	N/A	107	108	106	N/A	7592426

RDL = Reportable Detection Limit

N/A = Not Applicable

(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

(2) Detection limits raised due to matrix interference.

Maxxam Job #: B467370
 Report Date: 2014/08/13

 GOLDER ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 4000 CAN CREOSOTE Q3
 Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		KG8039	KG8040	KG8041	KG8042	KG8043		
Sampling Date		2014/08/06 08:20	2014/08/06 09:30	2014/08/06 09:45	2014/08/06 10:35	2014/08/06 11:00		
COC Number		A094724	A094724	A094724	A094724	A094724		
	Units	MW10-01	MW14-4B	MW14-4A	MW14-6B	MW14-6A	RDL	QC Batch
Volatiles								
Total Trihalomethanes	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7590188
Bromodichloromethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
Bromoform	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
Bromomethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7592792
Carbon tetrachloride	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
Chlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
Chlorodibromomethane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	7592792
Chloroethane	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	7592792
Chloroform	mg/L	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	0.00050	7592792
Chloromethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7592792
1,2-dibromoethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
1,2-dichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
1,3-dichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
1,4-dichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
1,1-dichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
1,2-dichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
1,1-dichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
cis-1,2-dichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
trans-1,2-dichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
Dichloromethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7592792
1,2-dichloropropane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
cis-1,3-dichloropropene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
trans-1,3-dichloropropene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
Methyl methacrylate	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
Methyl-tert-butylether (MTBE)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
Styrene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
1,1,1,2-tetrachloroethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7592792
1,1,2,2-tetrachloroethane	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	7592792
Tetrachloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
1,2,3-trichlorobenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	7592792
1,2,4-trichlorobenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	7592792
1,3,5-trichlorobenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
1,1,1-trichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
1,1,2-trichloroethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
RDL = Reportable Detection Limit								

Maxxam Job #: B467370
 Report Date: 2014/08/13

 GOLDER ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 4000 CAN CREOSOTE Q3
 Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		KG8039	KG8040	KG8041	KG8042	KG8043		
Sampling Date		2014/08/06 08:20	2014/08/06 09:30	2014/08/06 09:45	2014/08/06 10:35	2014/08/06 11:00		
COC Number		A094724	A094724	A094724	A094724	A094724		
	Units	MW10-01	MW14-4B	MW14-4A	MW14-6B	MW14-6A	RDL	QC Batch
Trichloroethene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
Trichlorofluoromethane	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
1,2,4-trimethylbenzene	mg/L	<0.00050	<0.00050	0.019	0.0075	0.0019	0.00050	7592792
1,3,5-trimethylbenzene	mg/L	<0.00050	<0.00050	0.019	0.0043	0.0013	0.00050	7592792
Vinyl chloride	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7592792
Surrogate Recovery (%)								
1,4-Difluorobenzene (sur.)	%	104	102	102	102	103	N/A	7592792
4-Bromofluorobenzene (sur.)	%	99	97	96	98	97	N/A	7592792
D4-1,2-Dichloroethane (sur.)	%	92	91	91	90	90	N/A	7592792
RDL = Reportable Detection Limit N/A = Not Applicable								

Maxxam Job #: B467370
 Report Date: 2014/08/13

GOLDER ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 4000 CAN CREOSOTE Q3
 Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		KG8044	KG8045		
Sampling Date		2014/08/06 11:30	2014/08/06 11:50		
COC Number		A094724	A094724		
	Units	MW14-2	MW14-5	RDL	QC Batch
Volatiles					
Total Trihalomethanes	mg/L	<0.0020	<0.0020	0.0020	7590188
Bromodichloromethane	mg/L	<0.00050	<0.00050	0.00050	7592792
Bromoform	mg/L	<0.00050	<0.00050	0.00050	7592792
Bromomethane	mg/L	<0.0020	<0.0020	0.0020	7592792
Carbon tetrachloride	mg/L	<0.00050	<0.00050	0.00050	7592792
Chlorobenzene	mg/L	<0.00050	<0.00050	0.00050	7592792
Chlorodibromomethane	mg/L	<0.0010	<0.0010	0.0010	7592792
Chloroethane	mg/L	<0.0010	<0.0010	0.0010	7592792
Chloroform	mg/L	<0.00050	<0.00050	0.00050	7592792
Chloromethane	mg/L	<0.0020	<0.0020	0.0020	7592792
1,2-dibromoethane	mg/L	<0.00050	<0.00050	0.00050	7592792
1,2-dichlorobenzene	mg/L	<0.00050	<0.00050	0.00050	7592792
1,3-dichlorobenzene	mg/L	<0.00050	<0.00050	0.00050	7592792
1,4-dichlorobenzene	mg/L	<0.00050	<0.00050	0.00050	7592792
1,1-dichloroethane	mg/L	<0.00050	<0.00050	0.00050	7592792
1,2-dichloroethane	mg/L	<0.00050	<0.00050	0.00050	7592792
1,1-dichloroethene	mg/L	<0.00050	<0.00050	0.00050	7592792
cis-1,2-dichloroethene	mg/L	<0.00050	<0.00050	0.00050	7592792
trans-1,2-dichloroethene	mg/L	<0.00050	<0.00050	0.00050	7592792
Dichloromethane	mg/L	<0.0020	<0.0020	0.0020	7592792
1,2-dichloropropane	mg/L	<0.00050	<0.00050	0.00050	7592792
cis-1,3-dichloropropene	mg/L	<0.00050	<0.00050	0.00050	7592792
trans-1,3-dichloropropene	mg/L	<0.00050	<0.00050	0.00050	7592792
Methyl methacrylate	mg/L	<0.00050	<0.00050	0.00050	7592792
Methyl-tert-butylether (MTBE)	mg/L	<0.00050	<0.00050	0.00050	7592792
Styrene	mg/L	<0.00050	<0.00050	0.00050	7592792
1,1,1,2-tetrachloroethane	mg/L	<0.0020	<0.0020	0.0020	7592792
1,1,2,2-tetrachloroethane	mg/L	<0.0020	<0.0020	0.0020	7592792
Tetrachloroethene	mg/L	<0.00050	<0.00050	0.00050	7592792
1,2,3-trichlorobenzene	mg/L	<0.0010	<0.0010	0.0010	7592792
1,2,4-trichlorobenzene	mg/L	<0.0010	<0.0010	0.0010	7592792
1,3,5-trichlorobenzene	mg/L	<0.00050	<0.00050	0.00050	7592792
1,1,1-trichloroethane	mg/L	<0.00050	<0.00050	0.00050	7592792
1,1,2-trichloroethane	mg/L	<0.00050	<0.00050	0.00050	7592792
RDL = Reportable Detection Limit					

Maxxam Job #: B467370
 Report Date: 2014/08/13

GOLDER ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 4000 CAN CREOSOTE Q3
 Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		KG8044	KG8045		
Sampling Date		2014/08/06 11:30	2014/08/06 11:50		
COC Number		A094724	A094724		
	Units	MW14-2	MW14-5	RDL	QC Batch
Trichloroethene	mg/L	<0.00050	<0.00050	0.00050	7592792
Trichlorofluoromethane	mg/L	<0.00050	<0.00050	0.00050	7592792
1,2,4-trimethylbenzene	mg/L	<0.00050	<0.00050	0.00050	7592792
1,3,5-trimethylbenzene	mg/L	<0.00050	<0.00050	0.00050	7592792
Vinyl chloride	mg/L	<0.00050	<0.00050	0.00050	7592792
Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	104	102	N/A	7592792
4-Bromofluorobenzene (sur.)	%	98	98	N/A	7592792
D4-1,2-Dichloroethane (sur.)	%	91	92	N/A	7592792
RDL = Reportable Detection Limit N/A = Not Applicable					

Maxxam Job #: B467370
Report Date: 2014/08/13

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: 4000 CAN CREOSOTE Q3
Sampler Initials: JL

GENERAL COMMENTS

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

Package 1	13.3°C
Package 2	13.3°C

Results relate only to the items tested.

Maxxam Job #: B467370
 Report Date: 2014/08/13

 GOLDER ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 4000 CAN CREOSOTE Q3
 Sampler Initials: JL

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits			
7591382	ARA	Matrix Spike [KG8040-02]	1,4-Difluorobenzene (sur.)	2014/08/07		107	%	70 - 130			
			4-Bromofluorobenzene (sur.)	2014/08/07		102	%	70 - 130			
			D4-1,2-Dichloroethane (sur.)	2014/08/07		99	%	70 - 130			
			Benzene	2014/08/07		108	%	70 - 130			
			Toluene	2014/08/07		102	%	70 - 130			
			Ethylbenzene	2014/08/07		106	%	70 - 130			
			m & p-Xylene	2014/08/07		109	%	70 - 130			
			o-Xylene	2014/08/07		110	%	70 - 130			
			(C6-C10)	2014/08/07		104	%	70 - 130			
			7591382	ARA	Spiked Blank	1,4-Difluorobenzene (sur.)	2014/08/07		107	%	70 - 130
4-Bromofluorobenzene (sur.)	2014/08/07					102	%	70 - 130			
D4-1,2-Dichloroethane (sur.)	2014/08/07					97	%	70 - 130			
Benzene	2014/08/07					97	%	70 - 130			
Toluene	2014/08/07					93	%	70 - 130			
Ethylbenzene	2014/08/07					97	%	70 - 130			
m & p-Xylene	2014/08/07					100	%	70 - 130			
o-Xylene	2014/08/07					101	%	70 - 130			
(C6-C10)	2014/08/07					108	%	70 - 130			
7591382	ARA	Method Blank				1,4-Difluorobenzene (sur.)	2014/08/07		106	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/08/07		102	%	70 - 130			
			D4-1,2-Dichloroethane (sur.)	2014/08/07		100	%	70 - 130			
			Benzene	2014/08/07	<0.00040		mg/L				
			Toluene	2014/08/07	<0.00040		mg/L				
			Ethylbenzene	2014/08/07	<0.00040		mg/L				
			m & p-Xylene	2014/08/07	<0.00080		mg/L				
			o-Xylene	2014/08/07	<0.00040		mg/L				
			Xylenes (Total)	2014/08/07	<0.00080		mg/L				
			F1 (C6-C10) - BTEX	2014/08/07	<0.10		mg/L				
			(C6-C10)	2014/08/07	<0.10		mg/L				
			7591382	ARA	RPD [KG8039-02]	Benzene	2014/08/07	NC		%	40
						Toluene	2014/08/07	NC		%	40
Ethylbenzene	2014/08/07	NC					%	40			
m & p-Xylene	2014/08/07	NC					%	40			
o-Xylene	2014/08/07	NC					%	40			
Xylenes (Total)	2014/08/07	NC					%	40			
F1 (C6-C10) - BTEX	2014/08/07	NC					%	40			
(C6-C10)	2014/08/07	NC					%	40			
7592426	JC7	Matrix Spike	D10-ANTHRACENE (sur.)	2014/08/09		113	%	50 - 130			
			D12-BENZO(A)PYRENE (sur.)	2014/08/09		113	%	50 - 130			
			D8-ACENAPHTHYLENE (sur.)	2014/08/09		95	%	50 - 130			
			TERPHENYL-D14 (sur.)	2014/08/09		108	%	50 - 130			
			Acenaphthene	2014/08/09		NC	%	50 - 130			
			Acenaphthylene	2014/08/09		104	%	50 - 130			
			Acridine	2014/08/09		58	%	50 - 130			
			Anthracene	2014/08/09		NC	%	50 - 130			
			Benzo(a)anthracene	2014/08/09		109	%	50 - 130			
			Benzo(b&j)fluoranthene	2014/08/09		103	%	50 - 130			
			Benzo(k)fluoranthene	2014/08/09		100	%	50 - 130			
			Benzo(g,h,i)perylene	2014/08/09		99	%	50 - 130			
			Benzo(c)phenanthrene	2014/08/09		107	%	50 - 130			
			Benzo(a)pyrene	2014/08/09		105	%	50 - 130			
			Benzo[e]pyrene	2014/08/09		108	%	50 - 130			

Maxxam Job #: B467370
 Report Date: 2014/08/13

 GOLDER ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 4000 CAN CREOSOTE Q3
 Sampler Initials: JL

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			Chrysene	2014/08/09		107	%	50 - 130
			Dibenz(a,h)anthracene	2014/08/09		103	%	50 - 130
			Fluoranthene	2014/08/09		110	%	50 - 130
			Fluorene	2014/08/09		NC	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2014/08/09		106	%	50 - 130
			2-Methylnaphthalene	2014/08/09		NC	%	50 - 130
			Naphthalene	2014/08/09		NC	%	50 - 130
			Phenanthrene	2014/08/09		NC	%	50 - 130
			Perylene	2014/08/09		103	%	50 - 130
			Pyrene	2014/08/09		NC	%	50 - 130
			Quinoline	2014/08/09		NC	%	50 - 130
7592426	JC7	Spiked Blank	D10-ANTHRACENE (sur.)	2014/08/09		105	%	50 - 130
			D12-BENZO(A)PYRENE (sur.)	2014/08/09		105	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2014/08/09		90	%	50 - 130
			TERPHENYL-D14 (sur.)	2014/08/09		100	%	50 - 130
			Acenaphthene	2014/08/09		89	%	50 - 130
			Acenaphthylene	2014/08/09		81	%	50 - 130
			Acridine	2014/08/09		70	%	50 - 130
			Anthracene	2014/08/09		75	%	50 - 130
			Benzo(a)anthracene	2014/08/09		84	%	50 - 130
			Benzo(b&j)fluoranthene	2014/08/09		82	%	50 - 130
			Benzo(k)fluoranthene	2014/08/09		82	%	50 - 130
			Benzo(g,h,i)perylene	2014/08/09		78	%	50 - 130
			Benzo(c)phenanthrene	2014/08/09		82	%	50 - 130
			Benzo(a)pyrene	2014/08/09		89	%	50 - 130
			Benzo[e]pyrene	2014/08/09		87	%	50 - 130
			Chrysene	2014/08/09		86	%	50 - 130
			Dibenz(a,h)anthracene	2014/08/09		76	%	50 - 130
			Fluoranthene	2014/08/09		84	%	50 - 130
			Fluorene	2014/08/09		80	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2014/08/09		81	%	50 - 130
			2-Methylnaphthalene	2014/08/09		70	%	50 - 130
			Naphthalene	2014/08/09		76	%	50 - 130
			Phenanthrene	2014/08/09		82	%	50 - 130
			Perylene	2014/08/09		83	%	50 - 130
			Pyrene	2014/08/09		88	%	50 - 130
			Quinoline	2014/08/09		83	%	50 - 130
7592426	JC7	Method Blank	D10-ANTHRACENE (sur.)	2014/08/09		109	%	50 - 130
			D12-BENZO(A)PYRENE (sur.)	2014/08/09		105	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2014/08/09		96	%	50 - 130
			TERPHENYL-D14 (sur.)	2014/08/09		103	%	50 - 130
			Acenaphthene	2014/08/09	<0.00010		mg/L	
			Acenaphthylene	2014/08/09	<0.00010		mg/L	
			Acridine	2014/08/09	<0.00020		mg/L	
			Anthracene	2014/08/09	<0.000010		mg/L	
			Benzo(a)anthracene	2014/08/09	<0.0000085		mg/L	
			Benzo(b&j)fluoranthene	2014/08/09	<0.0000085		mg/L	
			Benzo(k)fluoranthene	2014/08/09	<0.0000085		mg/L	
			Benzo(g,h,i)perylene	2014/08/09	<0.0000085		mg/L	
			Benzo(c)phenanthrene	2014/08/09	<0.000050		mg/L	
			Benzo(a)pyrene	2014/08/09	<0.0000075		mg/L	
			Benzo[e]pyrene	2014/08/09	<0.000050		mg/L	

Maxxam Job #: B467370
 Report Date: 2014/08/13

 GOLDER ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 4000 CAN CREOSOTE Q3
 Sampler Initials: JL

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			Chrysene	2014/08/09	<0.000085		mg/L	
			Dibenz(a,h)anthracene	2014/08/09	<0.000075		mg/L	
			Fluoranthene	2014/08/09	<0.000010		mg/L	
			Fluorene	2014/08/09	<0.000050		mg/L	
			Indeno(1,2,3-cd)pyrene	2014/08/09	<0.000085		mg/L	
			2-Methylnaphthalene	2014/08/09	<0.00010		mg/L	
			Naphthalene	2014/08/09	<0.00010		mg/L	
			Phenanthrene	2014/08/09	<0.000050		mg/L	
			Perylene	2014/08/09	<0.000050		mg/L	
			Pyrene	2014/08/09	<0.000020		mg/L	
			Quinoline	2014/08/09	<0.00020		mg/L	
7592428	MWB	Matrix Spike [KG8039-01]	O-TERPHENYL (sur.)	2014/08/09		99	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2014/08/09		90	%	50 - 130
7592428	MWB	Spiked Blank	O-TERPHENYL (sur.)	2014/08/09		101	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2014/08/09		122	%	70 - 130
7592428	MWB	Method Blank	O-TERPHENYL (sur.)	2014/08/09		101	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2014/08/09	<0.10		mg/L	
7592428	MWB	RPD [KG8045-01]	F2 (C10-C16 Hydrocarbons)	2014/08/09	NC		%	40
7592792	SLZ	Matrix Spike	1,4-Difluorobenzene (sur.)	2014/08/08		101	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/08/08		106	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2014/08/08		86	%	70 - 130
			Bromodichloromethane	2014/08/08		106	%	70 - 130
			Bromoform	2014/08/08		109	%	70 - 130
			Bromomethane	2014/08/08		81	%	70 - 130
			Carbon tetrachloride	2014/08/08		88	%	70 - 130
			Chlorobenzene	2014/08/08		99	%	70 - 130
			Chlorodibromomethane	2014/08/08		107	%	70 - 130
			Chloroethane	2014/08/08		70 (1)	%	70 - 130
			Chloroform	2014/08/08		86	%	70 - 130
			Chloromethane	2014/08/08		65 (1)	%	70 - 130
			1,2-dibromoethane	2014/08/08		103	%	70 - 130
			1,2-dichlorobenzene	2014/08/08		99	%	70 - 130
			1,3-dichlorobenzene	2014/08/08		98	%	70 - 130
			1,4-dichlorobenzene	2014/08/08		97	%	70 - 130
			1,1-dichloroethane	2014/08/08		75	%	70 - 130
			1,2-dichloroethane	2014/08/08		86	%	70 - 130
			1,1-dichloroethene	2014/08/08		79	%	70 - 130
			cis-1,2-dichloroethene	2014/08/08		81	%	70 - 130
			trans-1,2-dichloroethene	2014/08/08		80	%	70 - 130
			Dichloromethane	2014/08/08		74	%	70 - 130
			1,2-dichloropropane	2014/08/08		98	%	70 - 130
			cis-1,3-dichloropropene	2014/08/08		107	%	70 - 130
			trans-1,3-dichloropropene	2014/08/08		109	%	70 - 130
			Methyl methacrylate	2014/08/08		109	%	70 - 130
			Methyl-tert-butylether (MTBE)	2014/08/08		79	%	70 - 130
			Styrene	2014/08/08		107	%	70 - 130
			1,1,1,2-tetrachloroethane	2014/08/08		106	%	70 - 130
			1,1,2,2-tetrachloroethane	2014/08/08		100	%	70 - 130
			Tetrachloroethene	2014/08/08		95	%	70 - 130
			1,2,3-trichlorobenzene	2014/08/08		99	%	70 - 130
			1,2,4-trichlorobenzene	2014/08/08		98	%	70 - 130
			1,3,5-trichlorobenzene	2014/08/08		100	%	70 - 130

Maxxam Job #: B467370
 Report Date: 2014/08/13

 GOLDER ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 4000 CAN CREOSOTE Q3
 Sampler Initials: JL

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
7592792	SLZ	Spiked Blank	1,1,1-trichloroethane	2014/08/08		87	%	70 - 130
			1,1,2-trichloroethane	2014/08/08		99	%	70 - 130
			Trichloroethene	2014/08/08		95	%	70 - 130
			Trichlorofluoromethane	2014/08/08		69 (1)	%	70 - 130
			1,2,4-trimethylbenzene	2014/08/08		98	%	70 - 130
			1,3,5-trimethylbenzene	2014/08/08		105	%	70 - 130
			Vinyl chloride	2014/08/08		77	%	70 - 130
			1,4-Difluorobenzene (sur.)	2014/08/08		101	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/08/08		104	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2014/08/08		102	%	70 - 130
			Bromodichloromethane	2014/08/08		87	%	70 - 130
			Bromoform	2014/08/08		109	%	70 - 130
			Bromomethane	2014/08/08		78	%	70 - 130
			Carbon tetrachloride	2014/08/08		86	%	70 - 130
			Chlorobenzene	2014/08/08		96	%	70 - 130
			Chlorodibromomethane	2014/08/08		114	%	70 - 130
			Chloroethane	2014/08/08		69 (1)	%	70 - 130
			Chloroform	2014/08/08		84	%	70 - 130
			Chloromethane	2014/08/08		68 (1)	%	70 - 130
			1,2-dibromoethane	2014/08/08		110	%	70 - 130
			1,2-dichlorobenzene	2014/08/08		98	%	70 - 130
			1,3-dichlorobenzene	2014/08/08		92	%	70 - 130
			1,4-dichlorobenzene	2014/08/08		93	%	70 - 130
			1,1-dichloroethane	2014/08/08		77	%	70 - 130
			1,2-dichloroethane	2014/08/08		83	%	70 - 130
			1,1-dichloroethene	2014/08/08		78	%	70 - 130
			cis-1,2-dichloroethene	2014/08/08		78	%	70 - 130
			trans-1,2-dichloroethene	2014/08/08		81	%	70 - 130
			Dichloromethane	2014/08/08		74	%	70 - 130
			1,2-dichloropropane	2014/08/08		78	%	70 - 130
			cis-1,3-dichloropropene	2014/08/08		101	%	70 - 130
			trans-1,3-dichloropropene	2014/08/08		112	%	70 - 130
			Methyl methacrylate	2014/08/08		87	%	70 - 130
Methyl-tert-butylether (MTBE)	2014/08/08		78	%	70 - 130			
Styrene	2014/08/08		106	%	70 - 130			
1,1,1,2-tetrachloroethane	2014/08/08		103	%	70 - 130			
1,1,2,2-tetrachloroethane	2014/08/08		91	%	70 - 130			
Tetrachloroethene	2014/08/08		101	%	70 - 130			
1,2,3-trichlorobenzene	2014/08/08		91	%	70 - 130			
1,2,4-trichlorobenzene	2014/08/08		93	%	70 - 130			
1,3,5-trichlorobenzene	2014/08/08		97	%	70 - 130			
1,1,1-trichloroethane	2014/08/08		83	%	70 - 130			
1,1,2-trichloroethane	2014/08/08		95	%	70 - 130			
Trichloroethene	2014/08/08		80	%	70 - 130			
Trichlorofluoromethane	2014/08/08		69 (1)	%	70 - 130			
1,2,4-trimethylbenzene	2014/08/08		88	%	70 - 130			
1,3,5-trimethylbenzene	2014/08/08		91	%	70 - 130			
Vinyl chloride	2014/08/08		78	%	70 - 130			
7592792	SLZ	Method Blank	1,4-Difluorobenzene (sur.)	2014/08/08		102	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/08/08		87	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2014/08/08		88	%	70 - 130
			Bromodichloromethane	2014/08/08	<0.00050		mg/L	

Maxxam Job #: B467370
 Report Date: 2014/08/13

GOLDER ASSOCIATES LTD.
 Client Project #: 13-1324-0204
 Site Location: 4000 CAN CREOSOTE Q3
 Sampler Initials: JL

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			Bromoform	2014/08/08	<0.00050		mg/L	
			Bromomethane	2014/08/08	<0.0020		mg/L	
			Carbon tetrachloride	2014/08/08	<0.00050		mg/L	
			Chlorobenzene	2014/08/08	<0.00050		mg/L	
			Chlorodibromomethane	2014/08/08	<0.0010		mg/L	
			Chloroethane	2014/08/08	<0.0010		mg/L	
			Chloroform	2014/08/08	<0.00050		mg/L	
			Chloromethane	2014/08/08	<0.0020		mg/L	
			1,2-dibromoethane	2014/08/08	<0.00050		mg/L	
			1,2-dichlorobenzene	2014/08/08	<0.00050		mg/L	
			1,3-dichlorobenzene	2014/08/08	<0.00050		mg/L	
			1,4-dichlorobenzene	2014/08/08	<0.00050		mg/L	
			1,1-dichloroethane	2014/08/08	<0.00050		mg/L	
			1,2-dichloroethane	2014/08/08	<0.00050		mg/L	
			1,1-dichloroethene	2014/08/08	<0.00050		mg/L	
			cis-1,2-dichloroethene	2014/08/08	<0.00050		mg/L	
			trans-1,2-dichloroethene	2014/08/08	<0.00050		mg/L	
			Dichloromethane	2014/08/08	<0.0020		mg/L	
			1,2-dichloropropane	2014/08/08	<0.00050		mg/L	
			cis-1,3-dichloropropene	2014/08/08	<0.00050		mg/L	
			trans-1,3-dichloropropene	2014/08/08	<0.00050		mg/L	
			Methyl methacrylate	2014/08/08	<0.00050		mg/L	
			Methyl-tert-butylether (MTBE)	2014/08/08	<0.00050		mg/L	
			Styrene	2014/08/08	<0.00050		mg/L	
			1,1,1,2-tetrachloroethane	2014/08/08	<0.0020		mg/L	
			1,1,2,2-tetrachloroethane	2014/08/08	<0.0020		mg/L	
			Tetrachloroethene	2014/08/08	<0.00050		mg/L	
			1,2,3-trichlorobenzene	2014/08/08	<0.0010		mg/L	
			1,2,4-trichlorobenzene	2014/08/08	<0.0010		mg/L	
			1,3,5-trichlorobenzene	2014/08/08	<0.00050		mg/L	
			1,1,1-trichloroethane	2014/08/08	<0.00050		mg/L	
			1,1,2-trichloroethane	2014/08/08	<0.00050		mg/L	
			Trichloroethene	2014/08/08	<0.00050		mg/L	
			Trichlorofluoromethane	2014/08/08	<0.00050		mg/L	
			1,2,4-trimethylbenzene	2014/08/08	<0.00050		mg/L	
			1,3,5-trimethylbenzene	2014/08/08	<0.00050		mg/L	
			Vinyl chloride	2014/08/08	<0.00050		mg/L	

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 spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of 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 (one or both samples < 5x RDL).

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

Maxxam Job #: B467370
Report Date: 2014/08/13

GOLDER ASSOCIATES LTD.
Client Project #: 13-1324-0204
Site Location: 4000 CAN CREOSOTE Q3
Sampler Initials: JL

VALIDATION SIGNATURE PAGE

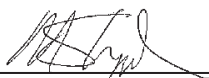
The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Janet Gao, Senior Analyst, Organics Department



Luba Shymushovska, Senior Analyst, Organic Department



Michael Sheppard, Organics Supervisor

Maxxam 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.

Company: Golder	Invoice To: Golder	G/O Report Address <input type="checkbox"/>	Report To: Same as Invoice <input checked="" type="checkbox"/>	Report Distribution (E-Mail): jburgbank@golder.com jlewis@golder.com osm.burgbank14@golder.com	REGULATORY GUIDELINES: <input checked="" type="checkbox"/> T1 <input type="checkbox"/> CCME <input type="checkbox"/> Regulated Drinking Water <input type="checkbox"/> Other:
Contact: Sulic Burghard E	Address: 122, 2535 - 3rd Ave SE Calgary				
Contact #s: 403 299 5600	City: Calg				

All samples are held for 90 calendar days after sample receipt, unless specified otherwise.

PO #: _____
 Project # / Name: **13-1324-6204 / 14000**
 Site Location: **Can Create Q3**
 Quote #: **GILDA 2017**
 Sampled By: **WJL**

SERVICE REQUESTED: RUSH (Contact lab to reserve)
 Date Required: _____
 REGULAR (5 to 7 Days)

Sample ID	Depth (unit)	Matrix GW / SW Soil	Date/Time Sampled YYMMDD 24:00	SOIL			WATER				Other Analysis	HOLD - Do not Analyze	# of Containers Submitted		
				BTEX F1-F4 Sieve (75 micron)	Regulated Metals (CCME / AT1)	Solids/4 Assessment ICP Metals Basic Class II Landfill	BTEX F1 BTEX F2 BTEX F4	Regulated Metals (CCME / AT1)	TOC Dissolved Mercury	Total Dissolved				Regulated Metals (CCME / AT1)	
MW10-01	—	GW	Aug 6/14 8:30												
MW14-4B	—		9:30												
MW14-4A	—		9:45												
MW14-6B	—		10:35												
MW14-6A	—		11:00												
MW14-2	—		11:30												
MW14-5	—		11:50												

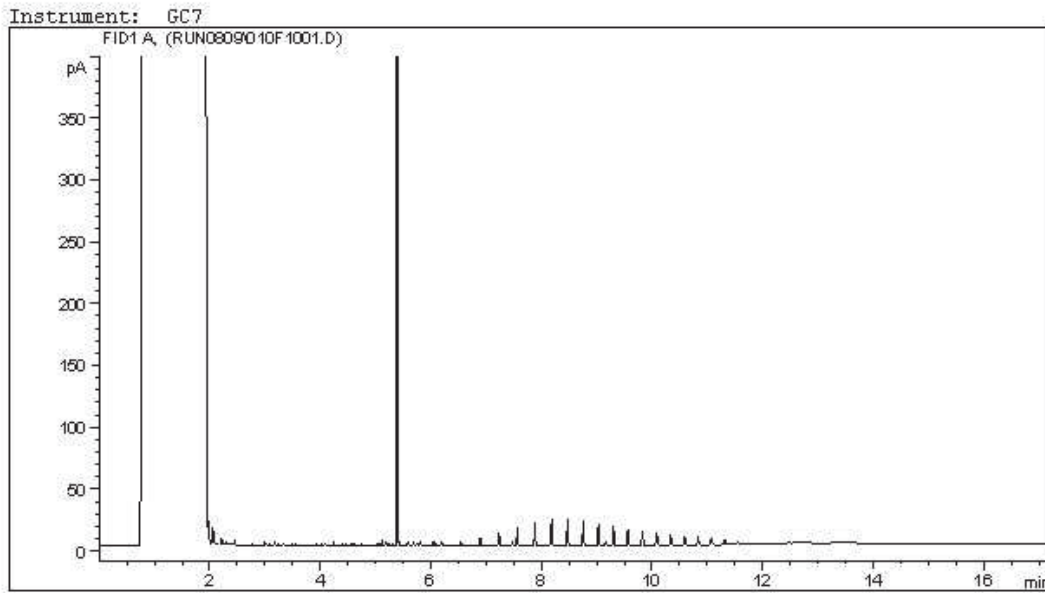
06-Aug-14 13:45
 Wendy Sears

 B467370
 JMH

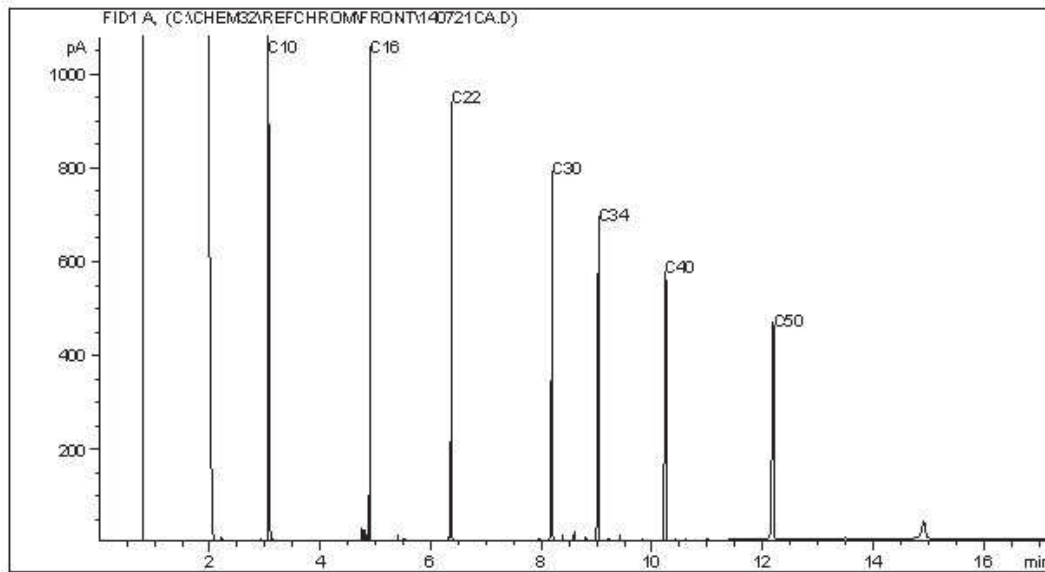
Please Indicate Filtered, Preserved or Both (F, P, F/P)

Relinquished By (Signature/Print): Jon Lewis	Date (YYMMDD): Aug 6/14	Time (24:00): 13:43	LAB USE ONLY
Relinquished By (Signature/Print): _____	Date (YYMMDD): _____	Time (24:00): _____	Received By: OURAN DESOUK Date: 2014/08/06 Time: 13:45
Special Instructions:	# of Jars Used & Not Submitted:	Maxxam Job #:	Custody Seal: Y Temperature: 14/13/13 Ice: Y
			Lab Comments: 14/13/13

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram



Carbon Range Distribution - Reference Chromatogram

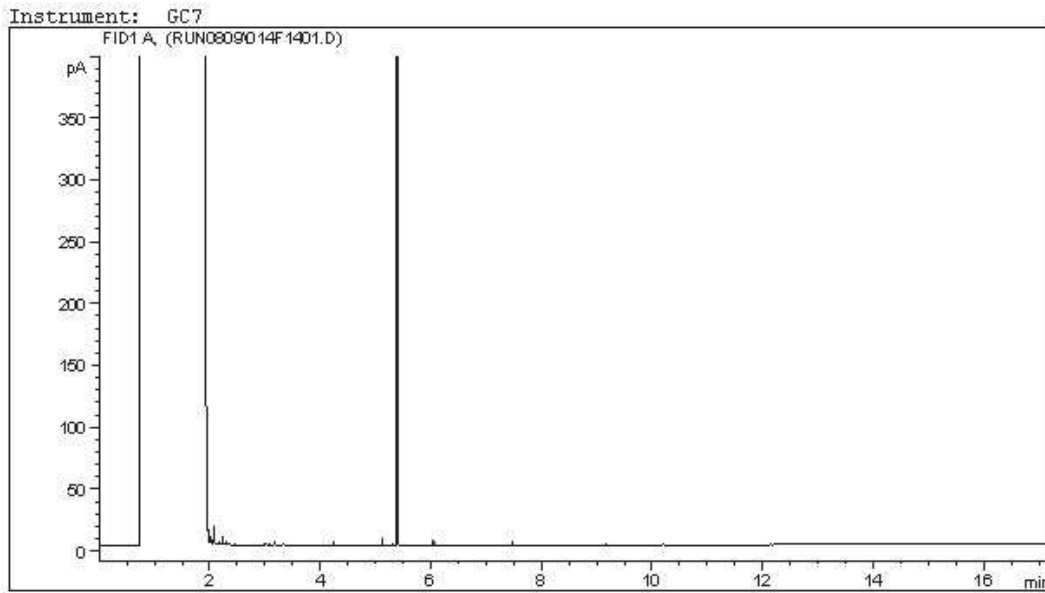


TYPICAL PRODUCT CARBON NUMBER RANGES

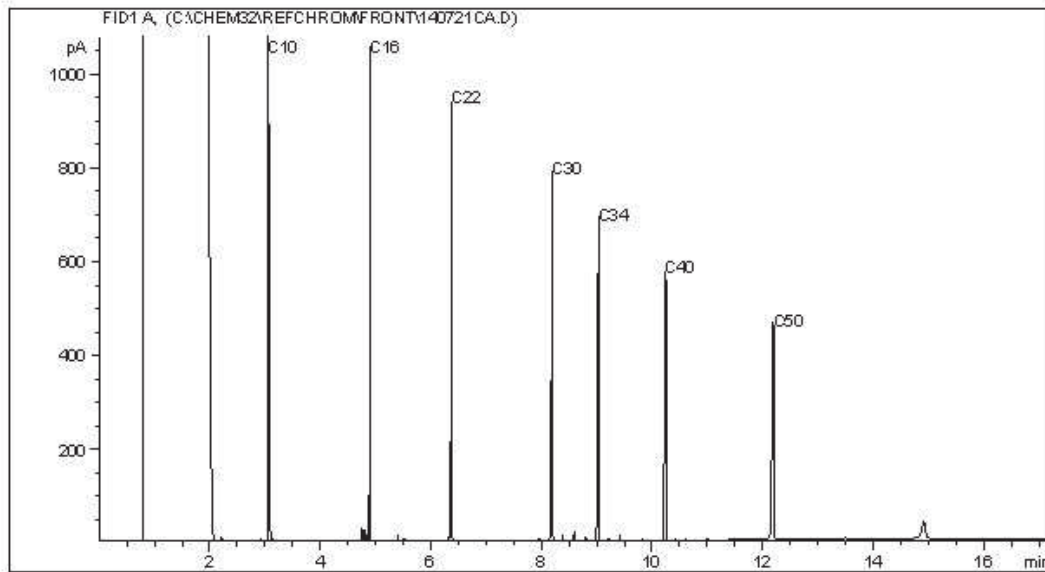
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

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



Carbon Range Distribution - Reference Chromatogram

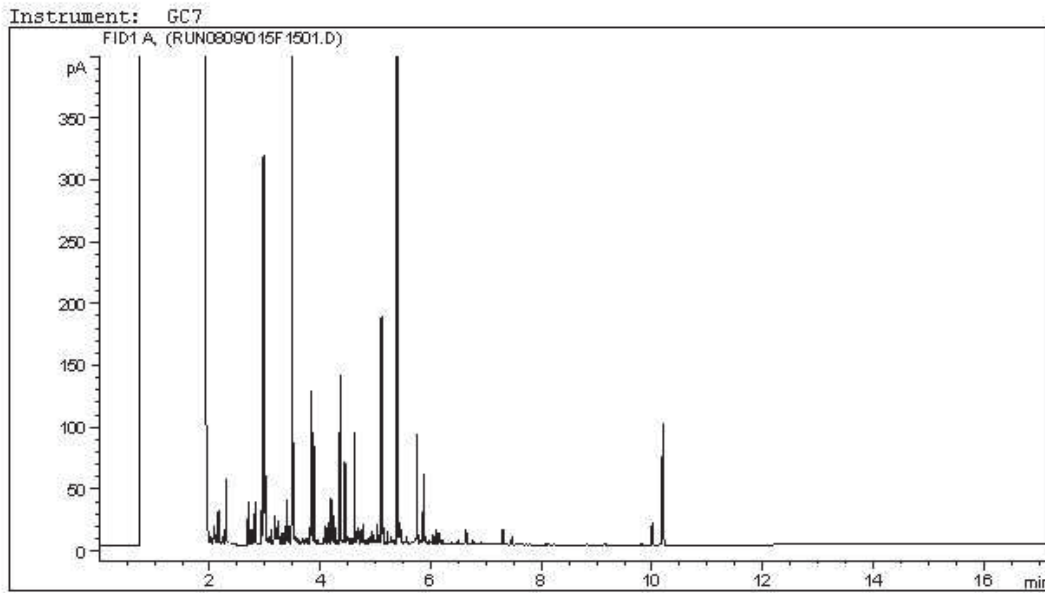


TYPICAL PRODUCT CARBON NUMBER RANGES

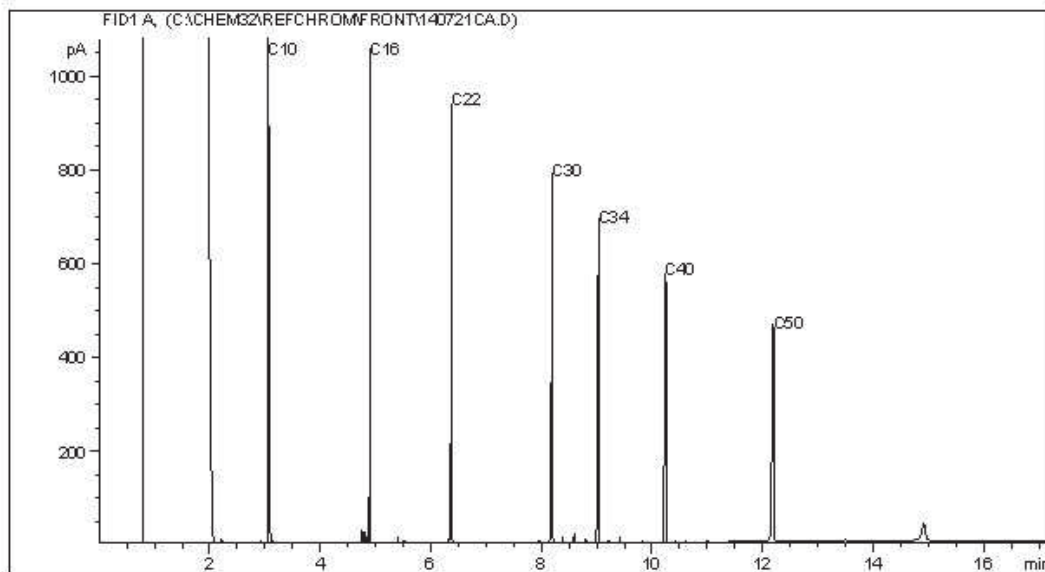
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

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



Carbon Range Distribution - Reference Chromatogram

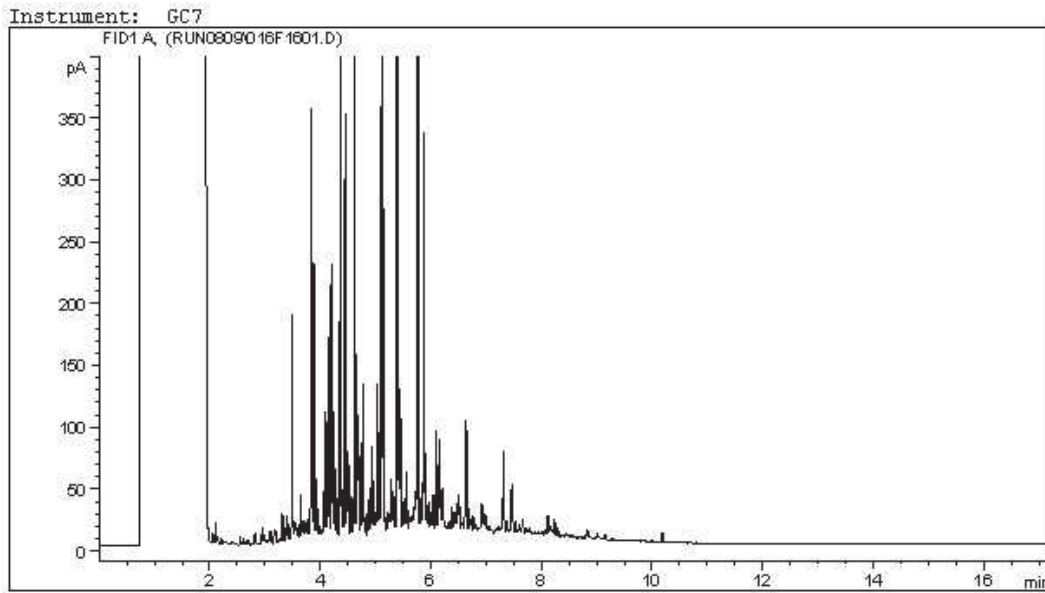


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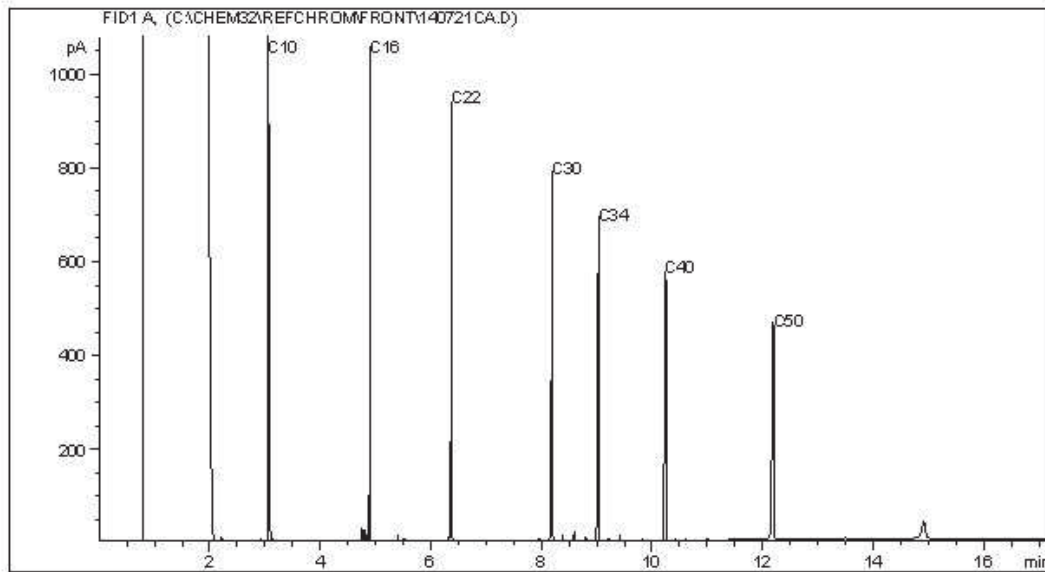
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

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



Carbon Range Distribution - Reference Chromatogram

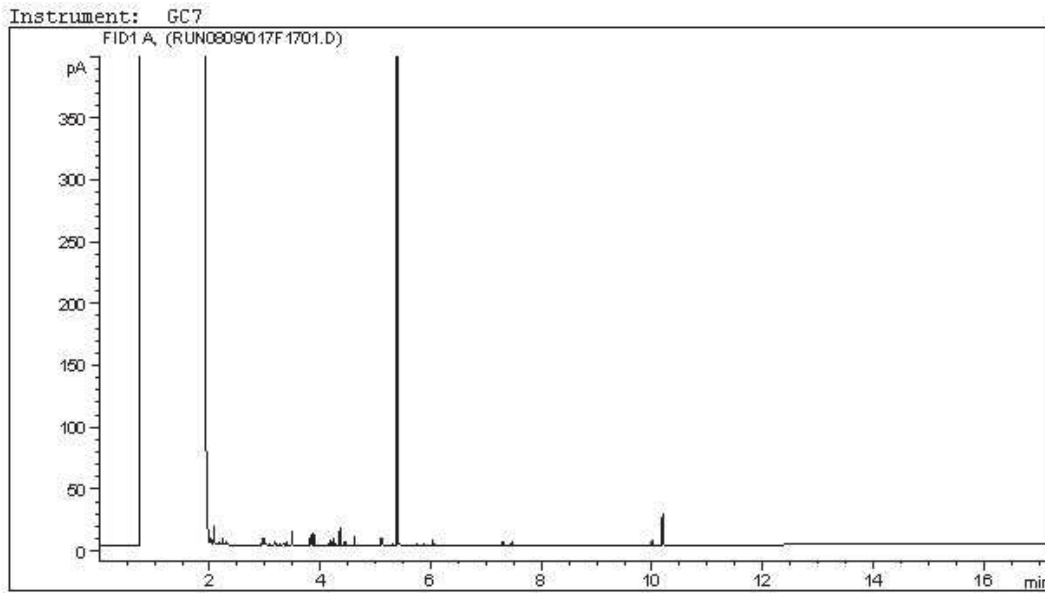


TYPICAL PRODUCT CARBON NUMBER RANGES

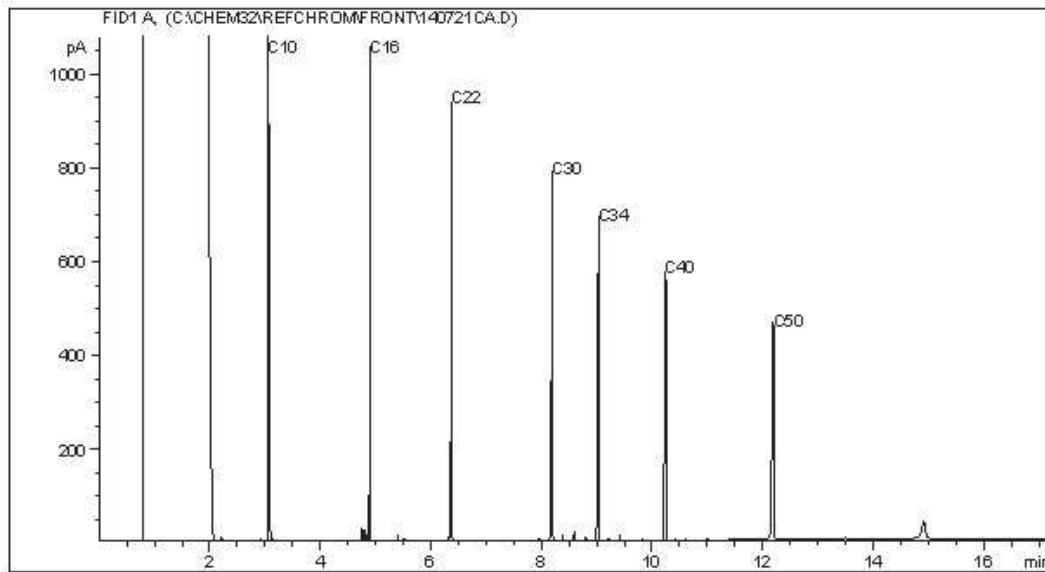
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

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



Carbon Range Distribution - Reference Chromatogram

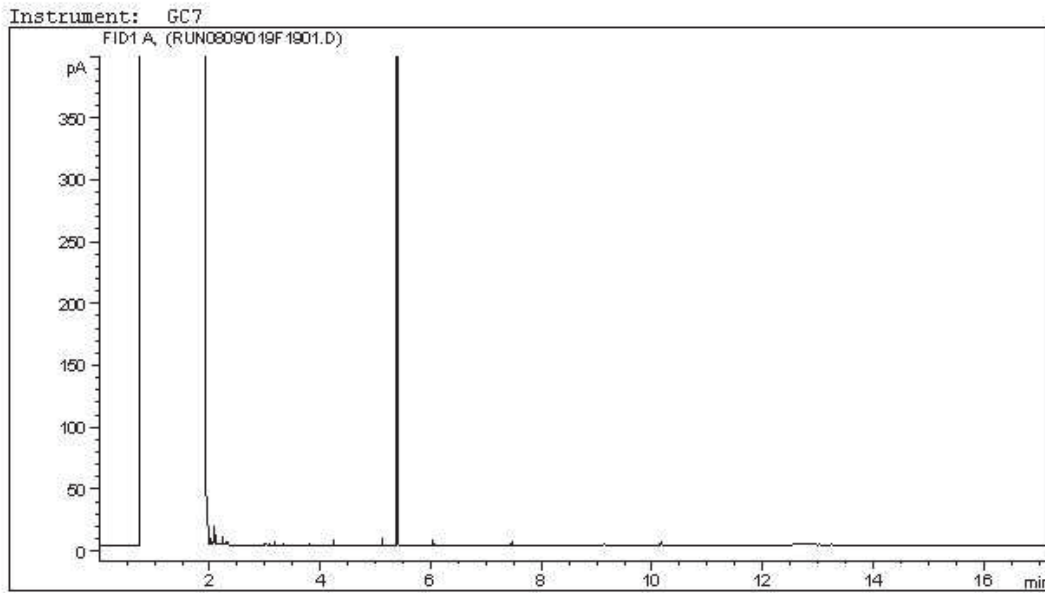


TYPICAL PRODUCT CARBON NUMBER RANGES

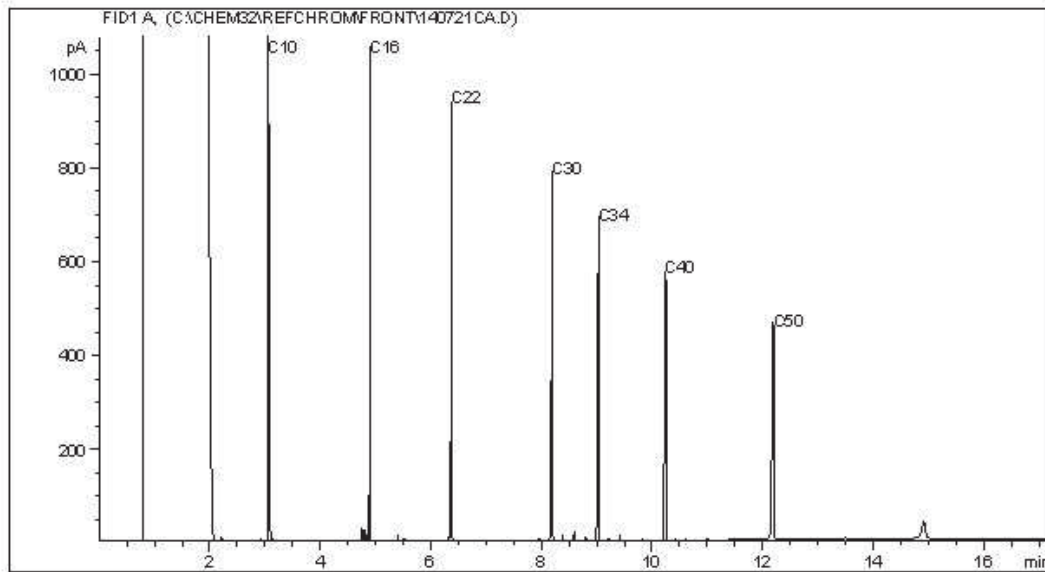
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

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



Carbon Range Distribution - Reference Chromatogram

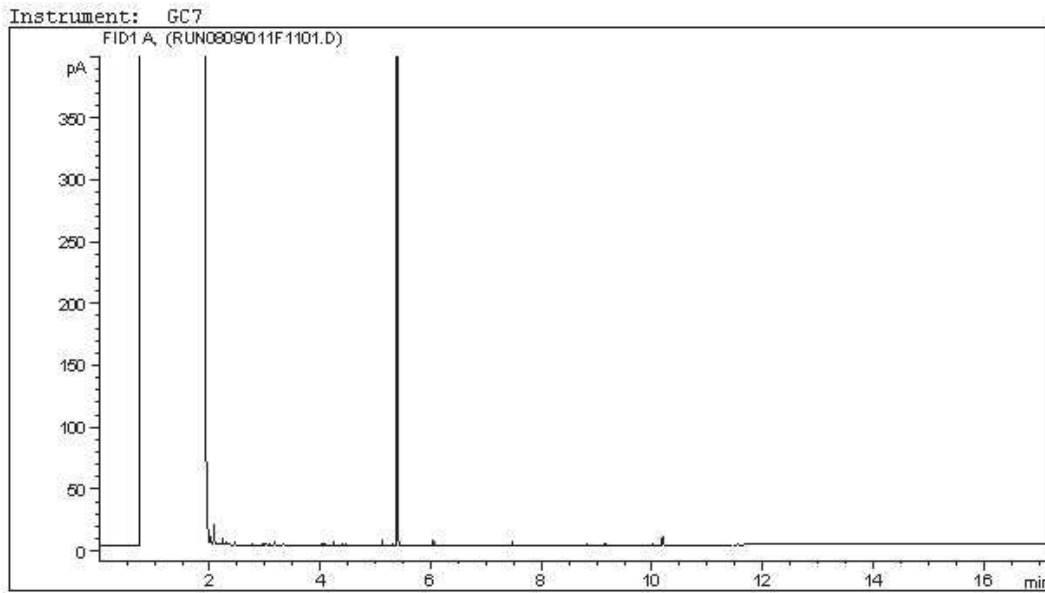


TYPICAL PRODUCT CARBON NUMBER RANGES

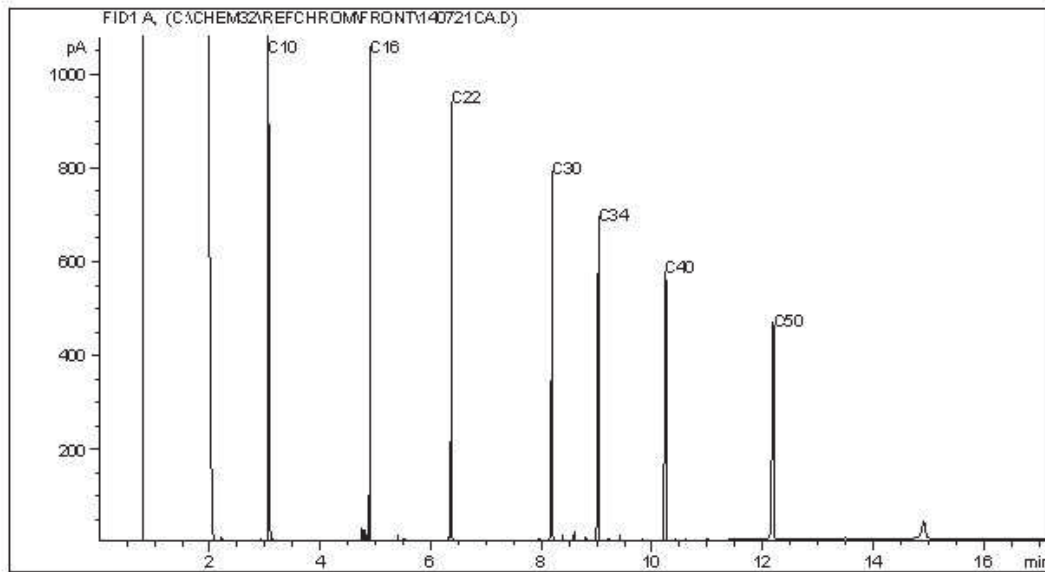
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

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



Carbon Range Distribution - Reference Chromatogram

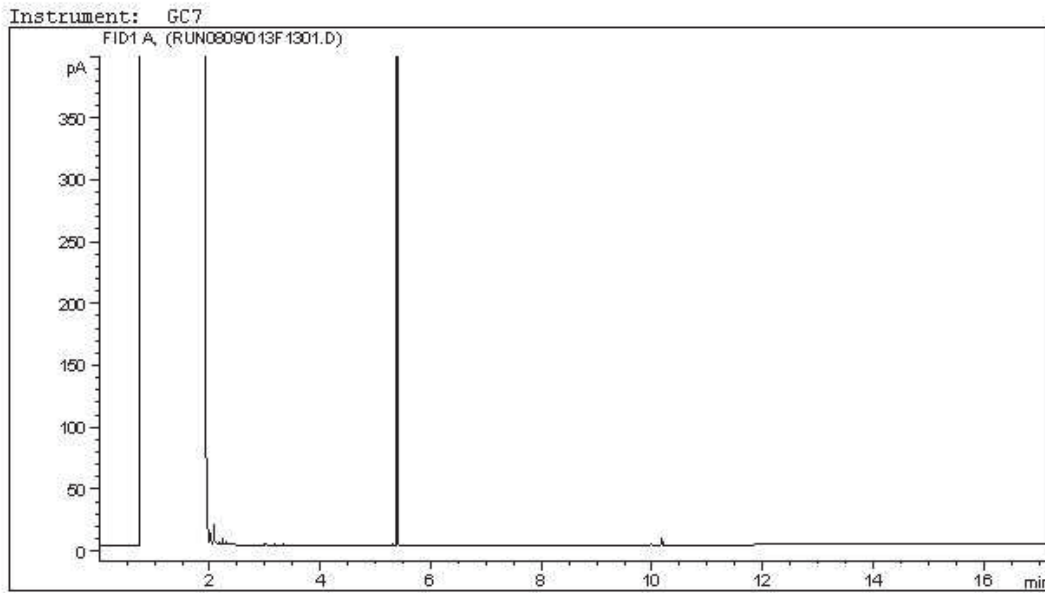


TYPICAL PRODUCT CARBON NUMBER RANGES

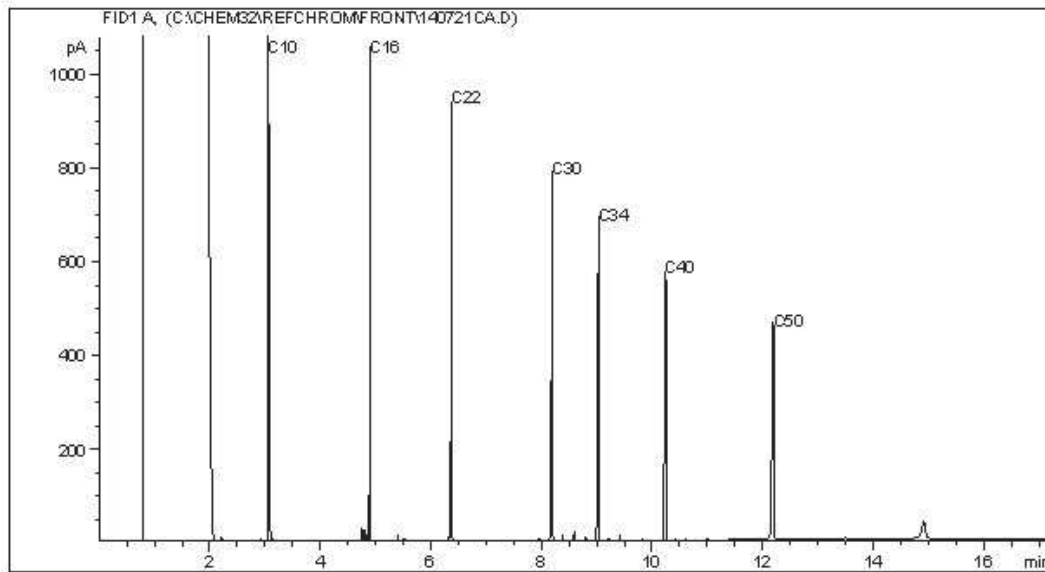
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

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



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.



Site Location: MW10-6
Your C.O.C. #: 101006

Attention: Julie Burghardt
GOLDER ASSOCIATES LTD
CALGARY
102, 2535 - 3rd Avenue SE
CALGARY, AB
CANADA T2A 7W5

Report Date: 2014/04/03
Report #: R1545651
Version: 1

Job/Sample	Analysis Type	Well Name/Sample ID	Sample Point
B424236/ JD8914	Certificate of Analysis	GOLDER ASSOCIATES	MW10-6

Encryption Key

James Butt

03 Apr 2014 07:59:19 -06:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Kacie Stewart, Project Manager
Email: KStewart@maxxam.ca
Phone# (780) 378-8505

=====

Maxxam 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.

Report Distribution

1	Reports(B424236)Julie Burghardt	GOLDER ASSOCIATES LTD	102, 2535 - 3rd Avenue SE	CALGARY, CANADA
0	Reports(B424236)NIKI BAUMANN	GOLDER ASSOCIATES LTD	102, 2535 - 3rd Avenue SE	CALGARY, CANADA

Date of Issue: 2014/04/03

Page 1 of 2

All analyses are performed according to internal procedures that are based on current published reference methods.



CERTIFICATE OF ANALYSIS

B424236:JD8914

MaxxID _____ Client ID _____ Meter Number _____ Laboratory Number _____

GOLDER ASSOCIATES LTD

Operator Name

GOLDER ASSOCIATES

Well Name

LSD

N/A

Initials of Sampler

Well ID

GOLDER ASSOCIATES LTD.

Sampling Company

PLASTIC BOTTLE

Container Identity

Percent Full

Field or Area _____ Pool or Zone _____ Sample Point _____

Test Recovery

Test Type _____ No. _____ Multiple Recovery _____

Production Rates
 Water m3/d _____ Oil m3/d _____ Gas 1000m3/d _____

Interval
 From: _____
 To: _____

Gauge Pressures kPa
 Source _____ As Received _____

Elevations (m)
 KB _____ GRD _____

Temperature °C
 23.0
 Source _____ As Received _____

Sample Gathering Point

Well Fluid Status

Well Status Type

Gas or Condensate Project

Solution Gas

Well Status Mode

Well Type

Licence No.

2014/03/25 11:15

Date Sampled Start

Date Sampled End

2014/03/27

Date Received

2014/03/31

Date Reported

2014/04/03

Date Reissued

SK1,APC

Analyst

PARAMETER DESCRIPTION	Result	unit	Method	MDL
Density Analysis				
API Gravity @ 15 °C	5.745	N/A		
Measured Relative Density @ 15 °C	1.0310	N/A	ASTM D4052	
Absolute Density @ 15 °C	1030	kg/m3		0.1
** Information not supplied by client – data derived from LSD Information				
Results relate only to Items tested				

Remarks:



APPENDIX G

Historical Soil Vapour Data

Sample Location ID	MW10-1		MW10-2		MW10-3B								MW10-5			MW10-6			MW10-7																
	R103247-01	R103247-02	R103247-03	R103247-04	R103247-05	R103247-06	R103247-07	R103247-08	R103247-09	R103247-10	R103247-11	R103247-12	R103247-13	R103247-14	R103247-15	R103247-16	R103247-17	R103247-18	R103247-19	R103247-20	R103247-21	R103247-22	R103247-23	R103247-24	R103247-25	R103247-26	R103247-27	R103247-28	R103247-29	R103247-30					
LAB ID	Well	Deep probe	Well	Shallow probe	Well	Shallow probe	Well	Shallow probe	Well	Shallow probe	Well	Shallow probe	Well	Shallow probe	Well	Shallow probe	Well	Shallow probe	Well	Shallow probe	Well	Shallow probe	Well	Shallow probe	Well	Shallow probe	Well	Shallow probe	Well	Shallow probe					
SAMPLE METHOD	Well	Deep probe	Well	Shallow probe	Well	Shallow probe	Well	Shallow probe	Well	Shallow probe	Well	Shallow probe	Well	Shallow probe	Well	Shallow probe	Well	Shallow probe	Well	Shallow probe	Well	Shallow probe	Well	Shallow probe	Well	Shallow probe	Well	Shallow probe	Well	Shallow probe					
SAMPLE DEPTH (mbgs)	2.7-3.3	2.4-2.55	2.4-2.55	2.5-3.1	1.68-2.13	1.68-2.13	1.68-2.13	1.68-2.13	2.74-3.00	2.74-3.00	2.13-3.9	1.07-1.52	1.07-1.52	1.65-2.44	3.04-3.42	3.04-3.71	3.04-3.15	3.04-3.15	3.04-3.15	3.04-3.15	3.04-3.15	3.04-3.15	3.04-3.15	3.04-3.15	3.04-3.15	3.04-3.15	3.04-3.15	3.04-3.15	3.04-3.15	3.04-3.15					
DATE SAMPLED	09-Mar-11	09-Mar-11	10-Nov-12	09-Mar-11	09-Mar-11	10-Nov-12	09-Mar-11	10-Nov-12	09-Mar-11	10-Nov-12	09-Mar-11	10-Nov-12	11-Mar-11	11-Mar-11	10-Nov-12	10-Mar-11	10-Nov-12	25-Apr-13	10-Mar-11	10-Nov-12	25-Apr-13	10-Mar-11	10-Nov-12	25-Apr-13	10-Mar-11	10-Nov-12	25-Apr-13	10-Mar-11	10-Nov-12	25-Apr-13					
LABORATORY	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO					
MATRIX	Car	Car	Car	Car	Car	Car	Car	Car	Car	Car	Car	Car	Car	Car	Car	Car	Car	Car	Car	Car	Car	Car	Car	Car	Car	Car	Car	Car	Car	Car					
Hydrocarbons																																			
nC6-n8 (total)	150	140	470	-	710	<160	220	390	<170	570	<170	750	190	1700	1400	<160	550	-	-	370	<17000	-	-	-	-	-	-	-	-	-	-	-	-	-	
nC6-n8 (aromatic)	3.1	2.9	24	-	96	<3.3	4.3	24	<3.3	84	<3.3	69	6	360	280	<3.2	81	-	-	9.9	110	-	-	-	-	-	-	-	-	-	-	-	-	-	
nC6-n8 (aliphatic)	150	140	470	-	610	<160	210	360	<170	510	<170	650	190	1300	1100	<160	480	-	-	340	<17000	-	-	-	-	-	-	-	-	-	-	-	-	-	
nC8-n10 (total)	150	140	700	-	670	<160	490	1100	<170	980	<170	1400	460	<160	2200	480	<160	2200	-	-	480	170000	-	-	-	-	-	-	-	-	-	-	-	-	-
nC8-n10 (aromatic)	15	2.9	<17	-	22	<3.3	<15	91	<3.3	67	<3.3	78	5.4	66	85	<3.2	320	-	-	200	76000	-	-	-	-	-	-	-	-	-	-	-	-	-	
nC8-n10 (aliphatic)	150	140	700	-	670	<160	490	1000	<170	910	<170	1300	460	<160	2200	480	<160	1800	-	-	270	93000	-	-	-	-	-	-	-	-	-	-	-	-	
nC6-n10 (F1)	310	290	1200	-	1400	<330	710	1500	<330	1600	<330	2200	350	2500	2200	<320	2700	-	-	850	180000	-	-	-	-	-	-	-	-	-	-	-	-	-	
nC10-n12 (total)	150	140	570	-	710	<160	370	2500	<170	3000	<170	2200	160	1200	1100	<160	4500	-	-	950	160000	-	-	-	-	-	-	-	-	-	-	-	-	-	
nC10-n12 (aromatic)	15	2.9	<17	-	<16	<3.3	<15	<16	<3.3	<17	<3.3	<16	20	<17	<16	<3.2	180	-	-	240	43000	-	-	-	-	-	-	-	-	-	-	-	-	-	
nC10-n12 (aliphatic)	150	140	570	-	710	<160	370	2500	<170	3000	<170	2200	<160	1200	1100	<160	4200	-	-	710	120000	-	-	-	-	-	-	-	-	-	-	-	-	-	
nC12-n16 (total)	150	290	270	-	740	<330	220	1700	<330	2200	<330	880	<320	2400	2800	<320	3500	-	-	<340	150000	-	-	-	-	-	-	-	-	-	-	-	-	-	
nC12-n16 (aromatic)	15	2.9	<17	-	<16	<3.3	<15	<16	<3.3	<17	<3.3	<16	<3.2	<17	<16	<3.2	<16	-	-	<3.4	1200	-	-	-	-	-	-	-	-	-	-	-	-	-	
nC12-n16 (aliphatic)	150	290	260	-	740	<330	230	1700	<330	2200	<330	880	<320	2400	2800	<320	3500	-	-	<340	150000	-	-	-	-	-	-	-	-	-	-	-	-	-	
nC10-n16 (total) (F2)	310	290	840	-	1400	<330	580	4200	<330	5100	<330	3000	350	3600	3900	<320	8100	-	-	1300	310000	-	-	-	-	-	-	-	-	-	-	-	-	-	
VHv (6-13)	310	570	970	-	1300	<660	650	2800	<660	2900	<660	2500	<630	2900	2700	<650	4500	-	-	1700	360000	-	-	-	-	-	-	-	-	-	-	-	-	-	
VPHv	310	570	940	-	1200	<660	610	2700	<660	2700	<660	2400	<630	2500	2400	<650	4200	-	-	1700	330000	-	-	-	-	-	-	-	-	-	-	-	-	-	
Volatile Organic Compounds																																			
1,1,1,2-Tetrachloroethane	0.15	0.14	<0.17	-	<0.16	4.6	<0.15	<0.16	0.33	<0.17	0.53	<0.16	0.47	<0.17	<0.16	0.23	<0.16	-	-	1.2	<0.33	-	-	-	-	-	-	-	-	-	-	-	-	-	
1,1,1-Trichloroethane	0.31	0.29	<0.34	0.46	ND	<0.32	<0.31	<0.32	<0.33	<0.34	<0.33	<0.33	<0.32	<0.33	<0.33	<0.32	<0.32	0.459	ND	<0.34	<0.33	2.02	-	-	-	-	-	-	-	-	-	-	-	-	
1,1,2,2-Tetrachloroethane	0.15	0.14	<0.17	0.585	ND	<0.16	<0.16	<0.15	<0.16	<0.17	<0.17	<0.16	<0.16	<0.17	<0.16	<0.16	<0.16	0.583	ND	<0.17	<0.23	2.57	-	-	-	-	-	-	-	-	-	-	-	-	
1,1,2-Trichloroethane	0.15	0.14	<0.17	0.46	ND	<0.16	<0.16	<0.15	<0.16	<0.17	<0.17	<0.16	<0.16	<0.17	<0.16	<0.16	<0.16	0.459	ND	<0.17	<0.33	2.02	-	-	-	-	-	-	-	-	-	-	-	-	
1,1,2-Trichloroethane	-	-	-	0.653	ND	-	-	-	-	-	-	-	-	-	-	-	-	0.651	ND	-	<0.66	2.87	-	-	-	-	-	-	-	-	-	-	-	-	
1,1-Dichloroethane	0.31	0.29	<0.34	0.345	ND	<0.32	<0.31	<0.32	<0.33	<0.34	<0.33	<0.33	<0.32	<0.33	<0.33	<0.32	<0.32	0.344	ND	<0.34	<0.33	1.51	-	-	-	-	-	-	-	-	-	-	-	-	
1,1-Dichloroethane	0.092	0.086	<0.1	0.402	ND	<0.096	<0.099	<0.092	<0.097	<0.099	<0.098	<0.099	0.13	<0.099	<0.099	<0.097	<0.097	0.401	ND	<0.1	<0.33	1.77	-	-	-	-	-	-	-	-	-	-	-	-	
1,2,3-Trichloropropane	0.31	0.29	<0.34	-	<0.32	<0.33	<0.31	<0.32	<0.33	<0.34	<0.33	<0.33	<0.32	<0.33	<0.33	<0.32	<0.32	-	-	<0.34	<0.33	-	-	-	-	-	-	-	-	-	-	-	-	-	
1,2,3-Trimethylbenzene	3.1	-	<3.4	0.818	1.29	<3.2	<3.1	4.9	<3.4	-	<3.3	-	<3.3	<3.3	<3.3	-	68	0.816	35.8	-	-	3.59	578	2140	1590	-	-	-	-	-	-	-	-		
1,2,4,5-Tetraethylbenzene	3.1	-	<3.4	-	<3.2	-	<3.1	<3.2	-	<3.4	-	<3.3	-	<3.3	<3.3	-	9.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1,2,4-Trichlorobenzene	0.31	0.29	0.8	0.611	ND	<0.32	<0.33	0.61	<0.32	<0.33	<0.34	<0.33	<0.32	0.86	<0.33	<0.32	<0.32	0.609	ND	<0.34	<0.33	2.68	-	-	-	-	-	-	-	-	-	-	-	-	
1,2,4-Trimethylbenzene	3.1	-	<3.4	-	<3.2	-	<3.1	<3.2	-	<3.4	-	<3.3	-	<3.3	<3.3	-	<3.2	-	-	12000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
1,2,4-Trimethylbenzene	0.61	0.58	<0.67	0.419	1.1	<0.66	0.77	1.1	<0.66	7.4	<0.66	5.2	1.9	6.9	6.9	<0.65	61	0.418	39	44	-	30.1	1380	10700	9270	-	-	-	-	-	-	-	-		
1,2-Dibromo-3-chloropropane	0.31	0.29	<0.34	-	<0.32	<0.33	<0.31	<0.32	<0.33	<0.34	<0.33	<0.33	<0.32	<0.33	<0.33	<0.32	<0.32	-	-	<0.34	<0.33	-	-	-	-	-	-	-	-	-	-	-	-		
1,2-Dibromoethane	0.31	0.29	<0.34	-	<0.32	<0.33	<0.31	<0.32	<0.33	<0.34	<0.33	<0.33	<0.32	<0.33	<0.33	<0.32	<0.32	-	-	<0.34	<0.33	-	-	-	-	-	-	-	-	-	-	-	-		
1,2-Dibromoethane (EDB)	-	-	-	0.655	ND	-	-	-	-	-	-	-	-	-	-	-	0.653	ND	-	-	2.88	-	-	-	-	-	-	-	-	-	-	-	-		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	-</																																		

Sample Location ID	LAB ID	SAMPLE METHOD	SAMPLE DEPTH (mbgs)	DATE SAMPLED	LABORATORY	MATRIX	Monitoring Wells																		AUC0212-04			2110724-06			3041469-05			AWK0120-01			AWD0187-04			AWD0187-05		
							MW10-1			MW10-2			MW10-3B						MW10-5			MW10-6			MW10-7			MW10-8			MW10-9			MW10-10								
		R103247-01	Well		AUC0212-03	R103247-02	2110724-01	R103247-03	R103247-04	2110724-03	R103247-05	2110724-04	R103247-06	2110724-02	R103247-07	R103247-08	2110724-05	R103247-09	AUC0212-04			2110724-06			3041469-05			AWK0120-01			AWD0187-04			AWD0187-05								
		Well	Deep probe	Deep probe	Well	Shallow probe	Shallow probe	Deep probe	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well										
		2.7-3.3	2.4-2.55	2.4-2.55	2.5-3.1	0.81-1.37	0.81-1.37	1.68-2.13	1.68-2.13	2.74-3.00	2.74-3.00	2.13-3.9	1.07-1.52	1.07-1.52	1.65-2.44	3.04-3.42	3.04-3.42	3.04-3.42	3.04-3.42	3.04-3.42	3.04-3.42	3.04-3.42	3.04-3.42	3.04-3.42	3.04-3.42	3.04-3.42	3.04-3.42	3.04-3.42	3.04-3.42	3.04-3.42	3.04-3.42											
		09-Mar-11	09-Mar-11	10-Nov-12	09-Mar-11	09-Mar-11	10-Nov-12	09-Mar-11	10-Nov-12	09-Mar-11	10-Nov-12	09-Mar-11	10-Nov-12	11-Mar-11	11-Mar-11	10-Nov-12	10-Mar-11	10-Nov-12	25-Apr-13	10-Mar-11	10-Nov-12	25-Apr-13	10-Mar-11	10-Nov-12	25-Apr-13	12-Nov-12	25-Apr-13	25-Apr-13	12-Nov-12	25-Apr-13	25-Apr-13											
		CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	Test America	Test America	Test America	Test America	Test America	Test America	Test America	Test America	Test America	Test America	Test America	Test America	Test America										
		CARO RDL 2011	CARO RDL 2012	Test America MDL 2011	Test America	Test America	Test America	Test America	Test America	Test America	Test America	Test America	Test America	Test America	Test America	Test America	Test America	Test America	Test America	Test America MDL	Test America	Test America	Test America	Test America MDL	Test America	Test America	Test America	Test America	Test America	Test America	Test America	Test America										
1-Pentene	-	-	-	1.23	395	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22	50.2	-	-	0.969	ND	ND	ND	-	-	-	-											
1-Undecene	-	-	-	0.515	5.84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.514	ND	-	-	2.26	ND	ND	ND	-	-	-	-										
2 & 3-Chlorobutene	-	-	-	0.886	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.884	ND	-	-	3.89	ND	ND	ND	-	-	-	-										
2,2,3-Trimethylpentane	-	-	-	0.394	6.86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.392	4.58	-	-	1.73	ND	ND	ND	-	-	-	-										
2,2,4-Trimethylpentane	-	-	-	0.398	6.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.397	2.73	-	-	1.75	ND	ND	ND	-	-	-	-										
2,2,5-Trimethylhexane	-	-	-	0.46	19.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.459	9.62	-	-	2.02	ND	ND	ND	-	-	-	-										
2,2-Dimethylbutane	-	-	-	0.281	8.66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.281	2.58	-	-	1.24	ND	ND	ND	-	-	-	-										
2,3,4-Trimethylpentane	-	-	-	0.275	22.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.274	11.1	-	-	1.21	ND	ND	ND	-	-	-	-										
2,3-Dimethylbutane	-	-	-	0.208	19.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.208	5.73	-	-	0.914	ND	ND	ND	-	-	-	-										
2,3-Dimethylpentane	-	-	-	0.353	24.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.352	11.9	-	-	1.55	ND	ND	ND	-	-	-	-										
2,4,4-Trimethyl-1-pentene	-	-	-	0.387	0.516	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.386	ND	-	-	1.7	ND	ND	ND	-	-	-	-										
2,4,4-Trimethyl-2-pentene	-	-	-	0.402	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.401	ND	-	-	1.77	ND	ND	ND	-	-	-	-										
2,4-Dimethylpentane	-	-	-	0.349	9.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.348	4.24	-	-	1.53	ND	ND	ND	-	-	-	-										
2,5-Dimethylhexane	-	-	-	0.394	6.31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.393	3.39	-	-	1.73	ND	ND	ND	-	-	-	-										
2-Butanone (MEK)	-	0.58	-	-	-	-	<0.66	-	-	<0.66	-	<0.66	-	<0.63	-	-	<0.65	-	-	-	-	-	<0.68	<1.7	2.18	ND	ND	ND	-	-	-	-										
2-Chlorobutene	0.61	0.58	<0.67	-	-	<0.64	<0.66	<0.61	<0.65	<0.66	<0.67	<0.66	<0.65	<0.63	<0.66	<0.66	<0.65	<0.64	-	-	-	<0.68	<0.66	-	-	-	-	-	-	-	-											
2-Ethyl-1-butene	-	-	-	0.291	27.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.29	2.33	-	-	1.28	ND	ND	ND	-	-	-	-										
2-Ethyltoluene	-	-	-	0.419	0.88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.418	34.5	-	-	1.84	153	1270	998	-	-	-	-										
2-Hexanone	-	-	-	0.238	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.237	ND	-	-	1.04	ND	ND	ND	-	-	-	-										
2-Methyl-1-pentene	-	-	-	0.253	94.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.252	9.53	-	-	1.11	ND	ND	ND	-	-	-	-										
2-Methyl-2-butene	-	-	-	0.193	38.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.192	3.75	-	-	0.847	ND	ND	ND	-	-	-	-										
2-Methyl-2-pentene	-	-	-	0.285	7.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.284	0.457	-	-	1.25	ND	ND	ND	-	-	-	-										
2-Methylbutylbenzene	3.1	-	<3.4	-	-	<3.2	3.1	<3.1	<3.2	<3.4	<3.3	-	<3.3	<3.3	<3.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-											
2-Methylheptane	-	-	-	0.398	26.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.397	1.77	-	-	1.75	26.6	466	347	-	-	-	-										
3-Ethyltoluene	-	-	-	0.419	2.36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.418	26.7	-	-	1.84	536	6790	5820	-	-	-	-										
3-Methyl-1-butene	-	-	-	0.207	113	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.207	13.7	-	-	0.911	ND	ND	ND	-	-	-	-										
3-Methylheptane	-	-	-	0.77	32.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.768	2.16	-	-	3.38	8.06	193	157	-	-	-	-										
3-Methylhexane	-	-	-	0.294	73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.294	21.8	-	-	1.29	2.79	4.65	4.31	-	-	-	-										
3-Methylpentane	-	-	-	0.258	101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.257	20.3	-	-	1.13	ND	3.42	3.17	-	-	-	-										
4-Chlorobutene	-	-	-	0.805	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.803	ND	-	-	3.54	ND	ND	ND	-	-	-	-										
4-Ethyltoluene	-	-	-	0.415	1.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.414	16.5	-	-	1.82	275	3910	3370	-	-	-	-										
4-Isopropyltoluene	-	-	-	0.897	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.894	63.6	-	-	3.94	471	2020	1580	-	-	-	-										
4-Methyl-1-pentene	-	-	-	0.213	44.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.212	5.33	-	-	0.935	ND	ND	ND	-	-	-	-										
4-Methyl-2-Pentanone (MIBK)	-	0.58	-	-	-	<0.66	-	-	<0.66	<0.66	<0.66	<0.63	-	<0.65	-	-	-	-	-	-	-	-	<0.68	<0.66	3	ND	ND	ND	-	-	-	-										
4-Nonene	-	-	-	0.172	4.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.172	15.8	-	-	0.757	ND	ND	ND	-	-	-	-										
Acetaldehyde	-	-	-	0.532	19.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.531	16.4	-	-	2.34	ND	ND	ND	-	-	-	-										
Acetone	3.1	2.9	<3.4	0.173	8.37	<3.2	3.6	<3.1	17	<3.3	20	<3.3	12	<3.2	7.9	<3.3	<3.2	<3.2	0.173	19.3	<3.4	4.3	0.761	6.06	5.11	4.54	-	-	-	-	-											
Acetonitrile	-	-	-	0.163	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.162	0.207	-	-	0.715	ND	ND	ND	-	-	-	-										
Acetylene	-	-	-	0.182	1.53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.181	0.925	-	-	0.763	ND	ND	ND	-	-	-	-										
Acrylonitrile	0.31	0.29	<0.34	0.667	ND	<0.32	<0.33	<0.31	<0.32	<0.33	<0.34	<0.33	<0.33	<0.32	<0.33	<0.33	<0.32	<0.32	0.665	ND	<0.34	<0.33	2.93	ND	ND	ND	-	-	-	-												
Allyl chloride	0.15	0.14	<0.17	0.262	ND	<0.16	<0.16	<0.15	<0.16	<0.17	<0.17	<0.16	<0.16	<0.17	<0.16	<0.16	<0.16	<0.16	0.261	ND	<0.17	<0.33	1.15	ND	ND	ND	-	-	-	-												
alpha-Pinene	-	-	-	0.479	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.2	577	-	-	2.11	178	13000	11200	-	-	-	-										
Benzaldehyde	-	-	-	0.398	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.397	ND	-	-	1.75	ND	ND	ND	-	-	-	-										
Benzene	0.15	0.14	3.7	0.205	14.6	5.8	0.95	0.68	2.9	0.89	3.7	0.99	2.3	1.3	0.59	0.53	2.3	2.4	0.205	1.21	1.8	1.2	0.902	ND	ND	ND	-	-	-	-												
Benzyl chloride	-	-	-	1.58	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.57	ND	-	-	6.92	ND	ND	ND	-	-	-	-										
beta-Pinene	-	-	-	0.475	0.985	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.473	40.4	-	-	2.08	27	510	455	-	-	-	-										
Bromobenzene	0.31	0.29	<0.34	-	-	<0.32	<0.33	<0.31	<0.32	<0.33	<0.3																															

Sample Location ID LAB ID SAMPLE METHOD SAMPLE DEPTH (mbgs) DATE SAMPLED LABORATORY	CARO RDL 2011	CARO RDL 2012	MW10-7B				MW10-9B		MW10-10	MW10-11				MW10-12	MW10-14	MW10-15				MW10-16				MW10-18		MW10-20							
			R103247-10	R103247-11	3041469-04	AWD0187-03	R103247-12	R103247-13	R103247-14	R103247-15	R103247-16	2110724-07	3041469-01	AWD0187-01	R103247-17	R103247-18	R103247-19	2110724-08	AUC0212-02	3041469-07	AWD0187-06	R103247-20	R103247-21	2110724-09	2110724-10	3041469-02	3041469-03	AWD0187-02	R103247-22	R103247-23	R103247-24		
			Deep probe	Shallow probe	Deep Probe	Deep Probe	Well	Shallow probe	Well	Deep probe	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well	Well
			1.96-2.74	1.22-1.68	1.96-2.74	1.96-2.74	3.3-3.4	1.37-1.83	2.74-3.3	1.22-1.52	2.13-3.1	2.13-3.27	2.13-2.97	3.05-4.57	2.13-2.97	3.05-4.57	2.13-4.27	2.13-2.85	2.13-3.52	2.13-2.85	2.13-3.37	2.13-3.37	1.22-1.52	2.13-3.3	2.13-3.51	2.13-3.51	2.13-2.99	2.13-2.99	2.13-2.99	2.13-3.2	1.07-1.52	2.13-3.0	
10-Mar-11	10-Mar-11	25-Apr-13	24-Apr-13	11-Mar-11	11-Mar-11	08-Mar-11	08-Mar-11	08-Mar-11	08-Mar-11	10-Nov-12	24-Apr-13	24-Apr-13	11-Mar-11	09-Mar-11	09-Mar-11	10-Nov-12	09-Mar-11	25-Apr-13	25-Apr-13	10-Mar-11	10-Mar-11	9-Nov-12	9-Nov-12	24-Apr-13	24-Apr-13	24-Apr-13	10-Mar-11	10-Mar-11	11-Mar-11				
CARO	CARO	CARO	Test America	CARO	CARO	CARO	CARO	CARO	CARO	CARO	Test America	CARO	CARO	CARO	CARO	CARO	Test America	Test America	CARO	Test America	CARO	CARO	CARO	CARO (DUP)	CARO	CARO (DUP)	Test America	CARO	CARO	CARO			
MATRIX	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air			
Hydrocarbons																																	
nC6+nC8 (total)	150	140	710	470	200	-	2300	430	370	390	550	220	<170	-	200	600	520	<170	-	-	<160	-	290	440	<150	<150	<220	<220	-	230	230	370	
nC6+nC8 (aromatic)	3.1	2.9	140	81	14	-	610	66	16	32	44	65	<3.4	-	3.7	100	49	<3.4	-	-	4.9	-	14	47	15	<3	<4.4	<4.4	-	<3.3	5.7	57	
nC6+nC8 (aliphatic)	150	140	580	370	200	-	1700	360	350	360	500	150	<170	-	200	500	490	<170	-	-	<160	-	280	410	<150	<150	<220	<220	-	230	230	320	
nC8+nC10 (total)	150	140	840	540	630	-	1300	330	370	880	600	600	<170	-	200	1100	1200	<170	-	-	880	-	740	2100	<150	<150	1000	760	-	290	870	640	
nC8+nC10 (aromatic)	15	2.9	140	150	3.3	-	290	22	34	<24	<23	13	7.4	-	<17	90	33	4.4	-	-	23	-	19	210	5	<3	9.8	<4.4	-	<16	130	50	
nC8+nC10 (aliphatic)	150	140	710	410	630	-	1000	310	350	680	550	<150	440	-	200	1000	1200	<170	-	-	850	-	740	1900	<150	<150	1000	760	-	280	770	600	
nC6+nC10 (F1)	310	290	1600	1000	870	-	3700	760	740	1100	1100	370	540	-	400	1700	1800	<340	-	-	980	-	1000	2500	<300	<300	1200	890	-	520	1100	1000	
nC10+nC12 (total)	150	140	650	240	670	-	470	300	<230	290	370	250	400	-	<170	1300	1600	200	-	-	1200	-	580	680	240	<150	1100	760	-	200	200	270	
nC10+nC12 (aromatic)	15	2.9	45	<17	<3.3	-	<17	<16	<23	<24	<23	46	<3.4	-	<17	<17	<16	33	-	-	<3.3	-	<16	<17	<3	<3	<4.4	<4.4	-	<16	<17	<17	
nC10+nC12 (aliphatic)	150	140	580	220	670	-	470	280	<230	270	340	200	400	-	<170	1300	1600	170	-	-	1200	-	580	680	240	<150	1100	760	-	190	200	260	
nC12+nC16 (total)	150	290	650	300	500	-	270	300	230	290	920	<310	<340	-	200	660	560	<340	-	-	750	-	550	410	<300	<300	<440	<440	-	160	170	270	
nC12+nC16 (aromatic)	15	2.9	<16	<17	<3.3	-	<17	<16	<23	<24	<23	<31	<34	-	<17	<17	<16	<34	-	-	<3.3	-	<16	<17	<3	<3	<4.4	<4.4	-	<16	<17	<17	
nC12+nC16 (aliphatic)	150	290	650	310	500	-	280	290	250	300	920	<310	<340	-	190	660	560	<340	-	-	750	-	550	410	<300	<300	<440	<440	-	170	180	270	
nC10+nC16 (total) (F2)	310	290	1300	540	1100	-	740	590	<470	580	1300	<310	610	-	<330	2000	2200	<340	-	-	2000	-	1100	1100	<300	<300	1500	1100	-	360	370	540	
Whv (6-13)	310	570	1400	780	1500	-	2300	660	600	770	1100	<620	970	-	360	1700	1900	<670	-	-	2200	-	870	1400	<590	<590	2200	1600	-	420	600	670	
VPhv	310	570	1100	580	1500	-	1400	560	560	720	1100	<620	970	-	330	1600	1800	<670	-	-	2200	-	840	1200	<590	<590	2200	1600	-	420	470	570	
Volatile Organic Compounds																																	
1,1,1,2-Tetrachloroethane	0.15	0.14	<0.16	<0.17	<0.33	-	<0.17	<0.16	<0.23	<0.24	<0.23	0.22	<0.34	-	<0.17	<0.17	<0.16	0.17	-	-	<0.33	-	<0.16	<0.17	2.3	<0.15	<0.44	<0.44	-	<0.16	<0.17	<0.17	
1,1,1-Trichloroethane	0.31	0.29	<0.32	<0.34	<0.33	ND	<0.34	<0.33	<0.47	<0.48	<0.46	<0.31	<0.34	ND	<0.33	<0.33	<0.33	<0.34	0.419	ND	<0.33	ND	<0.32	<0.34	<0.3	<0.3	<0.44	<0.44	ND	<0.33	<0.34	<0.34	
1,1,2,2-Tetrachloroethane	0.15	0.14	<0.16	<0.17	<0.23	ND	<0.17	<0.16	<0.23	<0.24	<0.23	<0.15	<0.24	ND	<0.17	<0.17	<0.16	<0.17	0.532	ND	<0.23	ND	<0.16	<0.17	<0.15	<0.15	<0.31	<0.31	ND	<0.33	<0.34	<0.34	
1,1,2-Trichloroethane	0.15	0.14	<0.16	<0.17	<0.33	ND	<0.17	<0.16	<0.23	<0.24	<0.23	<0.15	<0.34	ND	<0.17	<0.17	<0.16	<0.17	0.419	ND	<0.33	ND	<0.16	<0.17	<0.15	<0.15	<0.44	<0.44	ND	<0.33	<0.34	<0.34	
1,1,2-Trichloroethane	-	-	-	-	<0.67	ND	-	-	-	-	-	<0.67	ND	-	-	-	-	-	0.594	0.684	0.72	ND	-	-	-	-	<0.89	<0.89	ND	-	-	-	
1,1-Dichloroethane	0.31	0.29	<0.32	<0.34	<0.33	ND	<0.34	<0.33	<0.47	<0.48	<0.46	<0.31	<0.34	ND	<0.33	<0.33	<0.33	<0.34	0.314	ND	<0.33	ND	<0.32	<0.34	<0.3	<0.3	<0.44	<0.44	ND	<0.33	<0.34	<0.34	
1,1-Dichloroethane	0.092	0.086	<0.097	<0.1	<0.33	ND	<0.1	<0.099	<0.14	<0.15	<0.14	<0.099	<0.34	ND	<0.1	<0.1	<0.098	<0.1	0.366	ND	<0.33	ND	<0.097	<0.1	<0.089	<0.089	<0.44	<0.44	ND	<0.098	<0.1	<0.1	
1,2,3-Trichloropropane	0.31	0.29	<0.32	<0.34	<0.33	ND	<0.34	<0.33	<0.47	<0.48	<0.46	<0.31	<0.34	-	<0.33	<0.33	<0.33	<0.34	-	-	<0.33	ND	<0.32	<0.34	<0.3	<0.3	<0.44	<0.44	ND	<0.33	<0.34	<0.34	
1,2,3-Trichloropropane	0.31	0.29	<0.32	<0.34	<0.33	ND	<0.34	<0.33	<0.47	<0.48	<0.46	<0.31	<0.34	-	<0.33	<0.33	<0.33	<0.34	-	-	<0.33	ND	<0.32	<0.34	<0.3	<0.3	<0.44	<0.44	ND	<0.33	<0.34	<0.34	
1,2,3-Trichloropropane	0.31	0.29	<0.32	<0.34	<0.33	ND	<0.34	<0.33	<0.47	<0.48	<0.46	<0.31	<0.34	-	<0.33	<0.33	<0.33	<0.34	-	-	<0.33	ND	<0.32	<0.34	<0.3	<0.3	<0.44	<0.44	ND	<0.33	<0.34	<0.34	
1,2,3-Trichloropropane	0.31	0.29	<0.32	<0.34	<0.33	ND	<0.34	<0.33	<0.47	<0.48	<0.46	<0.31	<0.34	-	<0.33	<0.33	<0.33	<0.34	-	-	<0.33	ND	<0.32	<0.34	<0.3	<0.3	<0.44	<0.44	ND	<0.33	<0.34	<0.34	
1,2,4,5-Tetramethylbenzene	3.1	-	<3.2	<3.4	-	ND	<3.4	<3.3	<4.7	<4.8	<4.6	-	-	ND	<3.3	<3.3	<3.3	<3.4	0.744	3.2	-	1.87	<3.2	<3.4	-	-	-	-	ND	<3.3	<3.4	<3.4	
1,2,4,5-Tetramethylbenzene	3.1	-	<3.2	<3.4	-	ND	<3.4	<3.3	<4.7	<4.8	<4.6	-	-	ND	<3.3	<3.3	<3.3	<3.4	-	-	-	-	<3.2	<3.4	-	-	-	-	ND	<3.3	<3.4	<3.4	
1,2,4-Trichlorobenzene	0.31	0.29	<0.32	<0.34	<0.33	ND	0.64	<0.33	<0.47	<0.48	<0.46	<0.31	<0.34	ND	<0.33	<0.33	<0.33	<0.34	0.556	ND	<0.33	ND	<0.32	<0.34	<0.3	<0.3	<0.44	<0.44	ND	<0.33	<0.34	0.77	
1,2,4-Trichlorobenzene	0.31	0.29	<0.32	<0.34	<0.33	ND	0.64	&																									

Sample Location ID	CARO RDL 2011	CARO RDL 2012	MW10-7B		MW10-9B		MW10-10		MW10-11		MW10-12		MW10-14		MW10-15		MW10-16						MW10-18		MW10-20											
			R103247-10	R103247-11	3041469-04	AWD0187-03	R103247-12	R103247-13	R103247-14	R103247-15	R103247-16	2110724-07	3041469-01	AWD0187-01	R103247-17	R103247-18	R103247-19	2110724-08	MDL	AUC0212-02	3041469-07	AWD0187-06	R103247-20	R103247-21	2110724-09	2110724-10	3041469-02	3041469-03	AWD0187-02	R103247-22	R103247-23	R103247-24				
LAB ID	SAMPLE METHOD		SAMPLE DEPTH (mbgs)		DATE SAMPLED		LABORATORY		MATRIX																											
LAB ID	SAMPLE METHOD		SAMPLE DEPTH (mbgs)		DATE SAMPLED		LABORATORY		MATRIX																											
LAB ID	SAMPLE METHOD		SAMPLE DEPTH (mbgs)		DATE SAMPLED		LABORATORY		MATRIX																											
Dibromomethane	0.31	0.29	<0.32	<0.34	<0.33	-	<0.34	<0.33	<0.47	<0.48	<0.46	<0.31	<0.34	-	<0.33	<0.33	<0.33	<0.34	-	-	<0.33	-	<0.32	<0.34	<0.3	<0.3	<0.44	<0.44	-	<0.33	<0.34	<0.34				
Dichlorodifluoromethane	0.61	0.58	13	9.8	4.3	2.49	7.8	3.6	5.1	2.7	5.1	4.9	4.7	2.65	2	5.6	5.9	5	0.38	2.34	4.2	2.84	8.7	7.8	4.4	<0.59	4.4	<0.89	2.52	2.4	5.7	6.7				
Dichlorofluoromethane	-	-	-	-	-	ND	-	-	-	-	-	-	-	ND	-	-	-	-	0.326	ND	-	ND	-	-	-	-	-	-	-	-	-	-				
Diethyl ether	-	-	-	-	-	ND	-	-	-	-	-	-	-	ND	-	-	-	-	0.424	ND	-	ND	-	-	-	-	-	-	-	-	-	-				
Ethane	-	-	-	-	-	0.37	-	-	-	-	-	-	-	0.658	-	-	-	-	1.14	233	-	1.01	-	-	-	-	-	-	-	0.672	-	-				
Ethanol	-	-	-	-	-	ND	-	-	-	-	-	-	-	0.985	-	-	-	-	0.207	39.4	-	2.15	-	-	-	-	-	-	0.708	-	-	-				
Ethene	-	-	-	-	-	0.44	-	-	-	-	-	-	-	1.03	-	-	-	-	0.932	122	-	1.01	-	-	-	-	-	-	1.38	-	-	-				
Ethyl acetate	1.5	1.4	<1.6	<1.7	<1.7	-	<1.7	<1.6	<2.3	<2.4	<2.3	<1.5	<1.7	-	<1.7	<1.6	<1.7	-	-	-	-	<1.6	<1.7	<1.5	<1.5	<2.2	<2.2	-	<1.6	<1.7	<1.7					
Ethyl ether	0.61	0.58	<0.65	<0.68	<0.67	-	<0.68	<0.66	<0.93	<0.97	<0.92	<0.62	<0.67	-	<0.66	<0.66	<0.65	<0.67	-	-	<0.65	-	<0.64	<0.68	<0.59	<0.59	<0.89	<0.89	-	<0.65	<0.67	<0.67				
Ethyl methacrylate	0.31	0.29	<0.32	<0.34	<0.33	-	<0.34	<0.33	<0.47	<0.48	<0.46	<0.31	<0.34	-	<0.33	<0.33	<0.33	<0.34	-	-	<0.33	-	<0.32	<0.34	<0.3	<0.3	<0.44	<0.44	-	<0.33	<0.34	<0.34				
Ethylbenzene	0.31	0.29	22	25	0.43	ND	44	3.2	4.7	1.5	1.9	0.31	1	ND	<0.33	7.3	3.9	<0.34	0.337	9.41	1.4	1.08	1.9	31	0.47	<0.3	<0.3	0.53	ND	0.78	22	7				
Halocarbon 134A	-	-	-	-	-	3.89	-	-	-	-	-	-	-	ND	-	-	-	-	0.323	ND	-	23.2	-	-	-	-	-	-	1.72	-	-	-				
Heptanal	-	-	-	-	-	ND	-	-	-	-	-	-	-	ND	-	-	-	-	1.23	3.34	-	ND	-	-	-	-	-	-	ND	-	-	-				
Heptane	-	-	-	-	-	ND	-	-	-	-	-	-	-	ND	-	-	-	-	0.219	23.9	-	ND	-	-	-	-	-	-	ND	-	-	-				
Hexachlorobutadiene	0.15	0.14	<0.16	<0.17	<0.33	ND	<0.17	<0.16	<0.23	<0.24	<0.23	<0.15	<0.34	ND	<0.17	<0.17	<0.16	<0.17	0.833	ND	<0.33	ND	<0.16	<0.17	<0.15	<0.15	<0.44	<0.44	ND	<0.16	<0.17	0.5				
Hexachloroethane	0.31	0.29	<0.32	<0.34	<1.3	-	<0.34	<0.33	<0.47	<0.48	<0.46	<0.31	<1.4	-	<0.33	<0.33	<0.33	<0.34	-	-	<1.3	-	<0.32	<0.34	<0.3	<0.3	<1.8	<1.8	-	<0.33	<0.34	<0.34				
Hexanal	-	-	-	-	-	ND	-	-	-	-	-	-	-	ND	-	-	-	-	0.492	2.59	-	2.75	-	-	-	-	-	-	ND	-	-	-				
Hexane	-	-	-	-	-	ND	-	-	-	-	-	-	-	ND	-	-	-	-	-	-	-	ND	-	-	-	-	-	-	ND	-	-	-				
Indan	-	-	-	-	-	ND	-	-	-	-	-	-	-	ND	-	-	-	-	0.386	1.56	-	1.62	-	-	-	-	-	-	ND	-	-	-				
Indene	-	-	-	-	-	ND	-	-	-	-	-	-	-	ND	-	-	-	-	0.172	ND	-	ND	-	-	-	-	-	-	ND	-	-	-				
Isobutane	-	-	-	-	-	0.675	-	-	-	-	-	-	-	4	-	-	-	-	0.187	27.4	-	ND	-	-	-	-	-	-	2.48	-	-	-				
Isobutylbenzene	3.1	0.29	<3.2	<3.4	-	ND	<3.4	<3.3	<4.7	<4.8	<4.6	<0.31	-	ND	<3.3	<3.3	<3.3	<0.34	0.438	0.702	-	ND	<3.2	<3.4	<0.3	<0.3	-	-	ND	<3.3	<3.4	<3.4				
Isopentane	-	-	-	-	-	ND	-	-	-	-	-	-	-	ND	-	-	-	-	0.318	13.9	-	ND	-	-	-	-	-	-	ND	-	-	-				
Isohexane	-	-	-	-	-	ND	-	-	-	-	-	-	-	ND	-	-	-	-	0.213	20.8	-	ND	-	-	-	-	-	-	ND	-	-	-				
Isopentane	-	-	-	-	-	1.12	-	-	-	-	-	-	-	2.18	-	-	-	-	0.428	41.8	-	ND	-	-	-	-	-	-	4.32	-	-	-				
Isoprene	-	-	-	-	-	ND	-	-	-	-	-	-	-	ND	-	-	-	-	0.183	3.48	-	ND	-	-	-	-	-	-	ND	-	-	-				
Methyl ethyl ketone	0.61	-	2.1	3.4	-	-	20	<0.66	<0.93	1.2	<0.92	-	-	-	<0.66	<0.66	0.88	-	0.451	1.74	-	-	<0.64	2.4	-	-	-	-	-	1.1	<0.67	<0.67				
Methyl isobutyl ketone	0.61	-	<0.65	<0.68	-	-	1.1	<0.66	<0.93	<0.97	<0.92	-	-	-	<0.66	<0.66	<0.65	<0.67	-	0.62	1.52	-	<0.64	<0.68	-	-	-	-	-	<0.65	<0.67	<0.67				
Methyl methacrylate	0.61	0.58	<0.65	<0.68	<0.67	-	4.1	<0.66	<0.93	<0.97	<0.92	<0.62	<0.67	-	<0.66	<0.66	<0.65	<0.67	-	-	<0.65	-	<0.64	<0.68	<0.59	<0.59	<0.89	<0.89	-	<0.65	<0.67	<0.67				
Methyl tert-butyl ether	0.61	0.58	<0.65	<0.68	<0.67	ND	<0.68	<0.66	<0.93	<0.97	<0.92	<0.62	<0.67	ND	<0.66	<0.66	<0.65	<0.67	0.515	ND	<0.65	ND	<0.64	<0.68	<0.59	<0.59	<0.89	<0.89	ND	<0.65	<0.67	<0.67				
Methylcyclohexane	0.61	0.58	4.9	1.3	<0.67	ND	0.85	1.6	<0.93	<0.97	0.96	<0.62	<0.67	ND	<0.66	3.1	4.3	<0.67	0.311	26.6	<0.65	ND	2	2.5	<0.59	<0.59	<0.89	<0.89	ND	1.3	1.1	<0.67				
Methylcyclopentane	-	-	-	-	-	ND	-	-	-	-	-	-	-	ND	-	-	-	-	0.197	6.12	-	ND	-	-	-	-	-	-	ND	-	-	-				
Methylene chloride	3.1	2.9	22	17	<3.3	ND	<3.4	<3.3	<4.7	<4.8	<4.6	<3.1	<3.4	ND	<3.3	5.3	<3.3	<3.4	0.272	0.698	<3.3	ND	3.9	<3.4	<3	<3	<4.4	<4.4	ND	<3.3	13	<3.4				
m-Xylene & p-Xylene	-	-	-	-	-	ND	-	-	-	-	-	-	-	ND	-	-	-	-	0.673	32.4	-	4.97	-	-	-	-	-	-	ND	-	-	-				
Naphthalene	0.31	0.29	45	12	-	ND	0.64	<0.33	<0.47	<0.48	<0.46	46	-	ND	<0.33	<0.33	1.3	33	0.645	0.923	-	2.14	0.77	0.64	0.47	<0.3	-	-	ND	<0.33	<0.34	2.7				
n-Butanol	-	-	-	-	-	ND	-	-	-	-	-	-	-	ND	-	-	-	-	0.408	3.6	-	ND	-	-	-	-	-	-	ND	-	-	-				
n-Butylbenzene	3.1	-	<3.2	<3.4	-	ND	<3.4	<3.3	<4.7	<4.8	<4.6	-	-	ND	<3.3	<3.3	<3.3	-	0.212	ND	-	ND	<3.2	<3.4	-	-	-	ND	<3.3	<3.4	<3.4					
nC10-nC12 Non-reg. Aromatics	15	-	<16	<17	-	-	<17	<16	<23	<24	<23	-	-	-	<17	<17	<16	-	-	-	-	-	<16	<17	-	-	-	-	<16	<17	<17					
nC10-nC12 Other Aromatics	3.1	-	<3.2	<3.4	-	-	<3.4	<3.3	<4.7	<4.8	<4.6	-	-	-	<3.3	<3.3	<3.3	-	-	-	-	-	<3.2	<3.4	-	-	-	-	<3.3	<3.4	<3.4					
nC12-nC16 Non-reg. Aromatics	15	-	<16	<17	-	-	<17	<16	<23	<24	<23	-	-	-	<17	<17	<16	-	-	-	-	-	<16	<17	-	-	-	-	<16	<17	<17					
nC12-nC16 Other Aromatics	3.1	-	<3.2	<3.4	-	-	<3.4	<3.3	<4.7	<4.8	<4.6	-	-	-	<3.3	<3.3	<3.3	-	-	-	-	-	<3.2	<3.4	-	-	-	-								

Sample Location ID LAB ID SAMPLE METHOD SAMPLE DEPTH (mbgs) DATE SAMPLED LABORATORY	MW10-22			MW11-01B			MW11-02			MW11-03B			MW11-04B			MW11-06			MW11-09			AVK0120-02			
	R103247-25	2110724-11	2110724-12	AUC0212-01	2110724-13	2110724-14	2110724-15	2110724-16	2110724-17	2110724-18	2110724-19	2110724-20	2110724-21	2110724-22	2110724-23	AVK0120-03	2110724-24	2110724-25	2110724-26	AVK0120-02					
	Well	Well	Well	Well	Shallow probe	Deep probe	Shallow probe	Shallow probe	Shallow probe	Deep probe	Shallow probe	Deep probe	Deep probe	Shallow probe	Deep probe	Deep probe	Shallow probe	Shallow probe	Shallow probe	Deep probe	Shallow probe				
	2.13-3.3	2.13-3.35	2.13-3.35	2.13-3.3	1.22-1.83	2.13-2.74	2.13-2.74	1.07-1.68	2.13-2.74	0.91-1.68	2.13-2.74	1.98-2.44	1.98-2.44	1.22-1.83	2.13-2.59	2.13-2.59	1.22-1.83	1.22-1.83	1.22-1.83	2.13-2.74	1.22-1.83				
09-Mar-11	9-Nov-12	9-Nov-12	09-Mar-11	10-Nov-12	10-Nov-12	10-Nov-12	10-Nov-12	10-Nov-12	10-Nov-12	10-Nov-12	9-Nov-12	9-Nov-12	9-Nov-12	9-Nov-12	9-Nov-12	12-Nov-12	9-Nov-12	9-Nov-12	9-Nov-12	12-Nov-12					
CARO	CARO	CARO (DUP)	Test America	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO (DUP)	CARO	CARO	Test America	CARO	CARO (DUP)	CARO	CARO	Test America					
MATRIX	CARO RDL 2011	CARO RDL 2012	Air	Air	Air	Test America MDL	Air	Air	Air	Air	Air	Air	Air	Air	Test America MDL	Air	Air	Air	Air	Test America MDL	Air				
Hydrocarbons																									
nC6-nC8 (total)	150	140	680	<140	<140	-	-	<160	<170	<170	200	330	590	160	<150	160	280	190	-	-	160	<170	330	-	-
nC6-nC8 (aromatic)	3.1	2.9	110	9.5	<2.9	-	-	<3.2	5.3	10	47	120	140	19	4.7	21	92	48	-	-	20	5.3	130	-	-
nC6-nC8 (aliphatic)	150	140	550	<140	<140	-	-	<160	<170	<170	<170	190	460	<160	<150	<160	200	<160	-	-	<160	<170	210	-	-
nC8-nC10 (total)	150	140	880	170	<140	-	-	<160	<170	<170	<170	160	790	<160	<150	<160	160	<160	-	-	<160	200	<160	-	-
nC8-nC10 (aromatic)	15	2.9	29	6	3.5	-	-	3.2	3.3	<3.4	3.3	4.9	40	<3.1	<3	4.9	3.2	<3.2	-	-	5.6	4	<3.3	-	-
nC8-nC10 (aliphatic)	150	140	850	150	<140	-	-	<160	<170	<170	<170	170	760	<160	<150	<160	160	<160	-	-	<160	190	<160	-	-
nC6-nC10 (F1)	310	290	1600	290	<290	-	-	<320	<330	<340	370	490	1400	<310	<290	<330	470	350	-	-	<330	360	490	-	-
nC10-nC12 (total)	150	140	780	260	<140	-	-	<160	<170	<170	<170	<160	<170	<160	<150	<160	<160	<160	-	-	<160	<170	<160	-	-
nC10-nC12 (aromatic)	15	2.9	<16	<2.9	<2.9	-	-	<3.2	<3.1	<3.3	<3.4	<3.3	<3.3	<3.1	<3	<3.3	<3.2	<3.2	-	-	<3.3	<3.3	<3.3	-	-
nC10-nC12 (aliphatic)	150	140	780	260	<140	-	-	<160	<170	<170	<170	<160	<170	<160	<150	<160	<160	<160	-	-	<160	<170	<160	-	-
nC12-nC16 (total)	150	290	360	<290	<290	-	-	<320	<330	<340	<330	<330	<330	<310	<290	<330	<320	<320	-	-	<330	<330	<330	-	-
nC12-nC16 (aromatic)	15	2.9	<16	<2.9	<2.9	-	-	<3.2	<3.1	<3.3	<3.4	<3.3	<3.3	<3.1	<3	<3.3	<3.2	<3.2	-	-	<3.3	<3.3	<3.3	-	-
nC12-nC16 (aliphatic)	150	290	360	<290	<290	-	-	<320	<330	<340	<330	<330	<330	<310	<290	<330	<320	<320	-	-	<330	<330	<330	-	-
nC10-nC16 (total) (F2)	310	290	1200	<290	<290	-	-	<320	<330	<340	<330	<330	<330	<310	<290	<330	<320	<320	-	-	<330	<330	<330	-	-
VHv (6-13)	310	570	1300	<570	<570	-	-	<640	<670	<670	<670	<650	1700	<630	<590	<660	<630	<640	-	-	<650	<660	<660	-	-
VPHv	310	570	1100	<570	<570	-	-	<640	<670	<670	<670	<650	1300	<630	<590	<660	<630	<640	-	-	<650	<660	<660	-	-
Volatile Organic Compounds																									
1,1,1,2-Tetrachloroethane	0.15	0.14	<0.16	1.2	<0.14	-	-	<0.16	1.2	0.47	1.2	1.5	1.5	<0.16	0.53	<0.16	<0.16	0.22	-	-	<0.16	<0.17	<0.16	-	-
1,1,1-Trichloroethane	0.31	0.29	<0.33	<0.29	<0.29	0.456	ND	<0.32	<0.33	<0.34	<0.33	<0.33	<0.33	<0.31	<0.3	<0.33	<0.32	0.64	3.2	ND	<0.33	<0.33	0.56	2.13	ND
1,1,2,2-Tetrachloroethane	0.15	0.14	<0.16	<0.14	<0.14	0.58	ND	<0.16	<0.17	<0.17	<0.17	<0.16	<0.16	<0.17	<0.15	<0.16	<0.16	<0.16	2.69	ND	<0.16	<0.16	<0.16	0.541	ND
1,1,2-Trichloroethane	0.15	0.14	<0.16	<0.14	<0.14	0.456	ND	<0.16	<0.17	<0.17	<0.17	<0.16	<0.16	<0.17	<0.15	<0.16	<0.16	<0.16	0.667	ND	<0.16	<0.17	<0.16	0.426	ND
1,1,2-Trichlorofluoroethane	-	-	-	-	-	0.647	ND	-	-	-	-	-	-	-	-	-	-	-	6.1	ND	-	-	-	3.02	ND
1,1-Dichloroethane	0.31	0.29	<0.33	<0.29	<0.29	0.342	ND	<0.32	<0.33	<0.34	<0.33	<0.33	<0.33	<0.31	<0.3	<0.33	<0.32	<0.32	2.43	ND	<0.33	<0.33	<0.33	1.59	ND
1,1-Dichloroethene	0.092	0.086	<0.098	<0.086	<0.086	0.399	ND	<0.096	<0.1	<0.1	<0.1	<0.098	<0.099	<0.094	0.21	0.2	0.25	0.13	1.44	ND	<0.098	0.1	0.2	1.86	ND
1,2,3-Trichloropropane	0.31	0.29	<0.33	<0.29	<0.29	-	-	<0.32	<0.33	<0.34	<0.33	<0.33	<0.33	<0.31	<0.3	<0.33	<0.32	<0.32	-	-	<0.33	<0.33	<0.33	-	-
1,2,3-Trimethylbenzene	3.1	-	<3.3	-	-	0.811	1.38	-	-	-	-	-	-	-	-	-	-	-	0.836	ND	-	-	-	0.756	ND
1,2,4,5-Tetramethylbenzene	3.1	-	<3.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	0.31	0.29	<0.33	<0.29	<0.29	0.605	ND	<0.32	<0.33	<0.34	<0.33	<0.33	<0.33	<0.31	<0.3	<0.33	<0.32	<0.32	1.04	ND	<0.33	<0.33	<0.33	0.565	ND
1,2,4-Trifluorobenzene	3.1	-	<3.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	0.61	0.58	2.7	2.1	1.3	0.415	5.71	0.64	<0.67	<0.67	<0.67	<0.65	2.7	0.85	1	1.5	0.95	0.8	1.1	ND	1.5	1.6	0.69	0.387	1.48
1,2-Dibromo-3-chloropropane	0.31	0.29	<0.33	<0.29	<0.29	-	-	<0.32	<0.33	<0.34	<0.33	<0.33	<0.33	<0.31	<0.3	<0.33	<0.32	<0.32	-	-	<0.33	<0.33	<0.33	-	-
1,2-Dibromomethane	0.31	0.29	<0.33	<0.29	<0.29	-	-	<0.32	<0.33	<0.34	<0.33	<0.33	<0.33	<0.31	<0.3	<0.33	<0.32	<0.32	-	-	<0.33	<0.33	<0.33	-	-
1,2-Dibromoethane (EDB)	-	-	-	-	-	0.649	ND	-	-	-	-	-	-	-	-	-	-	-	0.93	ND	-	-	-	0.605	ND
1,2-Dichloro-1,1,2,2-tetrafluoroethane	-	-	-	-	-	0.585	ND	-	-	-	-	-	-	-	-	-	-	-	15.5	ND	-	-	-	2.73	ND
1,2-Dichlorobenzene	0.31	0.29	<0.33	<0.29	<0.29	0.503	ND	<0.32	<0.33	<0.34	<0.33	<0.33	<0.33	<0.31	<0.3	<0.33	<0.32	<0.32	2.42	ND	<0.33	<0.33	<0.33	0.469	ND
1,2-Dichloroethene	0.092	0.086	<0.098	<0.086	<0.086	0.342	ND	<0.096	<0.1	<0.1	<0.1	<0.098	<0.099	<0.094	<0.089	<0.099	<0.095	<0.096	1.7	ND	<0.098	<0.1	<0.099	1.59	ND
1,2-Dichloropropane	0.15	0.14	<0.16	<0.14	<0.14	0.39	ND	<0.16	<0.17	<0.17	<0.17	<0.16	<0.16	<0.17	<0.15	<0.16	<0.16	<0.16	0.445	ND	<0.16	<0.17	<0.16	0.364	ND
1,2-Diethylbenzene	3.1	-	<3.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dimethyl-3-Ethylbenzene	3.1	-	<3.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dimethyl-4-Ethylbenzene	3.1	-	<3.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trifluorobenzene	3.1	-	<3.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	0.61	0.58	1.1	<0.58	<0.58	0.415	2.09	<0.64	<0.67	<0.67	<0.67	<0.65	0.66	<0.63	<0.59	<0.66	<0.63	<0.64	0.979	ND	<0.65	<0.66	<0.66	0.387	0.563
1,3-Butadiene	-	-	-	-	-	0.164	1.56	-	-	-	-	-	-	-	-	-	-	-	1.27	ND	-	-	-	0.764	ND
1,3-Dichlorobenzene	0.31	0.29	<0.33	<																					

Sample Location ID	LAB ID		MW10-22				MW11-01B				MW11-02				MW11-03B				MW11-04B				MW11-08				MW11-09				AVK0120-02	
			R103247-25	2110724-11	2110724-12	Well	AUC0212-01	2110724-13	2110724-14	2110724-15	2110724-16	2110724-17	2110724-18	2110724-19	2110724-20	2110724-21	2110724-22	2110724-23	Well	AVK0120-03	2110724-24	2110724-25	2110724-26	Well	AVK0120-02							
			SAMPLE METHOD		Well		Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe		Shallow probe	Shallow probe	Shallow probe	Shallow probe		Shallow probe	Shallow probe	Shallow probe	Shallow probe				
			SAMPLE DEPTH (mbgs)		2.13-3.3		2.13-3.35	2.13-3.35	2.13-3.3	1.22-1.83	2.13-2.74	1.07-1.68	2.13-2.74	0.91-1.68	2.13-2.74	1.07-1.68	1.98-2.44	1.98-2.44		1.22-1.83	2.13-2.59	2.13-2.59	2.13-2.59		2.13-2.59	2.13-2.59	2.13-2.59	2.13-2.59	2.13-2.59	2.13-2.59		
DATE SAMPLED		09-Mar-11	9-Nov-12	9-Nov-12	09-Mar-11	10-Nov-12	10-Nov-12	10-Nov-12	10-Nov-12	10-Nov-12	10-Nov-12	9-Nov-12	9-Nov-12	9-Nov-12	9-Nov-12	9-Nov-12	9-Nov-12	12-Nov-12	9-Nov-12	9-Nov-12	9-Nov-12	9-Nov-12	12-Nov-12									
LABORATORY		CARO	CARO	CARO (DUP)	Test America MDL	Test America	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	Test America MDL	Test America	CARO	CARO (DUP)	CARO	Test America MDL	Test America									
MATRIX		CARO RDL 2011	CARO RDL 2012	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air									
1-Pentene	-	-	-	-	-	0.219	16.4	-	-	-	-	-	-	-	-	-	1.37	ND	-	-	-	-	1.02	ND								
1-Lindane	-	-	-	-	-	0.511	ND	-	-	-	-	-	-	-	-	-	1.05	ND	-	-	-	-	0.476	ND								
2,3-Chlorobutene	-	-	-	-	-	0.879	ND	-	-	-	-	-	-	-	-	-	3.35	ND	-	-	-	-	0.819	ND								
2,3-Trimethylpentane	-	-	-	-	-	0.391	0.701	-	-	-	-	-	-	-	-	-	0.625	ND	-	-	-	-	0.364	ND								
2,2,4-Trimethylpentane	-	-	-	-	-	0.394	2.22	-	-	-	-	-	-	-	-	-	0.557	ND	-	-	-	-	0.368	ND								
2,2,5-Trimethylhexane	-	-	-	-	-	0.456	0.624	-	-	-	-	-	-	-	-	-	0.486	ND	-	-	-	-	0.425	ND								
2,2-Dimethylbutane	-	-	-	-	-	0.279	0.493	-	-	-	-	-	-	-	-	-	2.46	ND	-	-	-	-	1.3	ND								
2,3,4-Trimethylpentane	-	-	-	-	-	0.272	1.79	-	-	-	-	-	-	-	-	-	0.334	ND	-	-	-	-	0.254	ND								
2,3-Dimethylbutane	-	-	-	-	-	0.206	1.46	-	-	-	-	-	-	-	-	-	2.09	ND	-	-	-	-	0.961	ND								
2,3-Dimethylpentane	-	-	-	-	-	0.349	3.54	-	-	-	-	-	-	-	-	-	0.409	ND	-	-	-	-	0.326	ND								
2,4,4-Trimethyl-1-pentene	-	-	-	-	-	0.384	ND	-	-	-	-	-	-	-	-	-	1.42	ND	-	-	-	-	0.358	ND								
2,4,4-Trimethyl-2-pentene	-	-	-	-	-	0.399	ND	-	-	-	-	-	-	-	-	-	0.567	ND	-	-	-	-	0.372	ND								
2,4-Dimethylpentane	-	-	-	-	-	0.346	0.884	-	-	-	-	-	-	-	-	-	2.27	ND	-	-	-	-	1.61	ND								
2,5-Dimethylhexane	-	-	-	-	-	0.391	0.632	-	-	-	-	-	-	-	-	-	0.404	ND	-	-	-	-	0.364	ND								
2-Butanone (MEK)	-	0.58	-	-0.58	-0.58	-	-	-0.64	-0.67	-0.67	-0.67	-0.67	-0.65	-0.66	-0.63	-0.59	-0.66	-0.63	-0.64	-0.64	-0.64	-0.64	2.29	ND								
2-Chlorobutene	0.61	0.58	-0.65	-0.58	-0.58	-	-	-0.64	-0.67	-0.67	-0.67	-0.67	-0.65	-0.66	-0.63	-0.59	-0.66	-0.63	-0.64	-0.64	-0.64	-0.64	-	-								
2-Ethyl-1-butene	-	-	-	-	-	0.288	1.23	-	-	-	-	-	-	-	-	-	5.21	ND	-	-	-	-	1.34	ND								
2-Ethyltoluene	-	-	-	-	-	0.415	1.15	-	-	-	-	-	-	-	-	-	0.943	ND	-	-	-	-	0.387	ND								
2-Hexanone	-	-	-	-	-	0.236	ND	-	-	-	-	-	-	-	-	-	1.26	ND	-	-	-	-	0.22	ND								
2-Methyl-1-pentene	-	-	-	-	-	0.25	3.46	-	-	-	-	-	-	-	-	-	2.7	ND	-	-	-	-	1.17	ND								
2-Methyl-2-butene	-	-	-	-	-	0.191	2.31	-	-	-	-	-	-	-	-	-	3.29	ND	-	-	-	-	0.891	ND								
2-Methyl-2-pentene	-	-	-	-	-	0.282	0.703	-	-	-	-	-	-	-	-	-	1.4	ND	-	-	-	-	1.32	ND								
2-Methylbutylbenzene	3.1	-	-	-3.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
2-Methylheptane	-	-	-	-	-	0.394	0.832	-	-	-	-	-	-	-	-	-	0.489	ND	-	-	-	-	0.368	ND								
3-Ethyltoluene	-	-	-	-	-	0.415	4.42	-	-	-	-	-	-	-	-	-	1.09	ND	-	-	-	-	0.387	0.553								
3-Methyl-1-butene	-	-	-	-	-	0.206	3.78	-	-	-	-	-	-	-	-	-	1.93	ND	-	-	-	-	0.958	ND								
3-Methylheptane	-	-	-	-	-	0.763	0.776	-	-	-	-	-	-	-	-	-	0.382	ND	-	-	-	-	0.711	ND								
3-Methylhexane	-	-	-	-	-	0.292	6.64	-	-	-	-	-	-	-	-	-	0.429	ND	-	-	-	-	0.272	ND								
3-Methylpentane	-	-	-	-	-	0.256	4.76	-	-	-	-	-	-	-	-	-	2.5	ND	-	-	-	-	1.19	ND								
4-Chlorobutene	-	-	-	-	-	0.798	ND	-	-	-	-	-	-	-	-	-	1.69	ND	-	-	-	-	0.744	ND								
4-Ethyltoluene	-	-	-	-	-	0.411	1.84	-	-	-	-	-	-	-	-	-	1.28	ND	-	-	-	-	0.383	ND								
4-Isopropyltoluene	-	-	-	-	-	0.889	4.54	-	-	-	-	-	-	-	-	-	2.27	ND	-	-	-	-	0.829	ND								
4-Methyl-1-pentene	-	-	-	-	-	0.211	1.17	-	-	-	-	-	-	-	-	-	1.99	ND	-	-	-	-	0.984	ND								
4-Methyl-2-Pentanone (MIBK)	-	0.58	-	-0.58	-0.58	-	-	-0.64	-0.67	-0.67	-0.67	-0.67	-0.65	-0.66	-0.63	-0.59	-0.66	-0.63	-0.64	-0.64	-0.64	-0.64	0.942	ND								
4-Nonene	-	-	-	-	-	0.171	2.27	-	-	-	-	-	-	-	-	-	5.16	ND	-	-	-	-	0.159	ND								
Acetaldehyde	-	-	-	-	-	0.527	11.3	-	-	-	-	-	-	-	-	-	2.25	ND	-	-	-	-	2.46	ND								
Acetone	3.1	2.9	18	-2.9	3.2	0.172	4.21	-3.2	-3.3	-3.4	-3.3	3.6	9.2	-3.1	-3	-3.3	-3.2	-3.2	-3.2	-3.2	-3.2	1.06	ND									
Acetonitrile	-	-	-	-	-	0.161	ND	-	-	-	-	-	-	-	-	-	2.64	ND	-	-	-	-	0.752	ND								
Acetylene	-	-	-	-	-	0.18	0.522	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.803	ND								
Acrylonitrile	0.31	0.29	-0.33	-0.29	-0.29	0.661	ND	-0.32	-0.33	-0.34	-0.33	-0.33	-0.33	-0.31	-0.3	-0.33	-0.32	-0.32	-0.32	-0.32	-0.32	1.68	ND									
Allyl chloride	0.15	0.14	-0.16	-0.14	-0.14	0.26	ND	-0.16	-0.17	-0.17	-0.17	-0.16	-0.17	-0.16	-0.15	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	2.89	ND									
alpha-Pinene	-	-	-	-	-	0.475	0.754	-	-	-	-	-	-	-	-	-	0.843	ND	-	-	-	-	0.443	ND								
Benzaldehyde	-	-	-	-	-	0.394	0.541	-	-	-	-	-	-	-	-	-	1.32	ND	-	-	-	-	0.368	ND								
Benzene	0.15	0.14	1.7	0.78	0.63	0.204	2.49	1.5	1.6	1.8	1.7	3.9	7.6	1.6	1.2	1.1	1.2	0.93	0.404	1.1	1.4	1.4	0.19	1.82								
Benzyl chloride	-	-	-	-	-	1.56	ND	-	-	-	-	-	-	-	-	-	1.72	ND	-	-	-	-	1.46	ND								
beta-Pinene	-	-	-	-	-	0.47	1.13	-	-	-	-	-	-	-	-	-	2.17	ND	-	-	-	-	0.439	ND								
Bromobenzene	0.31	0.29	-0.33	-0.29	-0.29	-	-	-0.32	-0.33	-0.34	-0.33	-0.33	-0.33	-0.31	-0.3	-0.33	-0.32	-0.32	-0.32	-0.32	-0.32	-	-	-								
Bromochloromethane	-	-	-	-	-	0.46	ND	-	-	-	-	-	-	-	-	-	4.23	ND	-	-	-	-	2.14	ND								
Bromodichloromethane	0.15	0.14	-0.16	-0.14	-0.14	0.582	ND	-0.16	-0.17	-0.17	-0.17	-0.16	-0.17	-0.16	-0.15	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	1.9	ND									
Bromoforn	0.31	0.29	-0.33	-0.29	-0.29	0.899	ND	-0.32	-0.33	-0.34	-0.33	-0.33	-0.33	-0.31	-0.3	-0.33	-0.32	-0.32	-0.32	-0.32	-0.32	1.82	ND									
Bromomethane	-	-	-	-	-	0.328	ND	-	-	-	-	-	-	-	-	-	3.72	ND	-	-	-	-	1.53	ND								
Butane	-	-	-	-	-	0.176	44.4	-	-	-	-	-	-	-	-	-	1.32	ND	-	-	-	-	0.82	ND								
Butyl acrylate	-	-	-	-	-	1.51	ND	-	-	-	-	-	-	-	-	-	2.85	ND	-	-	-	-	1.4	ND								
Butylaldehyde	-	-	-	-	-	0.856	1.69	-	-	-	-	-	-	-	-	-	2.06	ND	-	-	-	-	3.99	ND								
Carbon disulfide	0.61	0.58	6.2	-0.58	-0.58	0.895	11.2	0.99	-0.67	-0.67	-0.67	2.5	0.66	1.6	0.86	-0.66	1.7	-0.64	4.23	ND	0.88	1.1	1.4	4.17								
Carbon tetrachloride	0.092	0.086	-0.098	-0.086	-0.086	0.531	ND	-0.096	-0.1	0.1	0.13	-0.098	9.9	17	8	-0.099	-0.095	3.2	2.07	2.24	-0.098	16	0.79	0.495								
Chlorobenzene	0.31	0.29	-0.33	-0.29	-0.29	0.393	ND	-0.32	-0.33	-0.34	-0.33	-0.33	-0.33	-0.31	-0.3	-0.33	-0.32	-0.32	0.404	ND	-0.33	4.3	-0.33	0.366								
Chlorodifluoromethane	-	-	-	-	-	0.556	0.638	-	-	-	-	-	-	-	-	-	1.87	ND	-	-	-	-	2.59	ND								
Chloroethane	1.5	1.4	<1.6	<1.4	<1.4	0.158	ND	<1.6	<1.7	<1.7	<1.7	<1.6	<1.7	<1.6	<1.5	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	1.98	ND									
Chloroform	0.15	0.14	3	-0.14	-0.14	0.412	2.02	-0.16	-0.17	-0.17	-0.17	-0.16	7.3	-0.16	0.15	-0.16	-0.16	0.19	2.44	ND	-0.16	0.23	0.16	1.92								
Chloromethane	-	-	-	-	-	0.142	0.822	-	-	-	-	-	-	-	-	-	0.9	ND	-	-	-	-	0.661	ND								
Chloroprene	-	-	-	-																												

Sample Location ID	CARO RDL 2011	CARO RDL 2012	MW10-22		Test America MDL	AUC0212-01	MW11-01B		MW11-02	MW11-03B		MW11-04B	MW11-08		MW11-09		Test America MDL	AVK0120-03	MW11-09		Test America MDL	AVK0120-02	
			R103247-25	2110724-11			2110724-12	2110724-13		2110724-14	2110724-15		2110724-16	2110724-17	2110724-18	2110724-19			2110724-20	2110724-21			2110724-22
LAB ID			Well	Well	Well	Well	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	
SAMPLE METHOD			Well	Well	Well	Well	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	Shallow probe	
SAMPLE DEPTH (mbgs)			2.13-3.3	2.13-3.35	2.13-3.35	2.13-3.3	1.22-1.83	2.13-2.74	1.07-1.68	2.13-2.74	0.91-1.68	2.13-2.74	1.07-1.68	1.98-2.44	1.98-2.44	1.22-1.83	2.13-2.59	2.13-2.59	1.22-1.83	1.22-1.83	2.13-2.74	1.22-1.83	
DATE SAMPLED			09-Mar-11	9-Nov-12	9-Nov-12	09-Mar-11	10-Nov-12	10-Nov-12	10-Nov-12	10-Nov-12	10-Nov-12	10-Nov-12	10-Nov-12	9-Nov-12	9-Nov-12	9-Nov-12	9-Nov-12	12-Nov-12	9-Nov-12	9-Nov-12	9-Nov-12	12-Nov-12	
LABORATORY			CARO	CARO	CARO (DUP)	Test America	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO (DUP)	CARO	CARO	Test America	CARO	CARO (DUP)	CARO	Test America	
MATRIX			Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	
Dibromomethane	0.31	0.29	<0.33	<0.29	<0.29	-	-	<0.32	<0.33	<0.34	<0.33	<0.33	<0.33	<0.31	<0.3	<0.33	<0.32	<0.32	-	-	<0.33	<0.33	<0.33
Dichlorodifluoromethane	0.61	0.58	6.8	4.9	<0.58	0.414	2.02	4.8	4.3	5.4	5	5.2	5	6	6.2	4.6	4.7	4.8	4.8	4.3	7.3	4.9	1.93
Dichlorofluoromethane	-	-	-	-	-	0.355	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.66
Diethyl ether	-	-	-	-	-	0.462	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.16
Ethane	-	-	-	-	-	1.24	1.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.456
Ethanol	-	-	-	-	-	0.225	40.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.58
Ethene	-	-	-	-	-	0.203	30.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.543
Ethyl acetate	1.5	1.4	<1.6	<1.4	<1.4	-	-	<1.6	<1.7	<1.7	<1.7	<1.6	<1.7	<1.6	<1.5	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Ethyl ether	0.61	0.58	<0.65	<0.58	<0.58	-	-	<0.64	<0.67	<0.67	<0.67	<0.65	<0.66	<0.63	<0.59	<0.66	<0.63	<0.64	-	-	<0.65	<0.66	<0.66
Ethyl methacrylate	0.31	0.29	<0.33	<0.29	<0.29	-	-	<0.32	<0.33	<0.34	<0.33	<0.33	<0.33	<0.31	<0.3	<0.33	<0.32	<0.32	-	-	<0.33	<0.33	<0.33
Ethylbenzene	0.31	0.29	3.3	0.58	0.43	0.367	8	0.51	0.87	<0.34	0.4	<0.33	0.34	<0.3	0.56	0.47	<0.32	0.736	ND	0.65	0.66	0.46	0.342
Halocarbon 134A	-	-	-	-	-	0.352	ND	-	-	-	-	-	-	-	-	-	-	6.44	ND	-	-	-	1.64
Heptanal	-	-	-	-	-	1.34	5.69	-	-	-	-	-	-	-	-	-	-	1.7	ND	-	-	-	1.25
Heptane	-	-	-	-	-	0.239	2.7	-	-	-	-	-	-	-	-	-	-	0.407	ND	-	-	-	0.223
Hexachlorobutadiene	0.15	0.14	<0.16	<0.14	<0.14	0.908	ND	<0.16	<0.17	<0.17	<0.17	<0.16	<0.17	<0.16	<0.15	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	0.847
Hexachloroethane	0.31	0.29	<0.33	<0.29	<0.29	-	-	<0.32	<0.33	<0.34	<0.33	<0.33	<0.33	<0.31	<0.3	<0.33	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32
Hexanal	-	-	-	-	-	0.536	5.39	-	-	-	-	-	-	-	-	-	-	1.45	1.47	-	-	-	0.5
Hexane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.34	ND	-	-	-	1.25
Indan	-	-	-	-	-	0.42	0.798	-	-	-	-	-	-	-	-	-	-	1.33	ND	-	-	-	0.392
Indene	-	-	-	-	-	0.187	ND	-	-	-	-	-	-	-	-	-	-	0.823	ND	-	-	-	0.174
Isobutane	-	-	-	-	-	0.204	12.5	-	-	-	-	-	-	-	-	-	-	1.83	ND	-	-	-	0.95
Isobutylbenzene	3.1	0.29	<3.3	<0.29	<0.29	0.477	ND	<0.32	<0.33	<0.34	1.9	4.3	1.4	<0.31	<0.3	<0.33	<0.32	<0.32	<0.32	1.08	ND	<0.33	0.37
Isopentane	-	-	-	-	-	0.346	4.31	-	-	-	-	-	-	-	-	-	-	0.337	ND	-	-	-	0.323
Isohexane	-	-	-	-	-	0.232	8.71	-	-	-	-	-	-	-	-	-	-	2.33	ND	-	-	-	1.08
Isopentane	-	-	-	-	-	0.466	18.4	-	-	-	-	-	-	-	-	-	-	0.929	ND	-	-	-	2.17
Isoprene	-	-	-	-	-	0.199	1.37	-	-	-	-	-	-	-	-	-	-	1.95	ND	-	-	-	0.927
Methyl ethyl ketone	0.61	-	<0.65	-	-	0.491	0.814	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl isobutyl ketone	0.61	-	<0.65	-	-	0.676	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl methacrylate	0.61	0.58	<0.65	<0.58	<0.58	-	-	<0.64	<0.67	<0.67	<0.67	<0.65	<0.66	<0.63	<0.59	<0.66	<0.63	<0.64	-	-	<0.65	<0.66	<0.66
Methyl tert-butyl ether	0.61	0.58	<0.65	<0.58	<0.58	0.561	ND	<0.64	<0.67	<0.67	<0.67	<0.65	<0.66	<0.63	<0.59	<0.66	<0.63	<0.64	2.39	ND	<0.65	<0.66	<0.66
Methylcyclohexane	0.61	0.58	2.2	<0.58	<0.58	0.339	16.5	<0.64	<0.67	<0.67	<0.67	<0.65	4	<0.63	0.8	<0.66	<0.63	<0.64	0.583	ND	<0.65	<0.66	<0.66
Methylcyclopentane	-	-	-	-	-	0.215	4.85	-	-	-	-	-	-	-	-	-	-	2.04	ND	-	-	-	1
Methylene chloride	3.1	2.9	4.2	<2.9	<2.9	0.296	ND	<3.2	<3.3	<3.4	<3.3	<3.3	<3.3	<3.1	<3	<3.3	<3.2	<3.2	1.92	ND	<3.3	<3.3	<3.3
m-Xylene & p-Xylene	-	-	-	-	-	0.733	27.8	-	-	-	-	-	-	-	-	-	-	1.61	ND	-	-	-	0.684
Naphthalene	0.31	0.29	<0.33	0.4	0.52	0.703	1.14	1.8	0.43	<0.34	<0.33	<0.33	<0.33	<0.31	0.3	<0.33	0.32	<0.32	1.33	2.08	<0.33	0.46	<0.33
n-Butanol	-	-	-	-	-	0.444	0.838	-	-	-	-	-	-	-	-	-	-	0.915	1.8	-	-	-	0.802
n-Butylbenzene	3.1	-	<3.3	-	-	0.23	1.75	-	-	-	-	-	-	-	-	-	-	0.472	ND	-	-	-	0.215
nC10-nC12 Non-reg. Aromatics	15	-	<16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
nC10-nC12 Other Aromatics	3.1	-	<3.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
nC12-nC16 Non-reg. Aromatics	15	-	<16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
nC12-nC16 Other Aromatics	3.1	-	<3.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
nC8-nC10 Non-reg. Aromatics	15	-	<16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
n-Decane	0.92	0.86	<0.98	2.6	<1.7	0.491	4.07	<0.96	<1	<1	<1	<2	<0.99	<1.9	<1.8	<2	<1.9	<1.9	1.2	3.46	2	<2	<2
Neopentane	-	-	-	-	-	0.261	ND	-	-	-	-	-	-	-	-	-	-	2.2	ND	-	-	-	1.22
n-Hexane	3.1	2.9	<3.3	<2.9	<2.9	0.269	9.63	<3.2	<3.3	<3.4	<3.3	<3.3	5.9	<3.1	<3	<3.3	<3.2	<3.2	-	-	<3.3	<3.3	<3.3
n-Hydroxybenzene	3.1	-	<3.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrobenzene	0.31	0.29	<0.33	<0.29	<0.29	-	-	<0.32	<0.33	<0.34	<0.33	<0.33	<0.33	<0.31	<0.3	<0.33	<0.32	<0.32	-	-	<0.33	<0.33	<0.33
n-Nonane	-	-	-	-	-	0.443	1.84	-	-	-	-	-	-	-	-	-	-	0.905	ND	-	-	-	0.413
n-Octane	-	-	-	-	-	0.398	2.37	-	-	-	-	-	-	-	-	-	-	0.58	ND	-	-	-	0.372
n-Pentane	-	-	-	-	-	0.249	28.5	-	-	-	-	-	-	-	-	-	-	1.2	ND	-	-	-	1.16
n-Propylbenzene	3.1	-	<3.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
n-Propylbenzene	3.1	-	3.6	-	-	0.																	

Table G-2: Historical Soil Vapour Results Summary - Contaminants of Concern
Canada Creosote Site - North Bow
Human Health Risk Assessment Update

Sample Location ID	MW10-1				MW10-2	MW10-3B				MW10-5			MW10-7B				MW10-9B			
	Well		Deep probe		Well	Shallow probe		Deep probe		Well			Deep probe		Shallow probe	Deep probe			Well	Shallow probe
SAMPLE METHOD	Well		Deep probe		Well	Shallow probe		Deep probe		Well			Deep probe		Shallow probe	Deep probe			Well	Shallow probe
SAMPLE DEPTH (mbgs)	2.7-3.3	2.7-3.3	2.4-2.55	2.4-2.55	2.5-3.1	0.81-1.37	0.81-1.37	1.68-2.13	1.68-2.13	2.74-3.00	2.74-3.61	2.13-3.9	1.07-1.52	1.07-1.52	1.22-1.68	1.96-2.74	1.96-2.74	1.96-2.74	3.3-3.4	1.37-1.83
DATE SAMPLED	09-Mar-11	09-Mar-11	09-Mar-11	10-Nov-12	09-Mar-11	09-Mar-11	10-Nov-12	09-Mar-11	10-Nov-12	09-Mar-11	10-Nov-12	11-Mar-11	11-Mar-11	10-Nov-12	10-Mar-11	10-Mar-11	24-Apr-13	24-Apr-13	11-Mar-11	11-Mar-11
LABORATORY	CARO	Test America	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO	Test America	CARO	CARO
Acetaldehyde	-	19.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	-	-
Benzene	3.7	14.6	5.8	0.95	0.68	2.9	0.89	3.7	0.99	2.3	1.3	0.59	0.53	2.3	0.44	0.91	<0.67	ND	0.31	0.99
Bromodichloromethane	-	ND	<0.16	<0.16	<0.15	<0.16	<0.17	<0.17	0.2	<0.16	0.6	<0.17	<0.16	<0.16	<0.17	<0.16	<0.33	ND	<0.17	<0.16
1,3-Butadiene	-	30.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.3	ND	-	-
Carbon Tetrachloride	<0.1	ND	<0.096	0.16	<0.092	<0.097	<0.099	<0.1	<0.099	<0.098	<0.095	<0.099	0.13	<0.097	0.14	0.23	0.4	ND	0.2	0.13
Chloroform	8.4	25.6	4.5	0.39	2	2.9	0.73	4	36	16	79	1.1	0.43	<0.16	<0.17	0.16	3.3	3.87	0.27	0.72
Hexachlorobutadiene	0.44	ND	<0.16	<0.16	0.34	<0.16	<0.17	<0.17	<0.17	<0.16	<0.16	<0.17	<0.16	<0.16	<0.17	<0.16	<0.33	ND	<0.17	<0.16
Ethylbenzene	0.47	5.82	2.8	<0.33	<0.31	5.5	<0.33	4	<0.33	7.8	0.47	5.3	9.5	<0.32	25	22	0.43	ND	44	3.2
Naphthalene	<0.34	-	<0.32	<0.33	<0.31	<0.32	0.5	<0.34	<0.33	<0.33	20	2	<0.33	<0.32	12	45	<0.33	ND	0.64	<0.33
Nonane	-	1.93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	-	-
1,1,1,2-Tetrachloroethane	<0.17	-	<0.16	4.6	<0.15	<0.16	0.33	<0.17	0.53	<0.16	0.47	<0.17	<0.16	0.23	<0.17	<0.16	<0.23	ND	<0.17	<0.16
Toluene	20	182	90	<3.3	3.7	21	<3.3	81	<3.3	69	4.7	360	280	<3.2	78	140	14	23	610	66
Trichloroethylene	0.27	0.898	<0.096	<0.099	<0.092	<0.097	<0.099	<0.1	<0.099	<0.098	0.095	<0.099	<0.099	<0.097	0.14	<0.097	<0.17	3.2	<0.1	<0.099
1,2,3-Trimethylbenzene	<3.4	1.29	<3.2	-	<3.1	4.9	-	<3.4	-	<3.3	-	<3.3	<3.3	-	<3.4	<3.2	-	ND	<3.4	<3.3
1,2,4-Trimethylbenzene	<0.67	4.11	1.2	<0.66	0.77	11	<0.66	7.4	<0.66	5.2	1.9	6.9	6.9	<0.65	1.8	3.6	-	ND	2.6	<0.66
Xylenes (total)	6	30.3	16	<1.6	5.2	39	<1.7	31	<1.7	46	2.8	33	49	<1.6	130	110	2.6	ND	250	18
nC6-nC10 (F1)	1200	-	1400	<330	710	1500	<330	1600	<330	2200	350	2500	1900	<320	1000	1600	870	-	3700	760
nC10-nC16 (total) (F2)	840	-	1400	<330	580	4200	<330	5100	<330	3000	350	3600	3900	<320	540	1300	1100	-	740	590
Aliphatic >C ₈ -C ₈	470	-	610	<160	210	360	<170	510	<170	650	190	1300	1100	<160	370	580	200	-	1700	360
Aliphatic >C ₈ -C ₁₀	700	-	670	<160	490	1000	<170	910	<170	1300	<160	730	390	<160	410	710	630	-	1000	310
Aliphatic >C ₁₀ -C ₁₂	570	-	710	<160	370	2500	<170	3000	<170	2200	<160	1200	1100	<160	220	580	670	-	470	280
Aliphatic >C ₁₂ -C ₁₆	260	-	740	<330	230	1700	<330	2200	<330	880	<320	2400	2800	<320	310	650	500	-	280	290
Aromatic >C ₈ -C ₁₀	<17	-	22	<3.3	<15	91	<3.3	67	<3.3	78	5.4	66	85	<3.2	150	140	3.3	-	290	22
Aromatic >C ₁₀ -C ₁₂	<17	-	<16	<3.3	<15	<16	<3.3	<17	<3.3	<16	20	<17	<16	<3.2	<17	45	<3.3	-	<17	<16
Aromatic >C ₁₂ -C ₁₆	<17	-	<16	<3.3	<15	<16	<3.3	<17	<3.3	<16	<3.2	<17	<16	<3.2	<17	<16	<3.3	-	<17	<16

Sample Location ID	MW10-10	MW10-11				MW10-12	MW10-14	MW10-15				MW10-16				MW10-18					
	Well	Deep probe		Well		Well	Well	Well		Deep probe		Well				Well	Deep probe				
SAMPLE METHOD	Well	Deep probe		Well		Well	Well	Well		Deep probe		Well				Well	Deep probe				
SAMPLE DEPTH (mbgs)	2.74-3.3	1.22-1.52		2.13-3.1	2.13-3.27	2.13-2.97	2.13-2.97	3.05-4.57	2.13-4.27	2.13-2.85	2.13-2.85	2.13-3.52	2.13-3.37	2.13-3.37	1.22-1.52	2.13-3.3	2.13-3.51	2.13-2.99	2.13-2.99	2.13-3.2	1.07-1.52
DATE SAMPLED	08-Mar-11	08-Mar-11	08-Mar-11	10-Nov-12	24-Apr-13	24-Apr-13	11-Mar-11	09-Mar-11	09-Mar-11	09-Mar-11	10-Nov-12	25-Apr-13	25-Apr-13	10-Mar-11	10-Mar-11	10-Nov-12	24-Apr-13	24-Apr-13	10-Mar-11	10-Mar-11	
LABORATORY	CARO	CARO	CARO	CARO	CARO	Test America	CARO	CARO	CARO	Test America	CARO	CARO	Test America	CARO	CARO	CARO	CARO	Test America	CARO	CARO	
Acetaldehyde	-	-	-	-	-	ND	-	-	-	14.2	-	-	2.9	-	-	-	-	2.11	-	-	
Benzene	0.23	<0.24	0.78	0.65	<0.67	ND	<0.17	2.5	2.6	10.9	1.2	<0.65	ND	1	1.1	0.8	<0.89	ND	0.23	0.54	
Bromodichloromethane	<0.23	<0.24	<0.23	<0.15	<0.34	ND	<0.17	<0.17	<0.16	ND	<0.17	<0.33	ND	<0.16	<0.17	<0.15	<0.44	ND	<0.16	<0.17	
1,3-Butadiene	-	-	-	-	<1.4	ND	-	-	-	0.15	-	<1.3	5.79	<3.2	<3.4	-	-	-	-	-	
Carbon Tetrachloride	<0.14	<0.15	0.23	0.12	<0.34	ND	<0.1	0.1	<0.098	ND	0.17	<0.33	ND	<0.097	<0.1	<0.089	<0.44	ND	0.52	0.1	
Chloroform	0.33	0.29	5.5	<0.15	8.4	8.72	0.23	4.6	6.5	24.3	0.64	11	20.7	3.1	2.4	0.15	1.2	1.4	0.2	<0.17	
Hexachlorobutadiene	<0.23	<0.24	<0.23	<0.15	<0.34	ND	<0.17	<0.17	<0.16	ND	<0.17	<0.33	ND	<0.16	<0.17	<0.15	<0.44	ND	<0.16	<0.17	
Ethylbenzene	4.7	1.5	1.9	0.31	1	ND	<0.33	7.3	3.9	9.41	<0.34	1.4	1.08	1.9	31	0.47	1.2	ND	0.78	22	
Naphthalene	<0.47	<0.48	<0.46	46	<0.34	ND	<0.33	<0.33	1.3	0.923	33	2.7	2.14	0.77	0.64	0.47	0.58	ND	<0.33	<0.34	
Nonane	-	-	-	-	-	0.839	-	-	-	13.9	-	-	1.15	-	-	-	-	ND	-	-	
1,1,1,2-Tetrachloroethane	<0.23	<0.24	<0.23	<0.15	<0.24	ND	<0.17	<0.17	<0.16	ND	<0.17	<0.23	ND	<0.16	<0.17	<0.15	<0.31	ND	<0.16	<0.17	
Toluene	16	32	43	65	<3.4	1.81	3.7	96	46	99.3	<3.4	4.9	5.98	13	47	15	<4.4	2.28	<3.3	5	
Trichloroethylene	0.42	<0.15	1.5	<0.093	<0.17	11.8	<0.1	<0.1	0.26	0.758	<0.1	<0.16	ND	<0.097	0.27	0.18	0.22	17.1	<0.098	<0.1	
1,2,3-Trimethylbenzene	<4.7	<4.8	<4.6	-	-	ND	<3.3	<3.3	<3.3	3.2	-	-	1.87	<3.2	<3.4	-	-	ND	<3.3	<3.4	
1,2,4-Trimethylbenzene	<0.93	2.6	<0.92	4.3	-	ND	<0.66	6	2.3	9.74	2.6	-	6.55	<0.64	1.5	1.8	-	ND	<0.65	<0.67	
Xylenes (total)	30	16	14	1.7	5.4	ND	4	50	27	53	<1.7	10	7.84	17	180	2.8	6.2	ND	7.5	100	
nC6-nC10 (F1)	740	1100	1100	370	540	-	400	1700	1800	-	<340	980	-	1000	2500	<300	1200	-	520	1100	
nC10-nC16 (total) (F2)	<470	580	1300	<310	610	-	<330	2000	2200	-	<340	2000	-	1100	1100	<300	1500	-	360	370	
Aliphatic >C ₈ -C ₈	350	360	500	150	<170	-	200	500	490	-	<170	<160	-	280	410	<150	<220	-	230	230	
Aliphatic >C ₈ -C ₁₀	350	680	550	<150	440	-	200	1000	1200	-	<170	850	-	740	1900	<150	1000	-	280	770	
Aliphatic >C ₁₀ -C ₁₂	<230	270	340	200	400	-	<170	1300	1600	-	170	1200	-	580	680	240	1100	-	190	200	
Aliphatic >C ₁₂ -C ₁₆	250	300	920	<310	<340	-	190	660	560	-	<340	750	-	550	410	<300	<440	-	170	180	
Aromatic >C ₈ -C ₁₀	34	<24	<23	13	7.4	-	<17	90	33	-	4.4	23	-	19	210	5	9.8	-	<16	130	
Aromatic >C ₁₀ -C ₁₂	<23	<24	<23	46	<3.4	-	<17	<17	<16	-	33	<3.3	-	<16	<17	<3	<4.4	-	<16	<17	
Aromatic >C ₁₂ -C ₁₆	<23	<24	<23	<3.1	<3.4	-	<17	<17	<16	-	<3.4	<3.3	-	<16	<17	<3	<4.4	-	<16	<17	

Notes:
A denotes deeper well, B denotes shallow well.
All units in µg/m³, unless otherwise noted.
mbgs - metres below ground surface.
ND - non-detect.
DUP - duplicate sample

CARO Indicates sample results may be negatively biased

Table G-2: Historical Soil Vapour Results Summary - Contaminants of Concern
Canada Creosote Site - North Bow
Human Health Risk Assessment Update

Sample Location ID	MW10-20			MW10-22			VP11-02		VP11-03B		VP11-04B			VP11-08			VP11-09			
	Well	Well			Shallow probe	Deep probe	Shallow probe	Deep probe	Shallow probe	Deep probe		Shallow probe	Deep probe		Shallow probe			Deep probe		
SAMPLE METHOD	2.13-3.0	2.13-3.3	2.13-3.3	2.13-3.35	1.07-1.68	2.13-2.74	0.91-1.68	2.13-2.74	1.07-1.68	1.98-2.44	1.98-2.44	1.22-1.83	2.13-2.59	2.13-2.59	1.22-1.83	1.22-1.83	1.22-1.83	2.13-2.74		
DATE SAMPLED	11-Mar-11	09-Mar-11	09-Mar-11	10-Nov-12	10-Nov-12	10-Nov-12	10-Nov-12	10-Nov-12	9-Nov-12	9-Nov-12	9-Nov-12	9-Nov-12	9-Nov-12	12-Nov-12	9-Nov-12	9-Nov-12	12-Nov-12	9-Nov-12		
LABORATORY	CARO	CARO	Test America	CARO	CARO	CARO	CARO	CARO	CARO	CARO	CARO (DUP)	CARO	CARO	Test America	CARO	CARO (DUP)	Test America	CARO		
Acetaldehyde	-	-	11.3	-	-	-	-	-	-	-	-	-	-	ND	-	-	ND	-		
Benzene	0.2	1.7	2.49	0.78	1.8	1.7	3.9	7.6	1.6	1.2	1.1	1.2	0.93	0.404	1.1	1.4	1.82	1.4		
Bromodichloromethane	<0.17	<0.16	ND	<0.14	<0.17	<0.17	<0.16	<0.17	<0.16	<0.15	<0.16	<0.16	<0.16	ND	<0.16	<0.17	ND	<0.16		
1,3-Butadiene	-	-	1.56	-	-	-	-	-	-	-	-	-	-	ND	-	-	ND	-		
Carbon Tetrachloride	<0.1	<0.098	ND	<0.086	0.1	0.13	<0.098	9.9	17	8	<0.099	<0.095	3.2	2.24	<0.098	16	ND	0.79		
Chloroform	0.8	3	2.02	<0.14	<0.17	<0.17	<0.16	7.3	<0.16	0.15	<0.16	<0.16	0.19	ND	<0.16	0.23	ND	0.16		
Hexachlorobutadiene	0.5	<0.16	ND	<0.14	<0.17	<0.17	<0.16	<0.17	<0.16	<0.15	<0.16	<0.16	<0.16	ND	<0.16	<0.17	ND	<0.16		
Ethylbenzene	7	3.3	8	0.58	<0.34	0.4	<0.33	2.3	0.34	<0.3	0.56	0.47	<0.32	ND	0.65	0.66	0.56	0.46		
Naphthalene	2.7	<0.33	1.14	0.4	<0.34	<0.33	<0.33	<0.33	<0.31	0.3	<0.33	0.32	<0.32	2.08	<0.33	0.46	1.64	<0.33		
Nonane	-	-	1.84	-	-	-	-	-	-	-	-	-	-	ND	-	-	ND	-		
1,1,1,2-Tetrachloroethane	<0.17	<0.16	-	1.2	0.47	1.2	1.5	1.5	<0.31	<0.3	<0.33	<0.32	0.64	ND	<0.33	<0.33	ND	0.56		
Toluene	54	110	70.8	8.6	8.7	47	120	140	18	3.2	20	92	48	455	19	4	702	130		
Trichloroethylene	<0.1	0.33	ND	<0.086	<0.1	<0.1	<0.098	<0.099	<0.094	0.15	<0.099	<0.095	<0.096	ND	<0.098	<0.1	ND	<0.099		
1,2,3-Trimethylbenzene	<3.4	<3.3	1.38	-	-	-	-	-	-	-	-	-	-	ND	-	-	ND	-		
1,2,4-Trimethylbenzene	1.5	2.7	5.71	2.1	<0.67	<0.67	<0.65	2.7	0.85	1	1.5	0.95	0.8	ND	1.5	1.6	1.48	0.69		
Xylenes (total)	44	22	38.6	3.5	<1.7	<1.7	<1.6	25	1.7	1.6	3	2.4	<1.6	ND	3.3	2.2	1.9	2.4		
nC6-nC10 (F1)	1000	1600	-	290	<340	370	490	1400	<310	<290	<330	470	350	-	<330	360	-	490		
nC10-nC16 (total) (F2)	540	1200	-	<290	<340	<330	<330	<330	<310	<290	<330	<320	<320	-	<330	<330	-	<330		
Aliphatic >C ₆ -C ₈	320	550	-	<140	<170	<170	190	460	<160	<150	<160	200	<160	-	<160	<170	-	210		
Aliphatic >C ₈ -C ₁₀	600	850	-	150	<170	<170	170	760	<160	<150	<160	160	<160	-	<160	190	-	<160		
Aliphatic >C ₁₀ -C ₁₂	260	780	-	260	<170	<170	<160	<170	<160	<150	<160	<160	<160	-	<160	<170	-	<160		
Aliphatic >C ₁₂ -C ₁₆	270	360	-	<290	<340	<330	<330	<330	<310	<290	<330	<320	<320	-	<330	<330	-	<330		
Aromatic >C ₈ -C ₁₀	50	29	-	6	<3.4	3.3	4.9	40	<3.1	<3	4.9	3.2	<3.2	-	5.6	4	-	<3.3		
Aromatic >C ₁₀ -C ₁₂	<17	<16	-	<2.9	<3.4	<3.3	<3.3	<3.3	<3.1	<3	<3.3	<3.2	<3.2	-	<3.3	<3.3	-	<3.3		
Aromatic >C ₁₂ -C ₁₆	<17	<16	-	<2.9	<3.4	<3.3	<3.3	<3.3	<3.1	<3	<3.3	<3.2	<3.2	-	<3.3	<3.3	-	<3.3		

Notes:

A denotes deeper well, B denotes shallow well.

All units in µg/m³, unless otherwise noted.

mbgs - metres below ground surface.

ND - non-detect.

DUP - duplicate sample

CARO Indicates sample results may be negatively biased

At Golder Associates we strive to be the most respected global group of companies specializing in ground engineering and environmental services. Employee owned since our formation in 1960, we have created a unique culture with pride in ownership, resulting in long-term organizational stability. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees now operating from offices located throughout Africa, Asia, Australasia, Europe, North America and South America.

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