Village of Barons

ISSUED FOR USE

PHASE II AND PHASE III ENVIRONMENTAL SITE ASSESSMENT
124 MAIN STREET
LOT 17, BLOCK 2, PLAN 2605X
AMA SITE 9558
BARONS, ALBERTA

L22101183.001

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Available for Public Distribution

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EXECUTIVE SUMMARY

Foreword

Ms. Laurie Beck, Administrator for the Village of Barons, retained EBA Engineering Consultants Ltd. (EBA) to conduct Phase II and Phase III environmental site assessments (ESAs) of a property located at 124 Main Street (legally described as Lot 17, Block 2, Plan 2605X), in Barons, Alberta, hereinafter referred to as the site

The Phase II and Phase III ESAs were initiated following a geotechnical evaluation for a roadway improvement and water line upgrade project along Main Street from Railway Avenue to Prairie Avenue, which identified petroleum hydrocarbons (PHCs) within soils and groundwater to the east of the site and was conducted by EBA in December 2007 (EBA File: L22101182). The detection of PHCs during the geotechnical evaluation triggered a historical site assessment. EBA was not able to locate any records regarding the historical operations; however, anecdotal information provided by long-term residents of the Village of Barons confirmed the presence of a gas service station on site prior to 1970.

The objectives of the Phase II and Phase III ESAs were to assess soil and groundwater conditions on and off site, to delineate the PHC impacts in soil and groundwater, and to determine applicable remedial guidelines for the site. The Phase II and Phase III ESAs were conducted in accordance with the Alberta Municipal Affairs (AMA) Tank Site Remediation program objectives and Alberta Environment's (AENV's) Alberta Tier 1 and Tier 2 Soil and Groundwater Remediation Guidelines, June 2007. The Phase II ESA was prepared in general accordance Canadian Standards Association (CSA) document "Z769-00 Phase II Environmental Site Assessment", updated in March 2000.

Findings and Conclusions

An underground storage tank (UST), previously utilized on site during the operation of the former service station, has not be removed as was first suspected. Based upon site conditions identified during the course of these assessments, AENV Tier 1/2 Soil and Groundwater Remediation Guidelines, fine-grained criteria for residential land use have be applied for the evaluation of soil and groundwater quality. Soil guidelines were refined to include protection of Domestic Use Aquifer (DUA) and Ecological Direct Soil Contact.

Based on analytical results to date, the following conclusions have been made:

- Various PHC parameters were detected at concentrations greater than the Tier 1 Guidelines within soil samples collected at depths between 1.8 m below ground level (mbgl) and 3.6 mbgl at 08MW06 (east of the tank nest) and 09BH10 (north of the tank nest).
- Various PHC parameters were detected within groundwater samples collected from 08MW06 and 09MW11 at a concentration greater than the Tier 1 Guidelines.

Based on the findings of the chemical analysis, EBA has determined that the former site operations have resulted in impacts to the soil and/or groundwater in the areas of 08MW06, 09MW10, and 09MW11.

EBA recommends that the UST be removed from the site and that remedial activities be explored to return soil and groundwater conditions to concentrations less than the applied guidelines.

Soil bags and purged groundwater should also be collected and removed from the site.

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1.0 INTRODUCTION

1.1 GENERAL

Ms. Laurie Beck, Administrator for the Village of Barons, retained EBA Engineering Consultants Ltd. (EBA) to conduct a Phase II and Phase III environmental site assessment (ESA) of a property located at 124 Main Street (legally described as Lot 17, Block 2, Plan 2605X), in Barons, Alberta, hereinafter referred to as the site (Figure 1).

The Phase II and Phase III ESAs were initiated following a geotechnical evaluation for a roadway improvement and water line upgrade project along Main Street from Railway Avenue to Prairie Avenue and was conducted by EBA in December 2007 (EBA File: L22101182). The geotechnical evaluation discovered petroleum hydrocarbons (PHCs) within soils and groundwater to the east of the site, which triggered a historical assessment of the site. EBA was not able to locate any records regarding the historical site operations; however, anecdotal information provided by long-term residents of the Village of Barons confirmed the presence of a gas service station on site prior to 1970.

The objectives of the Phase II and Phase III ESAs were to assess soil and groundwater conditions on and off site, to delineate PHC impacts in the soil and groundwater, and to determine applicable remedial guidelines for the site. The Phase II and Phase III ESAs were conducted in accordance with the Alberta Municipal Affairs (AMA) Tank Site Remediation program objectives and Alberta Environment's (AENV's) Alberta Tier 1 and Tier 2 Soil and Groundwater Remediation Guidelines, June 2007. The Phase II ESA was prepared in general accordance Canadian Standards Association (CSA) document "Z769-00 Phase II Environmental Site Assessment", updated in March 2000.

1.2 AUTHORIZATION

Ms. Beck provided written authorization to proceed with the assessment to Mr. Deryck Masterman of EBA on August 25, 2008.

1.3 SCOPE OF WORK

In accordance with our Phase II ESA proposal dated August 13, 2008, EBA conducted the following tasks:

- coordinated Alberta One-Call, Shaw Cable, and a private utility locater (Alberta Line Find) to identify utilities on site within the proposed work areas prior to commencing the drilling program;
- advanced eight boreholes and completed five boreholes as groundwater monitoring wells;
- obtained disturbed soil samples at regular intervals (0.75 m) and/or at changes in soil stratigraphy;

- screened bulk soil samples for organic vapour emissions (OVEs);
- submitted selected soil samples to Maxxam Analytics Inc. (Maxxam) of Calgary, Alberta for the analysis of benzene, toluene, ethylbenzene, and xylenes (BTEX), PHC fractions F1 to F4, lead, and particle size analysis (PSA) parameters;
- monitored OVEs and groundwater levels/free-product thickness within each of the five monitoring wells on site;
- collected and submitted five groundwater samples to Maxxam for chemical analysis of BTEX, PHC fractions F1 to F2, and dissolved lead; and
- compared laboratory results with the selected risk management criteria and identified area(s) where soil and/or groundwater exceed their respective criteria.

After the Phase II ESA evaluation of soil and groundwater quality on site, EBA recommended that a Phase III ESA be undertaken to assess off-site conditions to the north of the site along Main Street. The objective of the Phase III ESA was to delineate the vertical and horizontal extent of the impacts. A proposal to conduct additional assessment for the site was provided to Ms. Beck on January 29, 2009 and included the following additional tasks:

- coordinated Alberta One-Call, Shaw Cable, and a private utility locater (Alberta Line Find) to conduct utility locates off site along Main Street and Alberta Avenue prior to commencing the drilling program;
- advanced an additional six boreholes and completed three boreholes as groundwater monitoring wells;
- screened bulk soil samples for OVEs;
- submitted 12 additional soil samples to Maxxam for the analysis of BTEX, PHC fractions F1 to F4, lead, and PSA parameters;
- monitored OVEs and groundwater levels/free-product thickness within each of the eight monitoring wells on site;
- collected and submitted three additional groundwater samples to Maxxam for chemical analysis of BTEX, PHC fractions F1 to F2, and dissolved lead;
- compared laboratory results with the selected risk management criteria and identified area(s) where soil and/or groundwater exceed their respective criteria; and
- prepared a Phase III ESA report discussing field observations and analytical results, with recommendations for further investigations or monitoring.

1.4 QUALIFICATIONS OF ASSESSORS

Mr. Jamie LaMontagne oversaw all fieldwork on site. Mr. LaMontagne is an environmental technologist with EBA's Lethbridge environment practice and has more than eight years of experience in the environmental industry.

Mr. Deryck Masterman, B.Sc., A.Ag., was the project manager, assisted with the interpretation of the results, and wrote the report. Mr. Masterman is an environmental scientist for EBA's Lethbridge environment practice and has more than five years of experience in the environmental industry.

Ms. Mandi Parker, P.Ag., conducted the preliminary review of the report and assisted in the interpretation of the results. Ms. Parker is an environmental scientist for EBA's Lethbridge environment practice and has more than 10 years of experience in the environmental industry.

Mr. Tom Dance, M.Sc., P.Geol., conducted the final review of the report. Mr. Dance is a principal consultant in EBA's environment practice in Calgary and has more than 28 years experience in the environmental industry.

2.0 BACKGROUND INFORMATION

2.1 SITE DESCRIPTION

The site is a rectangular shaped property, approximately 26,000 m^2 in area, located on the Southeast Quarter of Section 16, Township 012, Range 23 West of the Fourth Meridian at 124 Main Street, Barons, Alberta. The northern portion of the site is used as a public park and is comprised of trees, park benches, and a gazebo, whereas the southern portion is vacant. The tank nest area is located on the northern portion of the site.

Historically, the site operated as a gas service station. The former tank nest area is suspected to have been located on the northern portion of the site.

A site plan is provided on Figure 2.

2.2 LAND USE

According to the Village of Barons, the site is zoned Commercial (C1). Surrounding land use within 30 m or less of the site is comprised of Residential (R1) and C1.

2.3 GEOLOGY

The surficial geology in the Barons area is characterized as glaciolacustrine material with clay, silt, and sand forming the dominant geologic deposits (Shetson 1981). Bedrock in the Barons area consists of sandstone and shale strata from the St. Mary River Formation of the late Cretaceous age.

2.4 SURFACE WATER

There are several ephemeral wetlands located near the Village of Barons municipal boundaries; however, all identified wetlands are greater than 300 m from the site. Two water reservoirs are also located approximately 350 m southwest of the site; however, are no longer being used, and according to Mrs. Beck, will be reclaimed in the near future. The nearest surface waterbody of significance is Keho Lake, located approximately 5.25 km southeast of the site.

2.5 GROUNDWATER

Based on hydrogeological maps for the area, it is anticipated that shallow and regional groundwater flow would generally be southeast towards Keho Lake (Tokarsky 1974).

According to provincial water well records (AENV 2008), there are three registered water wells located within approximately 300 m of the site; therefore, they are at potential risk due to site conditions. The information gathered for registered water wells within 300 m of the site has been tabulated below.

WATER WELLS WITHIN 300 M OF THE SITE

Well ID No.	Location	Approximate Distance and Direction from Site	Approximate Depth	Year Installed	Owner
0194222	SE ¼ 16-012-23 W4M	150 m northeast.	29 m	1958	Unknown.
0194216	SE ¼ 16-012-23 W4M	300 m south.	29 m	1971	AENV No. 0613E
2058577	SE ¼ 16-012-23 W4M	300 m south.	20 m	1971	AENV No. 0611E

According to Ms. Beck, the Village of Barons began importing its potable water from the Village of Nobleford in April 2008. Potable water is piped to the Village of Barons via Nobleford's water treatment plant.

Water well locations are illustrated on Figure 3 and a summary of reported water wells near the site is provided in Appendix A.

3.0 METHODOLOGY

3.1 UTILITY LOCATION INFORMATION

Prior to drilling, Alberta One-Call and Shaw Cable were notified to locate public utilities on the property. In addition, a private utility locater (Alberta Line Find) was contracted by EBA to locate private underground utilities and verify underground utilities marked by representatives contacted by the Alberta One-Call system.

3.2 BOREHOLE DRILLING AND SOIL SAMPLING

EBA contracted Chilako Drilling Services Ltd. of Coaldale, Alberta to conduct the drilling program using a truck-mounted drill rig equipped with 150 mm diameter solid-stem augers. A total of eight boreholes were advanced on site on November 17, 2008. Six additional boreholes were advanced on March 12, 2009. The maximum depth assessed was 13.7 m below ground level (mbgl). Eight of the twenty-one boreholes were equipped with groundwater monitoring wells (08MW01, 08MW03, 08MW06, 08MW07, 08MW08, 09MW09, 09MW11, and 09MW13). Soil stratigraphy was logged in the field using the Unified Soil Classification System (USCS) and observations of staining and/or odours were recorded.

Groundwater monitoring wells were completed using 50 mm diameter polyvinyl chloride (PVC) standpipes. Silica sand was placed from the base of the borehole to approximately 0.3 m above the slotted standpipe interval within the borehole annulus. To reduce the possibility of inflow of surface water into the standpipe, the annulus of the monitoring wells above the slotted section was sealed with bentonite chips to approximately 0.2 mbgl and secured with flush mounted road box founded in concrete.

An abandoned underground storage tank (UST), previously believed to have been removed from the site in the 1970s, was encountered during the November 28, 2008 drilling program. The UST is located along the northeastern portion of the site. The top of the UST was located approximately 0.5 mbgl and was penetrated by the solid stem auger during drilling. The incident did not result in any injuries or further damages and was immediately reported to Ms. Beck (Village of Barons), Mr. Stephen Hoare (AMA), Mr. Henri Carriere (Project Director for the Lethbridge Environment Practice), and to Mr. Greg Goth (EBA's safety coordinator). The UST did not appear to contain any product at the time of the incident. A hazard assessment and internal safety review of the incident were conducted by EBA and the incident was documented. A copy of the hazard assessment report has been provided in Appendix D.

Borehole logs, including field screening results and a key to the USCS are presented in Appendix B. A site plan illustrating borehole and monitoring well locations is provided on Figure 2.

Soil samples were taken at regular depth intervals (0.75 m) and where changes in soil types were observed. Bagged soil samples were screened for OVEs using a GasTech TankTechtor 1238 ME™ (GasTech™) set in methane elimination mode.

Field vapour readings are not intended to provide a quantitative measurement of the level of hydrocarbon contamination in soil samples. The readings assist in the selection of samples for chemical analysis.

Based on OVE results, observations made during drilling, and the observed groundwater interface, samples were selected for laboratory analysis. Soil samples were placed in laboratory supplied 250 mL glass jars with Teflon™-lined lids, kept cool in coolers, and

transported to Maxxam under chain-of-custody (COC) for laboratory chemical analyses of BTEX, PHC fractions F1 to F4, lead, and PSA. Soil analytical results are summarized in Table 1 and are discussed in Section 5.1.

The analytical methodologies are referenced with Maxxam's laboratory reports in Appendix C. The reader is directed to these references for further details on specific analytical methods.

3.3 GROUNDWATER MONITORING, SAMPLING, AND ANALYTICAL TESTING

On November 28, 2008 and March 26, 2009, the groundwater monitoring wells were monitored for OVEs using a GasTech™ operated in methane elimination mode. Liquid levels in the monitoring wells were also measured at that time using a Heron™ interface probe.

Subsequently, the groundwater monitoring wells were purged of approximately three well volumes of standing water and allowed to recover to approximately 80% of the static level prior to sample collection. Groundwater samples were then collected using dedicated disposable bailers and were stored in laboratory supplied bottles. Samples were preserved according to laboratory instructions and transported in coolers to Maxxam under COC for analysis of BTEX, PHC fractions F1 to F2, and dissolved lead. Groundwater monitoring and sampling was conducted in accordance with EBA work methods (WM4203) to ensure sample quality was maintained.

The analytical program was developed following a review of historical land use which identified the potential presence of PHCs and lead as contaminates of potential concern. Analytical methodologies are referenced with Maxxam's laboratory reports in Appendix C. Monitoring well completions details and field monitoring results are summarized in Table 2. Groundwater analytical results are summarized in Table 3 and are discussed in Section 5.2.

3.4 HYDRAULIC CONDUCTIVITY ASSESSMENT

On November 28, 2008, EBA conducted hydraulic conductivity tests (K-test) on three monitoring wells (08MW1, 08MW07, and 08MW08). The K-tests were performed using the Hvorslev rising head bail test and Bouwer and Rice slug test analysis to estimate the hydraulic conductivity of the geologic material across which the well is screened.

The test results are provided in Appendix A.

3.5 MATERIALS MANAGEMENT

Drill cuttings were placed within a soil bag identified as containing potentially hazardous materials and were stored on site. Water purged from the monitoring wells was stored within 205 L drums on site. Drill cuttings and purged groundwater are still on site.

4.0 FIELD ASSESSMENT RESULTS

Section 4.1 to Section 4.3 discuss the soil materials encountered, groundwater conditions, and soil and guideline criteria selected.

4.1 SOIL MATERIALS

During the drilling investigations, the soil materials generally consisted of:

- topsoil from surface to approximately 0.1 mbgl;
- clay (lacustrine) with intermittent silt/sand lenses from 0.1 mbgl to a maximum depth of 4.7 mbgl; and
- claystone (bedrock) weathered with low to moderate strength from the base of the clay to the maximum depth of investigation (13.7 mbgl).

Results of the PSA determined that the soils were fine-grained material.

The stratigraphy observed during the drilling program was generally consistent with published reports for the regional geology in the Barons area as described in Section 2.3.

4.2 SOIL AND GROUNDWATER CONDITIONS

On March 26, 2009, EBA measured OVE concentrations and groundwater levels within each monitoring locations. OVE concentrations ranged between 50 parts per million (ppm) (08MW01 and 08MW03) and 450 ppm (08MW06). Groundwater was encountered at depths ranging from 2.15 mbgl at 08BH07 to 2.62 mbgl at 09BH11. Groundwater monitoring results indicate that the groundwater table is relatively flat with a slight hydraulic gradient to the south.

Hydraulic conductivity tests conducted for 08MW01 (9×10^{-6} m/s), 08MW07 (5×10^{-7} m/s), and 08MW08 (4×10^{-5} m/s) provide an average calculated hydraulic conductivity of 2×10^{-5} m/s.

Hydraulic conductivity results are provided in Appendix A.

4.3 GUIDELINE CRITERIA SELECTION

To assist in assessing the quality of soil and groundwater analyzed during the environmental assessment at the site, AENV's Tier 1 and Tier 2 Remediation Guidelines were applied. To apply these guidelines, the background information summarized in Section 2.0 were used to assess the land use and sensitivity of the site.

The site is located within an area of commercial buildings and residential dwellings. Therefore, the most sensitive land use within 30 m of the site is residential.

Drilling at the site demonstrated that the underling soils are predominantly fined grained. The depth to groundwater at the time of the assessment ranged between 2.15 mbgl and 2.62 mbgl.

The chemicals of potential concern associated with gasoline include the monocyclic aromatic hydrocarbons (BTEX) and the aliphatic hydrocarbons F1 (C_6 to C_{10} hydrocarbon chain), F2 (C_{11} to C_{16} hydrocarbon chain), F3 (C_{17} to C_{24} hydrocarbon chain), and F4 (longer than C_{25} hydrocarbon chains).

Under the residential land use scenario for fine-grained soils, the Tier 1 Guidelines for aromatic hydrocarbons include the exposure pathway for the protection of drinking water. However, for the F1 to F4 hydrocarbons, the Tier 1 criteria is based on the protection of ecological receptors and that is the pathway for direct soil contact by ecological organisms.

Within the guidelines, allowance can be made for exclusion of some pathways if site conditions permit. Testing of groundwater beneath the site yielded a hydraulic conductivity value of 2×10^{-5} m/s with a soil thickness greater than 2.5 m. These conditions suggest that the saturated soils might yield sufficient water for domestic use. Therefore, the pathway for protection of drinking water cannot be excluded.

Some of the evidence for hydrocarbon staining and vapours was discovered beneath the roadway. This sort of institutional barrier eliminates the opportunity for direct contact by soil organisms; therefore, the ecological pathway may not be a realistic measure for assessing soil quality. The next most stringent criteria for assessing soil quality would be by vapour inhalation for the F1 and F2 hydrocarbons. However, in keeping with the conservation nature of the Tier 1 Guidelines, we have applied the ecological direct contact for this assessment.

5.0 SOIL AND GROUNDWATER QUALITY

The following sections discuss soil and groundwater analytical results.

5.1 SOIL ANALYTICAL RESULTS

Indications of PHC staining and/or odours were noted during the drilling investigation at 08MW06, 08MW07, 09MW09, and 09BH10; however, the extent of the PHC indicators varied between borehole locations.

Eight surface soil samples and twenty subsoil samples were submitted for chemical analysis. PHC staining and/or high concentrations of PHCs were identified at 08BH04, 08BH05, 08BH08, or 09BH12 during the drilling program. Since the intent of the Phase III ESA was to delineate the extent of the plume, soil samples were not submitted from these locations as impacts were considered to be present.

Soil analytical results are summarized in Table 1. Analytical results greater than the guidelines are illustrated on Figure 4.

PHC fractions F3 to F4 concentrations were less than analytical detection limits within all samples submitted. BTEX and PHC fractions F1 to F2 concentrations within soil samples analyzed from 08MW01, 08BH02, 08MW03, 08MW07, 08MW09, 09MW11, 09MW13, and 09BH14 were less than analytical detection limits.

Concentrations of benzene (0.076 mg/kg), toluene (0.15 mg/kg), ethylbenzene (12 mg/kg), xylenes (29 mg/kg), and PHC fractions F1 (570 mg/kg) and F2 (370 mg/kg) were detected within 08MW06 at a depth of 1.8 mbgl. The benzene, ethylbenzene, xylenes, and PHC fractions F1 and F2 concentrations were greater than the domestic use aquifer (DUA) guidelines (0.046 mg/kg, 0.52 mg/kg, 0.11 mg/kg, 15 mg/kg, 210 mg/kg, and 150 mg/kg, respectively).

Concentrations of benzene (0.011 mg/kg), ethylbenzene (0.12 mg/kg), xylenes (0.36 mg/kg), and PHC fraction F1 (36 mg/kg) were also detected within 08MW06 at a depth of 3.6 mbgl. The ethylbenzene concentration was greater than the DUA guideline (0.11 mg/kg).

Concentrations of ethylbenzene (0.02 mg/kg) and PHC fractions F1 (160 mg/kg) and F2 (420 mg/kg) were detected within 09BH10 at a depth of 1.8 mbgl. The PHC fraction F2 was greater than the DUA guideline (150 mg/kg).

Lead concentrations ranged between 7 mg/kg (08MW01 at 1.2 mbgl and 08MW07 at 0.6 mbgl) and 62 mg/kg (08MW06 at 0.6 mbgl). All concentrations of lead were less than the ecological direct soil contact guideline (300 mg/kg).

Soil analytical results are summarized in Table 1. Analytical results greater than the guidelines are plotted on Figure 4.

5.2 GROUNDWATER ANALYTICAL RESULTS

Eight groundwater samples, plus one duplicate from monitoring well 09MW13, were submitted for chemical analysis. Groundwater analytical results are summarized in Table 3.

Benzene concentrations were detected at 08MW06 (0.068 mg/L), 09MW09 (0.0017 mg/L), and 09MW11 (0.0057 mg/L). The concentration of benzene detected at 08MW06 and 09MW11 were greater than the DUA guideline (0.005 mg/L).

The concentration of ethylbenzene detected at 08MW06 (0.036 mg/L) was greater than the DUA guideline (0.0024 mg/L).

The xylenes concentration detected at 08MW06 (0.072 mg/L) was less than the DUA guideline (0.3 mg/L).

Concentrations of PHC fraction F1 detected at 08MW06 (1.6 mg/L) and 09MW11 (0.1 mg/L) were less than the DUA guideline (2.2 mg/L).

Concentrations of PHC fraction F2 were detected at 08MW06 (1.7 mg/L) and 09MW09 (0.1 mg/L). The F2 concentration detected at 08MW06 was greater than the DUA guideline (1.1 mg/L).

Lead was detected within samples collected from 08MW06 (0.0031 mg/L) and 08MW07 (0.0003 mg/L); however, the concentrations were less than the DUA guideline (0.01 mg/L).

6.0 CONCLUSIONS

The objectives of the Phase II and Phase III ESAs were to assess soil and groundwater conditions on and off site, to delineate PHC impacts, and to determine applicable remedial guidelines for the site.

A UST, previously utilized on site during the operation of the former service station, has not been removed as was first suspected. Based on analytical results from samples collected in November 2008 and March 2009, the following impacts are noted:

- Various concentrations of benzene, ethylbenzene, xylenes, and PHC fractions F1 to F2 greater than the DUA guidelines were encountered with soil samples obtained from 08MW06 (east of tank nest) at depths of 1.8 m and 3.6 m.
- A concentration of PHC fraction F2 greater the DUA guideline was detected within a soil sample collected at a depth of 1.8 m within 09BH10 (north of tank nest).
- Concentrations of benzene, ethylbenzene, and PHC fraction F2 were detected within a groundwater sample collected from 08MW06 at concentrations greater than the Tier 1 Guidelines. Benzene was also detected at 09MW11 (west of tank nest) at a concentration greater than the Tier 1 Guideline.

The impacts extend beyond the tank nest and appear to be isolated within the lacustrine clay layer.

7.0 FURTHER ACTION/RENDERING AN OPINION

Based on the findings of the chemical analysis, EBA has determined that the former site operations have resulted in impacts to the soil and/or groundwater in the areas of 08MW06, 09MW10, and 09MW11.

EBA recommends that the UST be removed from the site and that remedial activities be explored to return soil and groundwater conditions to concentrations less than the applied guidelines.

Soil bags and purged groundwater should also be collected and removed from the site.

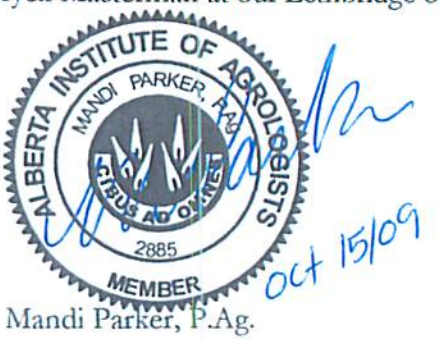
8.0 LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of the Village of Barons and their agents. EBA does not accept any responsibility for the accuracy of any of the data, the analysis or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than the Village of Barons, or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this report is subject to the terms and conditions stated in EBA's Services Agreement and in the Geo-environmental Report – General Conditions provided in Appendix E of this report.

9.0 CLOSURE

EBA trusts that this report satisfies your present requirements. Should you have any questions or comments, please contact Mr. Deryck Masterman at our Lethbridge office.

Respectfully submitted,
EBA Engineering Consultants Ltd.



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PERMIT NUMBER: P245
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TABLES

TABLE 1: SOIL ANALYTICAL RESULTS - AMA SITE 9558

Parameters	Detection Limits	Units	Protection of Domestic Use Aquifer		Ecological Direct Soil Contact	17-Nov-08														
						08MW01			08BH02		08MW03			08MW06				08MW07			
			< 3.0 m	> 3.0 m	< 3.0 m	1.2 m	4.2 m	5.4 m	1.8 m	3.6 m	1.8 m	3.6 m	4.8 m	0.6 m	1.8 m	3.6 m	4.5 m	0.6 m	2.4 m	4.2 m	4.8 m
Petroleum Hydrocarbons																				
Benzene	0.02	mg/kg	0.046	0.046	120	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.076	0.011	nd	nd		nd	nd
Toluene	0.01	mg/kg	0.52	0.52	220	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.15	nd	nd	nd		nd	nd
Ethylbenzene	0.04	mg/kg	0.11	0.11	240	nd	nd	nd	nd	nd	nd	nd	nd	nd	12	0.12	nd	nd		nd	nd
Xylenes	0.04	mg/kg	15	15	130	nd	nd	nd	nd	nd	nd	nd	nd	nd	29	0.52	nd	nd		nd	nd
F1 (C_6 to C_{10})	12	mg/kg	210	1,100	420	nd	nd	nd	nd	nd	nd	nd	nd	nd	570	36	nd	nd		nd	nd
F2 (C_{10} to C_{16})	10	mg/kg	150	1,500	300	nd	nd	nd	nd	nd	nd	nd	nd	nd	370	nd	nd	nd		nd	nd
F3 (C_{16} to C_{34})	10	mg/kg	ng	ng	2,600	nd	nd	nd	nd	nd	nd	nd	nd	nd	< 10	nd	nd	nd		nd	nd
F4 (C_{34} to C_{50})	10	mg/kg	ng	ng	11,200	nd	nd	nd	nd	nd	nd	nd	nd	nd	< 10	nd	nd	nd		nd	nd
Metals																					
Lead (Pb)	1	mg/kg	ng	ng	300	-	8	1*	11	9	11	8	14	62	32	6	8	-		12	11
Physical Properties																					
Soil Moisture Content	0.3	%	ng	ng	ng	16	15	12	24	14	24	11	13	12	19	1*	7.1	12	23	14	9.5
<75 um Sieve	0.2	%	ng	ng	ng	92	nt	nt	nt	nt	nt	nt	8*	nt	nt	nt	nt	nt	90	nt	nt
>75 um Sieve	0.2	%	ng	ng	ng	8	nt	nt	nt	nt	t	nt	13	nt	nt	nt	nt	nt	10	nt	nt
CCME Class	0.2		ng	ng	ng	FINE	nt	nt	nt	nt	nt	nt	FINE	nt	nt	nt	nt	nt	FINE	nt	nt

Parameters	Detection Limits	Units	Protection of Domestic Use Aquifer		Ecological Direct Soil Contact	11-Mar-09											
						09MW09			09BH10			09MW11			09MW13	09BH14	
			< 3.0 m	> 3.0 m		4.2 m	4.8 m	6.0 m	1.8 m	3.0 m	4.8 m	3.6 m	4.8 m	6.0 m	4.8 m	3.0 m	4.8 m
Petroleum Hydrocarbons																	
Benzene	0.02	mg/kg	0.046	0.046	120	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Toluene	0.01	mg/kg	0.52	0.52	220	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Ethylbenzene	0.04	mg/kg	0.11	0.11	240	nd	nd	nd	0.02	nd	nd	nd	nd	nd	nd	nd	nd
Xylenes	0.04	mg/kg	15	15	130	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
F1 (C_6 to C_{10})	12	mg/kg	210	1,100	420	nd	nd	nd	160	nd	nd	nd	nd	nd	nd	nd	nd
F2 (C_{10} to C_{16})	10	mg/kg	150	1,500	300	nd	nd	nd	420	nd	nd	nd	nd	nd	nd	nd	nd
F3 (C_{16} to C_{34})	10	mg/kg	ng	ng	2,600	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
F4 (C_{34} to C_{50})	10	mg/kg	ng	ng	11,200	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Metals																	
Lead (Pb)	1	mg/kg	ng	ng	300	8	9	-	14	14	16	10	16	15	8	10	15
Physical Properties																	
Soil Moisture Content	0.3	%	ng	ng	ng	13	11	13	19	26	21	20	15	13	14	15	12
<75 um Sieve	0.2	%	ng	ng	ng	63	75	nt	81	nt	nt	nt	nt	91	nt	67	nt
>75 um Sieve	0.2	%	ng	ng	ng	37	25	nt	19	nt	nt	nt	nt	9.2	nt	33	nt
CCME Class	0.2		ng	ng	ng	FINE	FINE	nt	FINE	nt	nt	nt	nt	FINE	nt	FINE	nt

Notes:

[1] Alberta Environment. August 2008. Alberta Tier 1 Soil Remediation Guideline Values for Soil and Groundwater for Residential Land Use for Fine-grained Soils.

* Detection limits raised by one significant figure due to dilution of sample.

nt - Parameter not analyzed

nd - Less than analytical detection limits.

ng - No guidelines established.

Bold and Underlined - Greater than the referenced guideline

TABLE 2: MONITORING WELL COMPLETION DETAILS AND FIELD MONITORING RESULTS - AMA SITE 9558								
Monitoring Well Identifier	Date of Installation	TOC Elevation[1] (m)	Monitoring Well Depth (mBTOC)[2]	Screen Interval (mbgl)[3]	Screened In	Depth to Groundwater (mBTOC)	Groundwater Elevation (m)	Organic Vapour Emissions[4]
						26-Mar-09		
08MW01	18-Nov-08	98.64	5.69	1.5 to 6.1	Clay and Bedrock	2.26	96.39	50 ppm
08MW03	18-Nov-08	98.71	5.49	1.5 to 6.1	Clay and Bedrock	2.34	96.37	50 ppm
08MW06	18-Nov-08	98.63	4.39	1.5 to 4.5	Clay and Bedrock	2.29	96.35	450 ppm
08MW07	18-Nov-08	98.47	5.64	1.5 to 6.1	Clay and Bedrock	2.15	96.32	150 ppm
08MW08	18-Nov-08	98.64	11.50	8.2 to 12.7	Bedrock	2.30	96.34	100 ppm
09MW09	9-Mar-09	98.56	6.10	3.1 to 6.1	Clay and Bedrock	2.20	96.37	100 ppm
09MW11	9-Mar-09	98.82	6.10	3.1 to 6.1	Clay and Bedrock	2.62	96.21	75 ppm
09MW13	9-Mar-09	98.77	6.10	3.1 to 6.1	Clay and Bedrock	2.40	96.37	75 ppm

Notes:

Benchmark: Top bolt of fire hydrant located on the corner of Main Street and Alberta Avenue.

[1] Elevation of top of plastic casing.

[2] Metres below top of plastic casing.

[3] Metres below grond level.

[4] Organic vapour emissions recorded using a GasTech 1238 ME™ calibrated to hexane and operated in methane elimination mode.

nd - Not detected.

ppm - Parts per million.

%LEL - Percentage of the lower explosive limit.

TABLE 3: GROUNDWATER ANALYTICAL RESULTS - AMA SITE 9558

Parameter	Detection Limits	Units	AENV Tier 1[1]	28-Nov-08					26-Mar-09			
				08MW01	08MW03	08MW06	08MW07	08MW08	09MW09	09MW11	09MW13	09DUP01*
Petroleum Hydrocarbons												
Benzene	0.0009	mg/L	0.005	nd	nd	**0.068**	nd	nd	0.0017	**0.0057**	nd	nd
Toluene	0.0009	mg/L	0.024	nd	nd	nd	nd	nd	nd	nd	nd	nd
Ethylbenzene	0.0009	mg/L	0.0024	nd	nd	**0.036**	nd	nd	nd	nd	nd	nd
Xylenes	0.002	mg/L	0.3	nd	nd	0.072	nd	nd	nd	nd	nd	nd
F1 (C_6 to C_{10})	0.2	mg/L	2.2	nd	nd	1.6	nd	nd	nd	0.1	nd	nd
F2 (C_{10} to C_{16})	0.1	mg/L	1.1	nd	nd	**1.7**	nd	nd	0.1	nd	nd	nd
Metals												
Lead (Pb)	1	mg/L	0.01	nd	nd	0.0031	0.0003	nd	nd	nd	nd	nd

Notes:

[1] Alberta Environment. August 2008. Alberta Tier 1 Soil and Groundwater Remediation Guideline Values for Residential Lands with Fine-grained Soils.

nt - Parameter not analyzed.

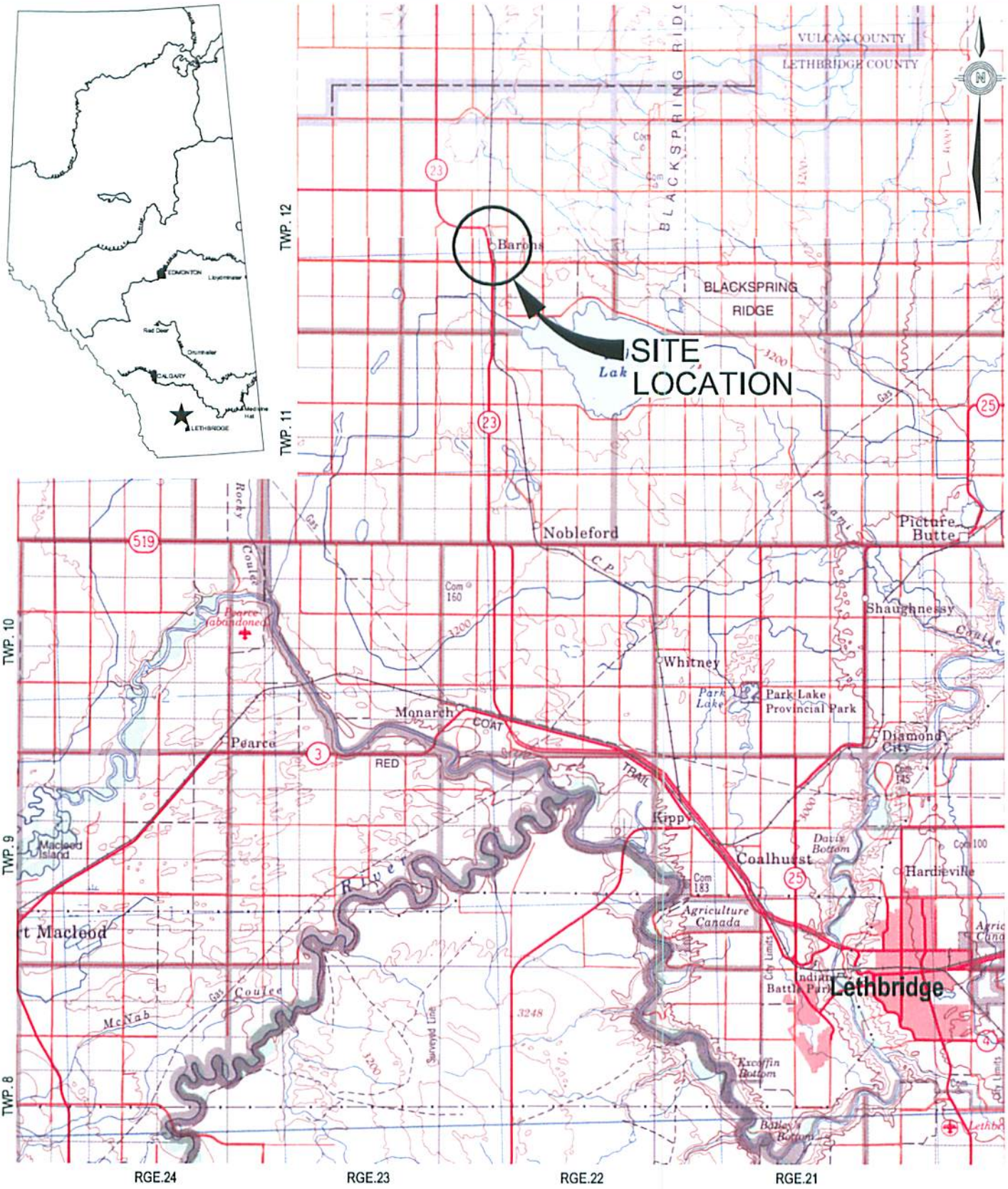
nd - Below analytical detection limits.

ng - No guidelines established.

Bold and Underlined - Greater than the referenced guideline.

* 09DUP01 - Duplicates sample of 09MW13

FIGURES



CLIENT

Village of Barons

PHASE II/III ENVIRONMENTAL SITE ASSESSMENT
AMA SITE 9558

SITE LOCATION PLAN

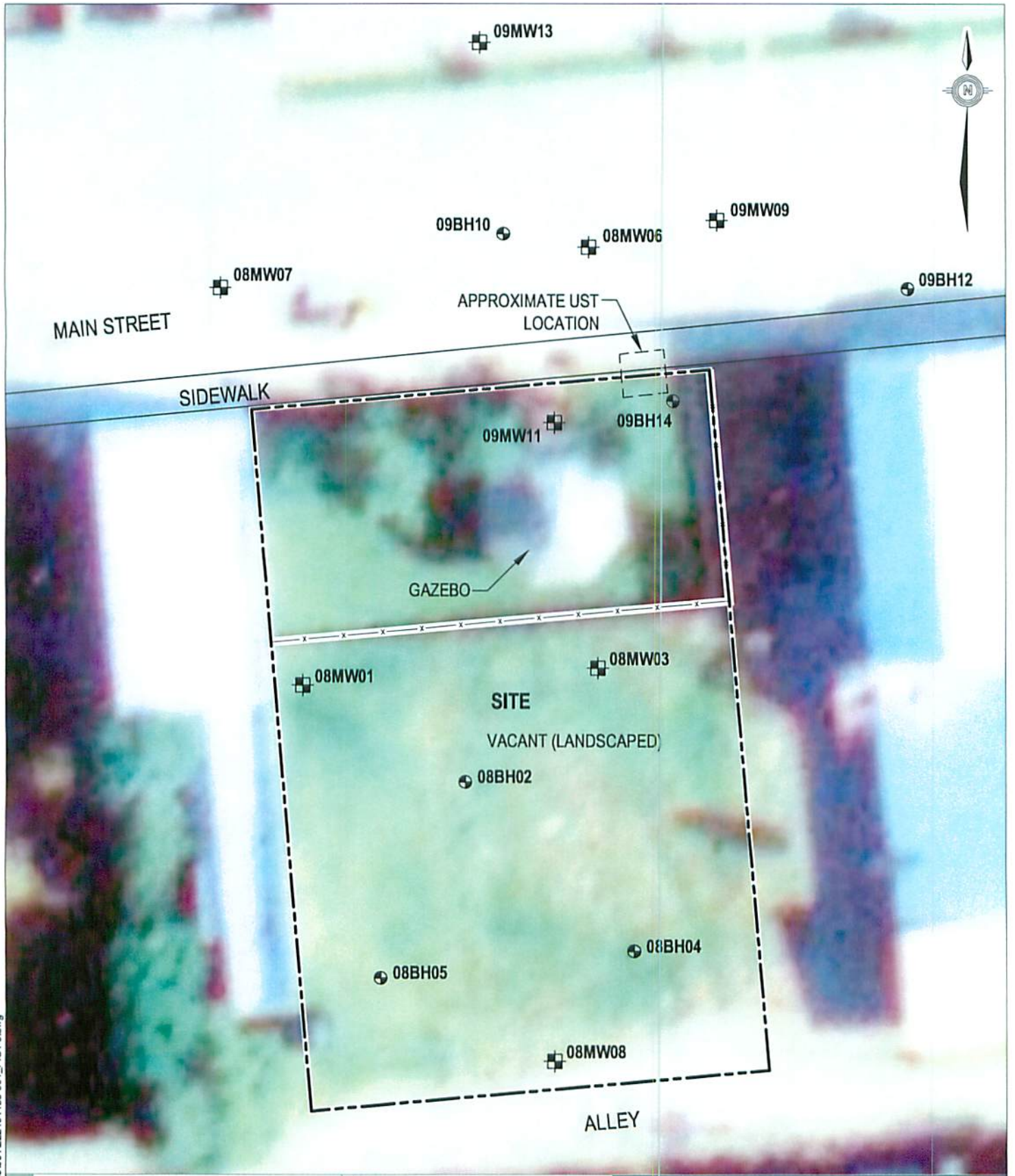
NOTE
NOT TO SCALE

EBA Engineering Consultants Ltd.

PROJECT NO.	DWN	CKD	REV
L22101183.001	LCH	DM	0
OFFICE	DATE		
LETH	September 30, 2009		

Figure 1

\\lethbridge\drafting\L221 Projects\L22101183\001\L22101183-001_FIG1-5.dwg



LEGEND

SITE BOUNDARY

FENCE

08BH# BOREHOLE LOCATION

08MW# MONITORING WELL

5 10m

APPROXIMATE SCALE 1:250

CLIENT

Village of Barons

PHASE II/III ENVIRONMENTAL SITE ASSESSMENT
AMA SITE 9558

SITE PLAN

EBA Engineering Consultants Ltd.

PROJECT NO.	DWN	CKD	REV
L22101183.001	LCH	DM	0
OFFICE: LETH	DATE: August 10, 2009		

Figure 2

\\Lethbridge\drafting\L221 Projects\L22101183\001\L22101183-001_FIG1-5.dwg

LEGEND

WELL LOCATION

0 100 250 m

APPROXIMATE SCALE 1: 7 500

CLIENT

Village of Barons

PHASE II/III ENVIRONMENTAL SITE ASSESSMENT
AMA SITE 9558

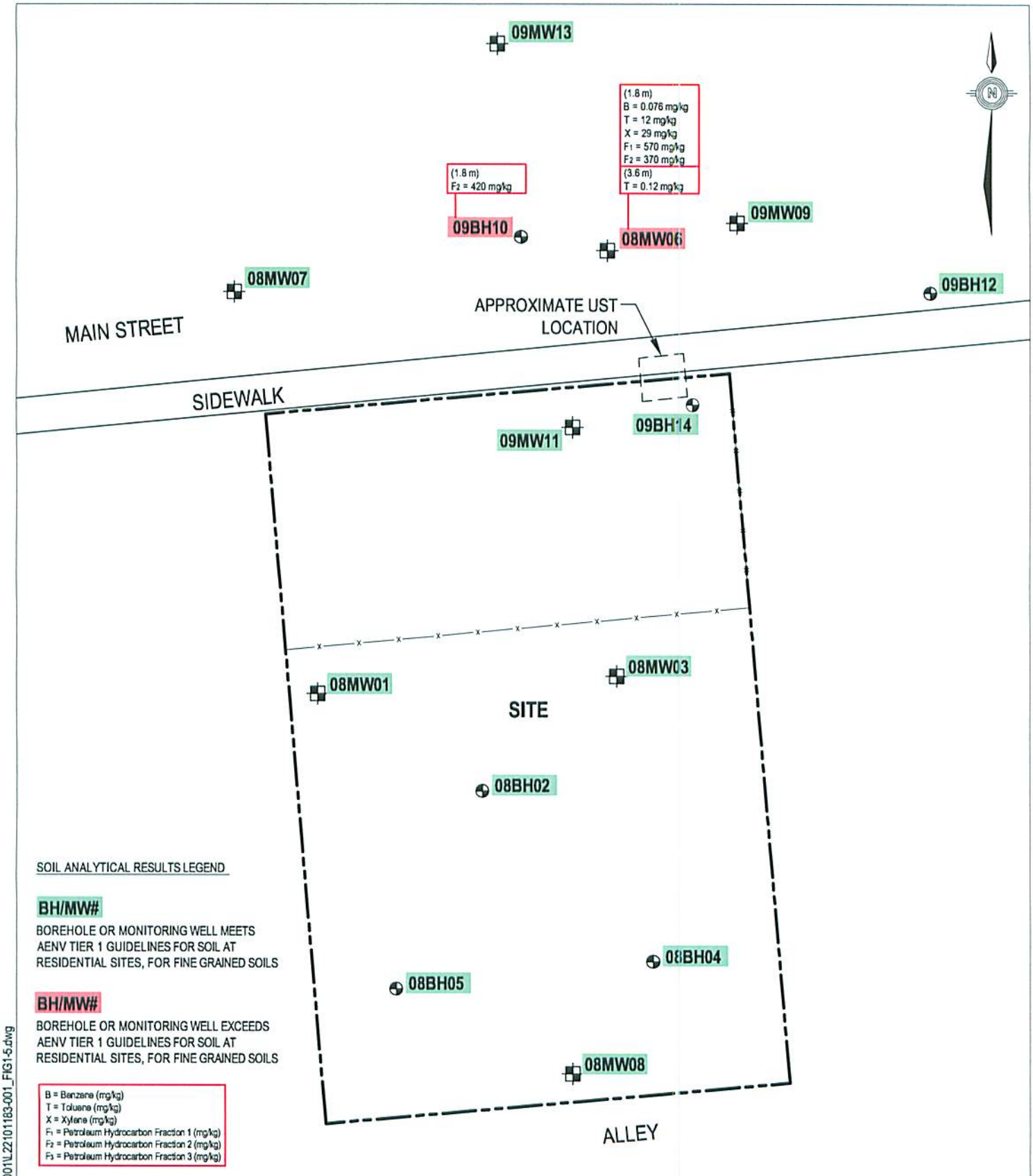
ESTIMATED LOCATION OF WELLS NEAR THE SITE

EBA Engineering Consultants Ltd.

PROJECT NO	DWN	CHD	REV
L22101183.001	LCH	DM	0
OFFICE	DATE		
LETH	August 10, 2009		

Figure 3

\\lethbridge\drafting\L221 Projects\L221011830001\L221011830-001_FIG1-5.dwg



SOIL ANALYTICAL RESULTS LEGEND

BH/MW#

BOREHOLE OR MONITORING WELL MEETS AENV TIER 1 GUIDELINES FOR SOIL AT RESIDENTIAL SITES, FOR FINE GRAINED SOILS

BH/MW#

BOREHOLE OR MONITORING WELL EXCEEDS AENV TIER 1 GUIDELINES FOR SOIL AT RESIDENTIAL SITES, FOR FINE GRAINED SOILS

B = Benzene (mg/kg)
T = Toluene (mg/kg)
X = Xylene (mg/kg)
F_1 = Petroleum Hydrocarbon Fraction 1 (mg/kg)
F_2 = Petroleum Hydrocarbon Fraction 2 (mg/kg)
F_3 = Petroleum Hydrocarbon Fraction 3 (mg/kg)

LEGEND

SITE BOUNDARY

FENCE

08BH# BOREHOLE LOCATION

08MW# MONITORING WELL

5 10m

APPROXIMATE SCALE 1:250

CLIENT

Village of Barons

PHASE II/III ENVIRONMENTAL SITE ASSESSMENT AMA SITE 9558

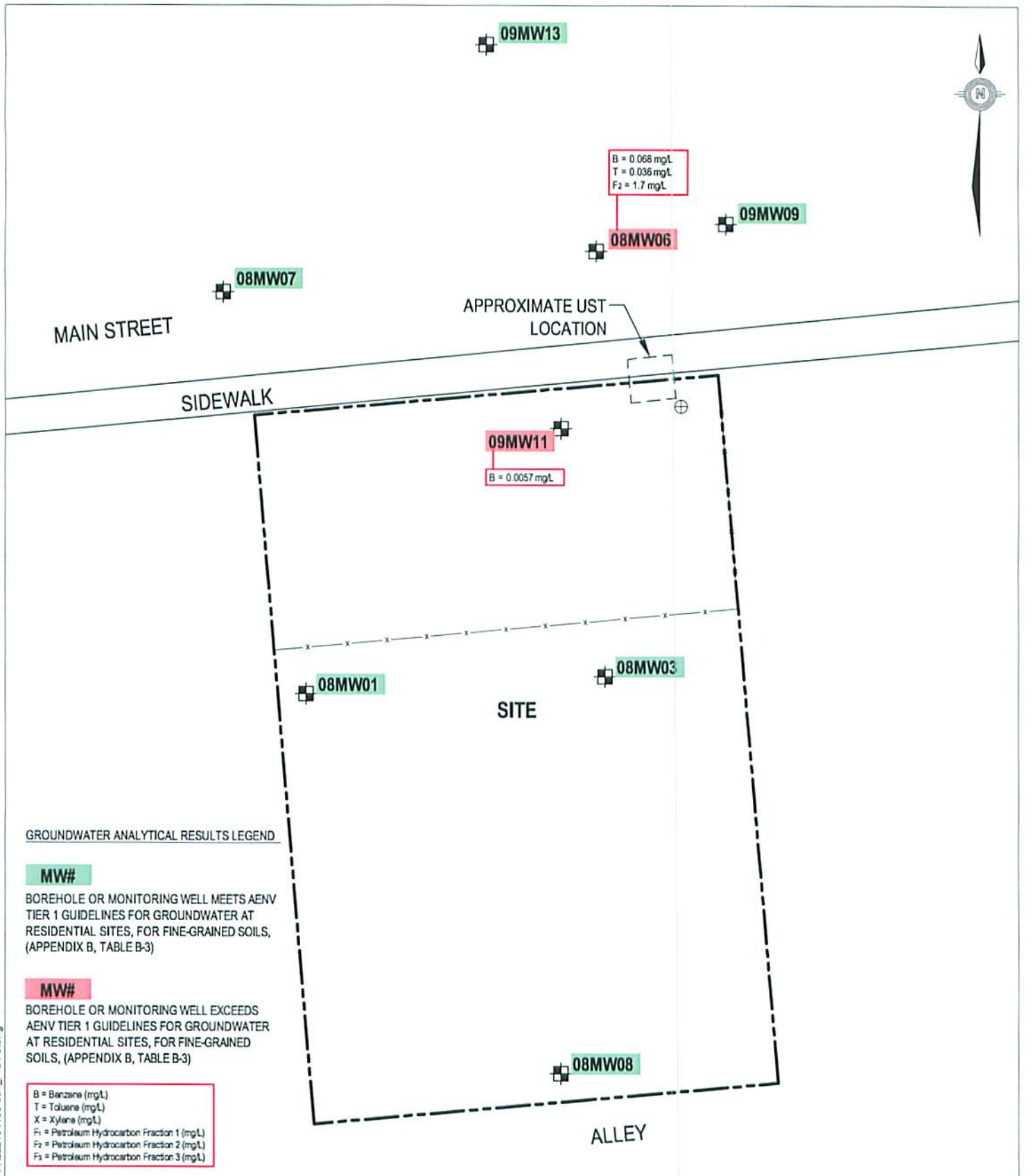
SOIL ANALYTICAL RESULTS GREATER THAN AENV TIER 1 GUIDELINES

EBA Engineering Consultants Ltd.

PROJECT NO.	DWN	CKD	REV
L22101183.001	LCH	DM	0
OFFICE: LETH	DATE: August 31, 2009		

Figure 4

\Lethbridge\drafting\L221 Projects\L22101183001\L22101183-001_FIG1-5.dwg



CLIENT

Village of Barons

PHASE II/III ENVIRONMENTAL SITE ASSESSMENT
AMA SITE 9558

GROUNDWATER ANALYTICAL RESULTS GREATER THAN AENV TIER 1 GUIDELINES

EBA Engineering Consultants Ltd.

PROJECT NO.	DWN	CKD	REV
L22101183.001	LCH	DM	0
OFFICE: LETH	DATE: August 31, 2009		

Figure 5

\Wethbridge\drafting\L221 Projects\L22101183\001\L22101183-001_FIG1-5.dwg

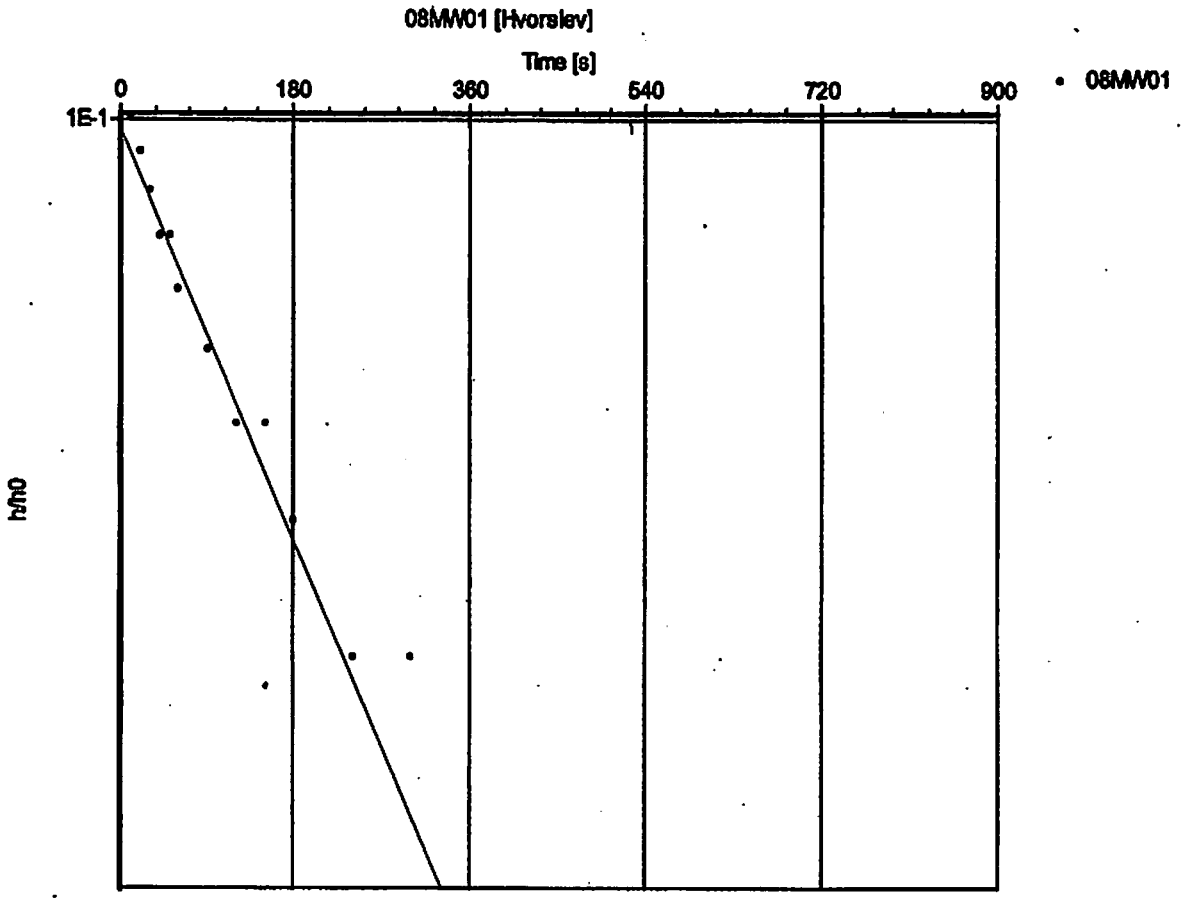
APPENDIX A

APPENDIX A INFORMATION COLLECTED FOR GUIDELINE SELECTIONS

EBA Engineering Consultants Ltd
Riverbend Atrium One #115, 200 Rivercrest Drive SE
Calgary, AB T2C 2X5 CANADA

Slug Test Analysis Report

Project:	The Village of Barons - Site Inspection
Number:	L22101183.001
Client:	The Village of Barons



Slug Test: 08MW01

Analysis Method: Hvorslev

Analysis Results: Conductivity: 6.59E-6 [m/s]

Test parameters:

Test Well:	08MW01	Aquifer Thickness:	4.6 [m]
Casing radius:	0.051 [m]		
Screen length:	4.6 [m]		
Boring radius:	0.152 [m]		

Comments:

Evaluated by: Jay X

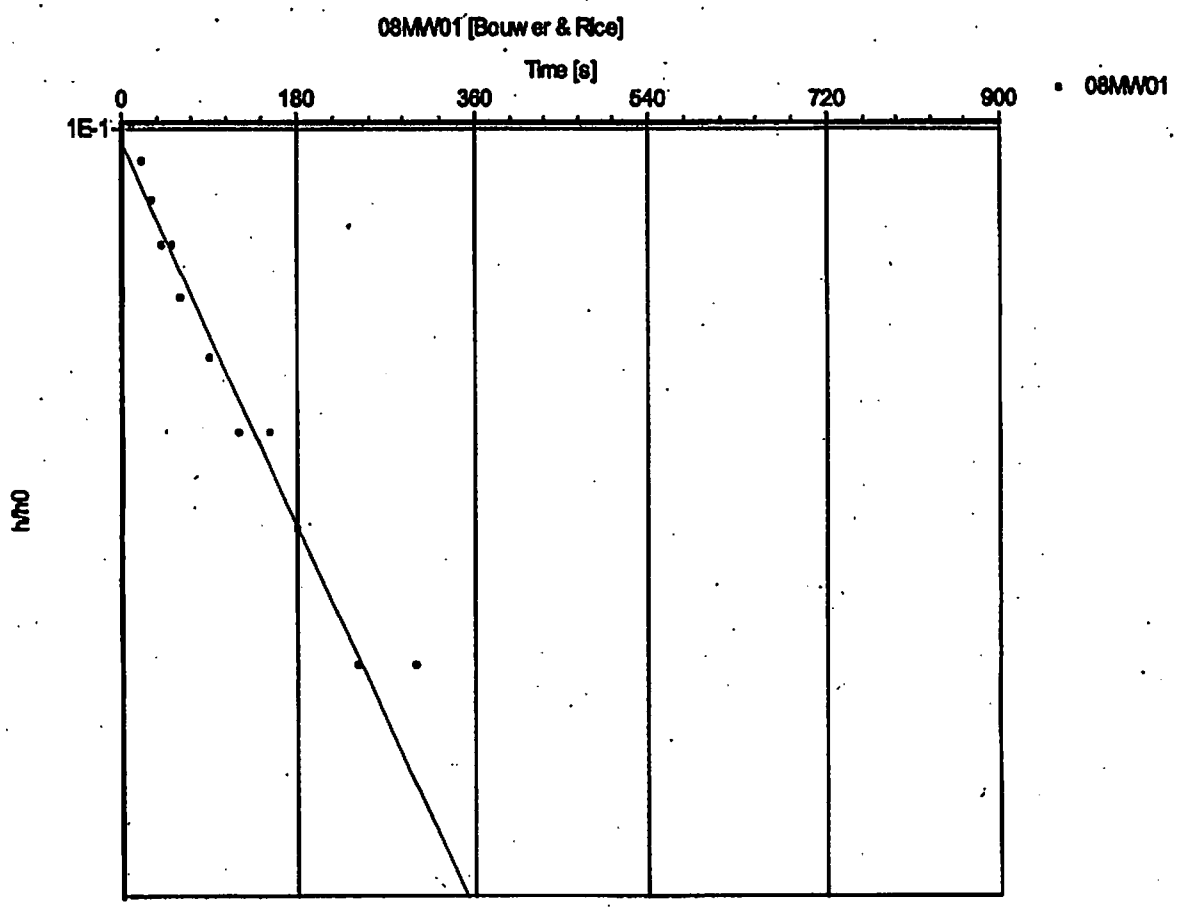
Figure

Evaluation 12/16/2008

EBA Engineering Consultants Ltd
Riverbend Atrium One #115, 200 Rivercrest Drive SE
Calgary, AB T2C 2X5 CANADA

Slug Test Analysis Report

Project:	The Village of Barons - Site Inspection
Number:	L22101183.001
Client:	The Village of Barons



Slug Test: 08MW01

Analysis Method: Bouwer & Rice

Analysis Results:

Conductivity: 1.12E-5 [m/s]

Test parameters:

Test Well:	08MW01	Aquifer Thickness:	4.6 [m]
Casing radius:	0.051 [m]	Gravel Pack Porosity (%)	20
Screen length:	4.6 [m]		
Boring radius:	0.152 [m]		
r(eff):	0.082 [m]		

Comments:

Evaluated by: Jay X

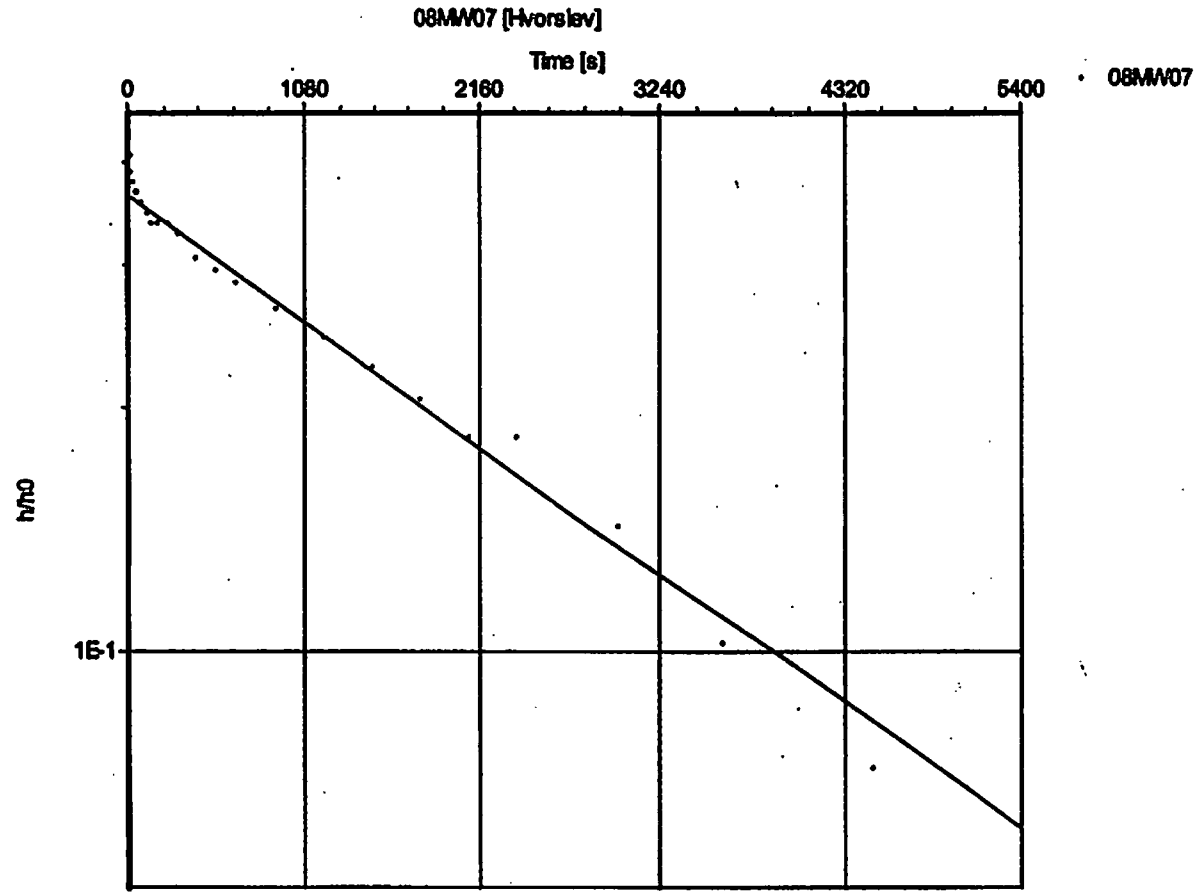
Figure

Evaluation 12/16/2008

EBA Engineering Consultants Ltd
Riverbend Atrium One #115, 200 Rivercrest Drive SE
Calgary, AB T2C 2X5 CANADA

Slug Test Analysis Report

Project:	The Village of Barons - Site Inspection
Number:	L22101183.001
Client:	The Village of Barons



Slug Test: 08MW07

Analysis Method: Hvorslev

Analysis Results: Conductivity: 3.22E-7 [m/s]

Test parameters:

Test Well:	08MW07	Aquifer Thickness:	4.6 [m]
Casing radius:	0.051 [m]		
Screen length:	4.6 [m]		
Boring radius:	0.152 [m]		

Comments:

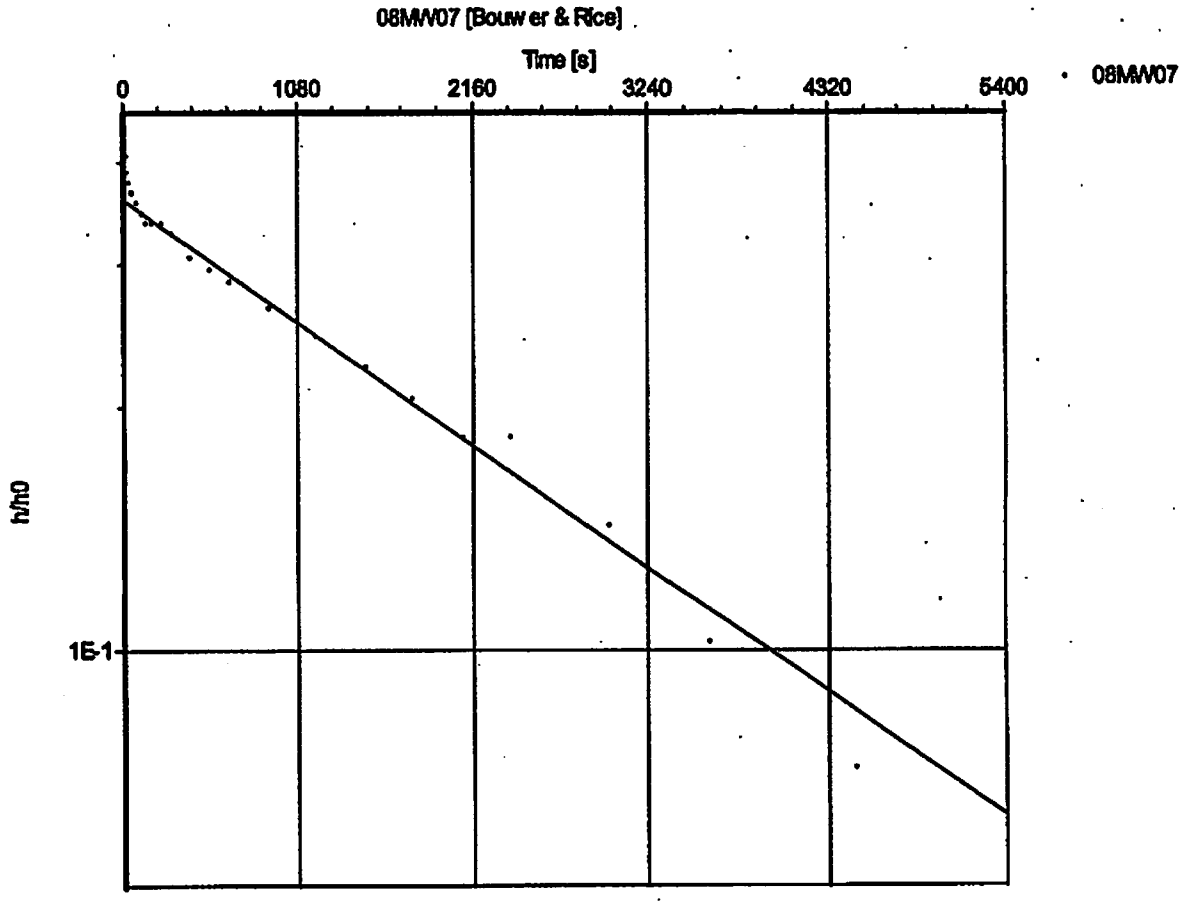
Evaluated by: Jay X

Figure — Evaluation 12/16/2008

EBA Engineering Consultants Ltd
Riverbend Atrium One #115, 200 Rivercrest Drive SE
Calgary, AB T2C 2X5 CANADA

Slug Test Analysis Report

Project:	The Village of Barons - Site Inspection
Number:	L22101183.001
Client:	The Village of Barons



Slug Test: 08MW07

Analysis Method: Bouwer & Rice

Analysis Results:

Conductivity: 5.73E-7 [m/s]

Test parameters:

Test Well:	08MW07	Aquifer Thickness:	4.6 [m]
Casing radius:	0.051 [m]	Gravel Pack Porosity (%)	20
Screen length:	4.6 [m]		
Boring radius:	0.152 [m]		
r(eff):	0.082 [m]		

Comments:

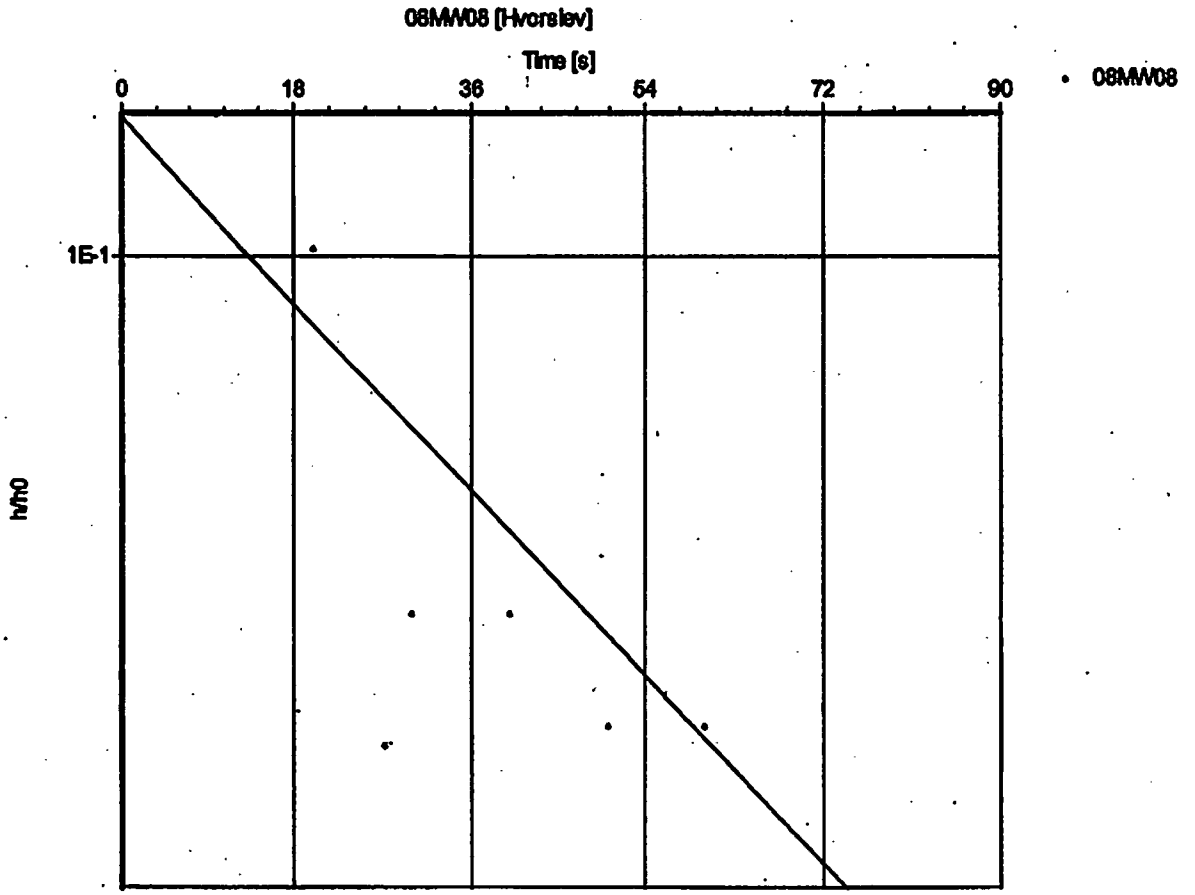
Evaluated by: Jay X

Figure Evaluation 12/16/2008

EBA Engineering Consultants Ltd
Riverbend Atrium One #115, 200 Rivercrest Drive SE
Calgary, AB T2C 2X5 CANADA

Slug Test Analysis Report

Project:	The Village of Barons - Site Inspection
Number:	L22101183.001
Client:	The Village of Barons



Slug Test: 08MW08

Analysis Method: Hvorslev

Analysis Results: Conductivity: 2.56E-5 [m/s]

Test parameters:

Test Well:	08MW08	Aquifer Thickness:	4.5 [m]
Casing radius:	0.051 [m]		
Screen length:	4.5 [m]		
Boring radius:	0.152 [m]		

Comments: Automatic fit, only for the first 100 seconds

Evaluated by: Jay X

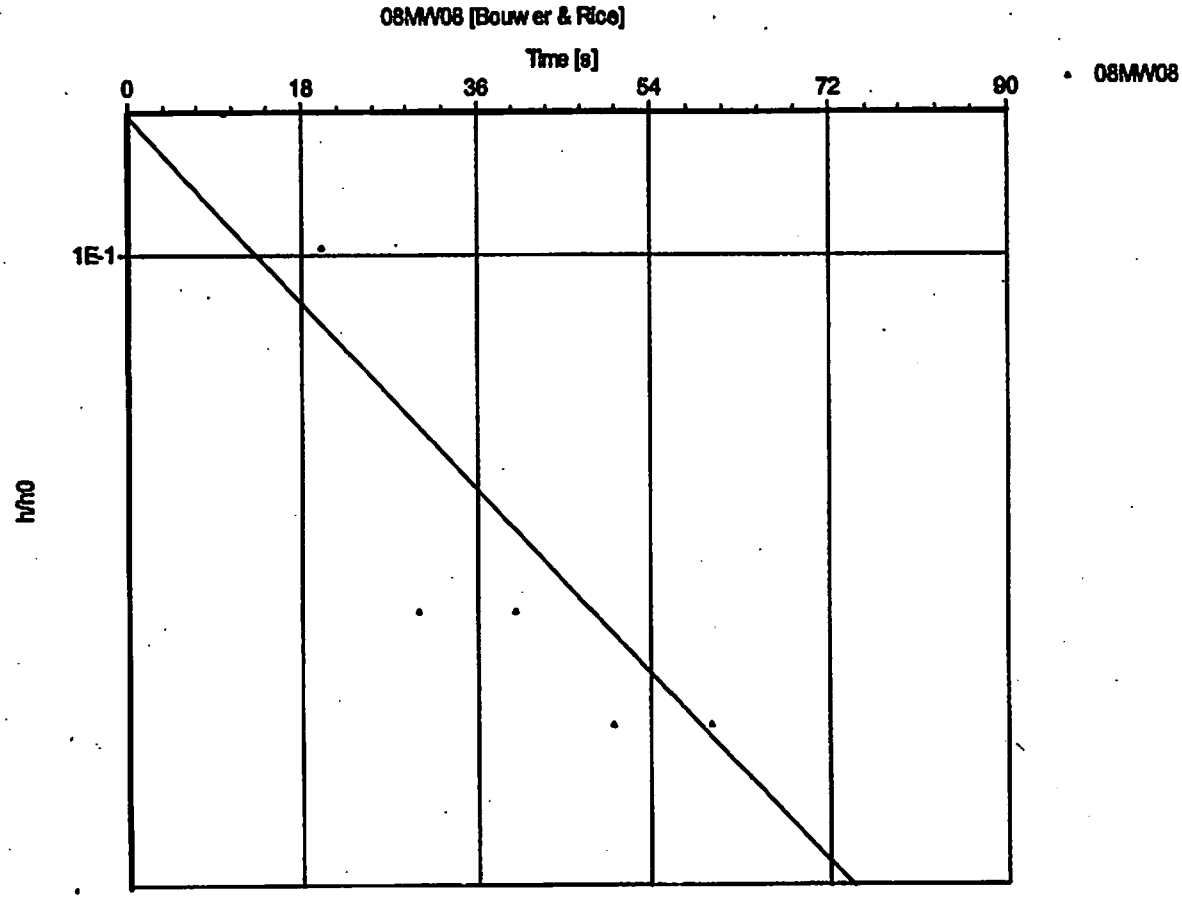
Figure

Evaluation 12/16/2008

EBA Engineering Consultants Ltd
Riverbend Atrium One #115, 200 Rivercrest Drive SE
Calgary, AB T2C 2X5 CANADA

Slug Test Analysis Report

Project:	The Village of Barons - Site Inspection
Number:	L22101183.001
Client:	The Village of Barons



Slug Test: 08MW08

Analysis Method: Bouwer & Rice

Analysis Results:

Conductivity: 6.12E-5 [m/s]

Test parameters:

Test Well:	08MW08	Aquifer Thickness:	4.5 [m]
Casing radius:	0.051 [m]	Gravel Pack Porosity (%)	20
Screen length:	4.5 [m]		
Boring radius:	0.152 [m]		
r(eff):	0.082 [m]		

Comments: Automatic fit. Only the first 100 seconds

Evaluated by: Jay X

Figure

Evaluation 12/16/2008

Water Well Drilling Report

Alberta Environment

The data contained in this report is supplied by the Driller. The province disclaims responsibility for its accuracy.

Well I.D.: 0194222
Map Verified: Not Verified
Date Report Received:
Measurements: Imperial

1. Contractor & Well Owner Information

Company Name: INTERPROVINCIAL DRLG
Drilling Company Approval No.:
Mailing Address:
City or Town:
Postal Code:
WellOwner's Name:
Well Location Identifier:
P.O. Box Number:
Mailing Address:
Postal Code:
City:
Province:
Country:

2. Well Location

1/4 or LSD	Sec	Twp	Rge	Wes M
EH	16	012	23	4

Location in Quarter
0 FT from Bound
0 FT from Bound
Lot Block Plan

Well Elev: 3165 FT
How Obtain: Estimated

3. Drilling Information

Type of Work: Well Inventory
Reclaimed Well
Date Reclaimed:
Materials Used:
Method of Drilling: Drilled
Flowing Well: No
Gas Present: No
Rate: Gallons
Oil Present: No
Proposed well use: Domestic
Anticipated Water Requirements/day 0 Gallons

6. Well Yield

Test Date(yyyy/mm/dd): 1958/02/10
Start Time: 11:00 AM
Test Method: Baller
Non pumping static level: 32 FT
Rate of water removal: 15 Gallons/M
Depth of pump intake: 0 FT
Water level at end of pumping: FT
Distance from top of casing to ground level: inches
Depth To water level (feet)
Elapsed Time
Drawdown Minutes:Sec Recove
Total Drawdown: 0 FT
If water removal was less than 2 hr duration, reason why:
Recommended pumping rate: 0 Gallons/Min
Recommended pump intake: 0 FT
Type Pump Installed
Pump Type:
Pump Model:
H.P.:
Any further pumptest information?

4. Formation Log

Depth from ground level (feet)	Lithology Description
1	Topsoil
10	Gravel & Boulders
21	Sand & Gravel
23	Silty Sand & Gravel
44	Blue Shale
59	Gray Shale
63	Sand & Shale
79	Gray Shale
83	Gray Sandy Shale
90	Gray Water Bearing Sandstone
96	Blue Shale

5. Well Completion

Date Started(yyyy/mm/dd):
Date Completed(yyyy/mm/dd): 1958/02/10
Well Depth: 96 FT
Borehole Diameter: 0 inches
Casing Type: Unknown
Liner Type:
Size OD: 6 inches
Size OD: 0 inches
Wall Thickness: 0 inches
Wall Thickness: 0 inches
Bottom at: 96 FT
Top: 0 FT Bottom: 0 FT
Perforations
Perforations Size:
from: 0 FT to: 0 FT — 0 inches x 0 inches
from: 0 FT to: 0 FT — 0 inches x 0 inches
from: 0 FT to: 0 FT — 0 inches x 0 inches
Perforated by:
Seal:
from: 0 FT to: 0 FT
Seal:
from: 0 FT to: 0 FT
Seal:
from: 0 FT to: 0 FT
Screen Type:
from: 0 FT to: 0 FT
Screen ID: 0 inches
Slot Size: 0 inches
Screen Type:
from: 0 FT to: 0 FT
Screen ID: 0 inches
Slot Size: 0 inches
Screen Installation Method:
Fittings
Top:
Bottom:
Pack:
Grain Size:
Amount:
Geophysical Log Taken:
Retained on Files:
Additional Test and/or Pump Data
Chemistries taken By Driller: No
Held: 0
Documents Held: 1
Pitless Adapter Type:
Drop Pipe Type:
Length: FT
Diameter: Inches
Comments:
OWNER STATES CEALR, MEDIUM HARD WATER.

7. Contractor Certification

Driller's Name: UNKNOWN DRILLER
Certification No.:
This well was constructed in accordance with the Water Well regulation of the Alberta Environmental Protection & Enhancement Act. All information in this report is true.
Signature
Yr Mo Day

Water Well Drilling Report

Alberta Environment

The data contained in this report is supplied by the Driller. The province disclaims responsibility for its accuracy.

Well I.D.: 0194216
Map Verified: Field
Date Report Received:
Measurements: Imperial

1. Contractor & Well Owner Information

Company Name: ALBERTA ENVIRONMENT/EARTH SCIENCES DIVISION
Drilling Company Approval No.: 99998
Mailing Address: 9820-106 ST, OXBRIDGE PLACE
City or Town: EDMONTON AB CA
Postal Code: T5K 2J6
WellOwner's Name: ALTA ENV #0613E
Well Location Identifier:
P.O. Box Number:
Mailing Address:
Postal Code:
City:
Province:
Country:

2. Well Location

1/4 or LSD	Sec	Twp	Rge	West M
SE	16	012	23	

Location in Quarter
0 FT from Bounds
0 FT from Bounds
Lot Block Plan
Well Elev: FT
How Obtain: Not Obtain

3. Drilling Information

Type of Work: Test Hole
Reclaimed Well
Date Reclaimed:
Materials Used:
Method of Drilling: Drilled
Flowing Well: No
Gas Present: No
Rate: Gallons
Oil Present: No
Proposed well use: Unknown
Anticipated Water Requirements/day 0 Gallons

6. Well Yield

Test Date(yyyy/mm/dd):Start Time:
Test Method:
Non pumping static level: FT
Rate of water removal: Gallons/Min
Depth of pump intake: FT
Water level at end of pumping: FT
Distance from top of casing to ground level: Inches

Depth To water level (feet)
Elapsed Time
Drawdown Minutes:Sec Recov

Total Drawdown: FT
If water removal was less than 2 hr duration, reason why:

Recommended pumping rate: Gallons/Min
Recommended pump intake: FT
Type pump Installed
Pump type:
Pump model:
H.P.:
Any further pumptest information?

4. Formation Log

Depth from ground level (feet)	Lithology Description
9	Clay
12	Hard Shale
28	Shale
35	Hard Shale & Sandstone
47	Siltstone
55	Hard Sandstone
58	Shale
63	Hard Sandstone
84	Shale
90	Water Bearing Sandstone
95	Shale & Sandstone

5. Well Completion

Date Started(yyyy/mm/dd):
Date Completed(yyyy/mm/dd): 1971/03/01
Well Depth: 95 FT
Borehole Diameter: 0 Inches
Casing Type:
Liner Type:
Size OD: 0 Inches
Size OD: 0 Inches
Wall Thickness: 0 Inches
Wall Thickness: 0 Inches
Bottom at: 0 FT
Top: 0 FT Bottom: 0 FT
Perforations
Perforations Size:
from: 0 FT to: 0 FT — 0 Inches x 0 Inches
from: 0 FT to: 0 FT — 0 Inches x 0 Inches
from: 0 FT to: 0 FT — 0 Inches x 0 Inches
Perforated by:
Seal: from: 0 FT to: 0 FT
Seal: from: 0 FT to: 0 FT
Seal: from: 0 FT to: 0 FT
Screen Type: from: 0 FT to: 0 FT
Screen ID: 0 Inches
Slot Size: 0 Inches
Screen Type: from: 0 FT to: 0 FT
Screen ID: 0 Inches
Slot Size: 0 Inches
Screen Installation Method:
Fittings
Top:
Bottom:
Pack:
Grain Size:
Amount:
Geophysical Log Taken:
Retained on Files:
Additional Test and/or Pump Data
Chemistries taken By Driller: No
Held: 0
Documents Held: 1
Pitless Adapter Type:
Drop Pipe Type:
Length:
Diameter:
Comments:
OWNER STATES AIR DRILLED 100FT W. &25FT S. OF 612-E.

7. Contractor Certification

Driller's Name: UNKNOWN DRILLER
Certification No.:
This well was constructed in accordance with the Water Well regulation of the Alberta Environmental Protection & Enhancement Act. All information in this report is true.
Signature
Yr Mo Day

Water Well Drilling Report

Alberta Environment

The data contained in this report is supplied by the Driller. The province disclaims responsibility for its accuracy.

The information contained in this "Water Well Drilling Report" is unverified by Alberta Environment

Well I.D.: 2058577
Map Verified: Not Verified
Date Report Received: 2007/03/09
Measurements: Imperial

1. Contractor & Well Owner Information

Company Name: UNKNOWN DRILLING COMP. 10
Drilling Company Approval No.: 10
Mailing Address: UNKNOWN
City or Town:
Postal Code:
WellOwner's Name: ALTA ENV - 611E
Well Location Identifier:
P.O. Box Number:
Mailing Address:
Postal Code:
City: EDMONTON
Province: AB
Country: CA

2. Well Location

1/4 or LSD	Sec	Twp	Rge	Wes M
SE	16	012	23	4

Location in Quarter
FT from N Bound
FT from E Bound
Lot Block Plan
Well Elev: FT
How Obtain: Not Obtain

3. Drilling Information

Type of Work: Test Hole
Reclaimed Well
Date Reclaimed:
Materials Used: Unknown
Method of Drilling: Rotary
Proposed well use: Observation
Anticipated Water Requirements/day Gallons
Flowing Well: No
Rate: Gallons
Gas Present: No
Oil Present: No

4. Formation Log

Depth from ground level (feet)	Lithology Description

5. Well Completion

Date Started(yyyy/mm/dd): 1971/03/12
Date Completed(yyyy/mm/dd): 1971/03/12
Well Depth: 65 FT
Borehole Diameter: Inches
Casing Type: Unknown
Liner Type: Unknown
Size OD: Inches
Size OD: Inches
Wall Thickness: Inches
Wall Thickness: Inches
Bottom at: FT
Top: FT Bottom: FT
Perforations
Perforations Size:
from: FT to: FT Inches x Inches
from: FT to: FT Inches x Inches
from: FT to: FT Inches x Inches
Perforated by: Unknown
Seal: Unknown
from: FT to: FT
Seal: Unknown
from: FT to: FT
Seal: Unknown
from: FT to: FT
Screen Type: Unknown
Screen ID: Inches
from: FT to: FT
Slot Size: Inches
Screen Type: Unknown
Screen ID: Inches
from: FT to: FT
Slot Size: Inches
Screen Installation Method: Unknown
Fittings
Top: Unknown
Bottom: Unknown
Pack: Unknown
Grain Size:
Amount: Unknown
Geophysical Log Taken:
Retained on File:
Additional Test and/or Pump Data
Chemistries taken By Driller: No
Held:
Documents Held:
Pitless Adapter Type:
Drop Pipe Type:
Length:
Diameter:
Comments:

6. Well Yield

Test Date(yyyy/mm/dd): Start Time:
Test Method:
Non pumping static level: FT
Rate of water removal: Gallons/Min
Depth of pump intake: FT
Water level at end of pumping: FT
Distance from top of casing to ground level: Inches

Depth To water level (feet)	Elapsed Time Minutes:Sec	Drawdown	Recover

Total Drawdown: FT
If water removal was less than 2 hr duration, reason why:
Recommended pumping rate: Gallons/Min
Recommended pump intake: FT
Type pump Installed
Pump type:
Pump model:
H.P.:
Any further pumptest information?

7. Contractor Certification

Driller's Name: UNKNOWN DRILLER10
Certification No.: 10
This well was constructed in accordance with the Water Well regulation of the Alberta Environmental Protection & Enhancement Act. All information in this report is true.
Signature
Yr Mo Day

Water Well Drilling Report

Alberta Environment

The data contained in this report is supplied by the Driller. The province disclaims responsibility for its accuracy.

Well I.D.: 0194195
Map Verified: Field
Date Report Received: 1981/05/27
Measurements: Imperial

1. Contractor & Well Owner Information

Company Name: ALBERTA ENVIRONMENT/EARTH SCIENCES DIVISION
Drilling Company Approval No.: 99998
Mailing Address: 9820-106 ST, OXBRIDGE PLACE
City or Town: EDMONTON AB CA
Postal Code: T5K 2J6
WellOwner's Name: ALTA ENV #1998E
Well Location Identifier:
P.O. Box Number:
Mailing Address:
Postal Code:
City:
Province:
Country:

2. Well Location

1/4 or LSD	Sec	Twp	Rge	West M
SW	15	012	23	

Location in Quarter
0 FT from Bounda
0 FT from Bounda
Lot Block Plan
Well Elev: 3175 FT
How Obtain: Estimated

3. Drilling Information

Type of Work: Test Hole
Reclaimed Well
Date Reclaimed:
Materials Used:
Method of Drilling: Rotary
Flowing Well: No
Gas Present: No
Rate: Gallons
Oil Present: No
Proposed well use: Unknown
Anticipated Water Requirements/day 0 Gallons

4. Formation Log

Depth from ground level (feet)	Lithology Description
10	Silt
25	Shale
71	Silty Shale
72	Sandstone
84	Shale
89	Sandstone
98	Shale
100	Sandstone
104	Shale
107	Sandstone
110	Shale
112	Sandstone
115	Shale
120	Sandstone
135	Shale
137	Sandstone
138	Shale
140	Sandstone
141	Shale
148	Sandstone
190	Shale
196	Sandstone
198	Shale
200	Sandstone

5. Well Completion

Date Started(yyyy/mm/dd): 1980/11/09
Date Completed(yyyy/mm/dd): 1980/11/20
Well Depth: 200 FT
Borehole Diameter: 0 Inches
Casing Type:
Liner Type:
Size OD: 0 Inches
Size OD: 0 Inches
Wall Thickness: 0 Inches
Wall Thickness: 0 Inches
Bottom at: 0 FT
Top: 0 FT Bottom: 0 FT
Perforations
Perforations Size:
from: 0 FT to: 0 FT — 0 Inches x 0 Inches
from: 0 FT to: 0 FT — 0 Inches x 0 Inches
from: 0 FT to: 0 FT — 0 Inches x 0 Inches
Perforated by:
Seal: from: 0 FT to: 0 FT
Seal: from: 0 FT to: 0 FT
Seal: from: 0 FT to: 0 FT
Screen Type: from: 0 FT to: 0 FT
Screen ID: 0 Inches
Slot Size: 0 Inches
Screen Type: from: 0 FT to: 0 FT
Screen ID: 0 Inches
Slot Size: 0 Inches
Screen Installation Method:
Fittings
Top:
Bottom:
Pack:
Grain Size:
Amount:
Geophysical Log Taken:
Retained on Files:
Additional Test and/or Pump Data
Chemistries taken By Driller: No
Held: 0
Documents Held: 4
Pitless Adapter Type:
Drop Pipe Type:
Length:
Diameter:
Comments:
OWNER STATES WELL CORED.

6. Well Yield

Test Date(yyyy/mm/dd):Start Time
Test Method:
Non pumping static level: FT
Rate of water removal: Gallons/Min
Depth of pump intake: FT
Water level at end of pumping: FT
Distance from top of casing to ground level: Inches
Depth To water level (feet)
Elapsed Time
Drawdown Minutes:Sec Recov
Total Drawdown: FT
If water removal was less than 2 hr duration, reason why:
Recommended pumping rate: Gallons/Min
Recommended pump intake: FT
Type pump installed
Pump type:
Pump model:
H.P.:
Any further pumptest information?

7. Contractor Certification

Driller's Name: UNKNOWN DRILLER
Certification No.:
This well was constructed in accordance with the Water Well regulation of the Alberta Environmental Protection & Enhancement Act. All information in this report is true.
Signature Yr Mo Day

Report

Water Well Drilling Report

Alberta Environment

The data contained in this report is supplied by the Driller. The province disclaims responsibility for its accuracy.

Well I.D.: 0194421
Map Verified: Field
Date Report Received: 1988/02/17
Measurements: Imperial

1. Contractor & Well Owner Information

Company Name: UNKNOWN DRILLER
Drilling Company Approval No.: 99999
Mailing Address: UNKNOWN
City or Town: UNKNOWN AB CA
Postal Code:
WellOwner's Name: ARC# TH 28-76
Well Location Identifier:
P.O. Box Number:
Mailing Address:
Postal Code:
City:
Province:
Country:

2. Well Location

1/4 or LSD	Sec	Twp	Rge	West M
14	16	012	23	4

Location in Quarter
0 FT from Bounda
0 FT from Bounda
Lot Block Plan

Well Elev: 3153 FT
How Obtain: Survey-Tra

3. Drilling Information

Type of Work: Coal Test Hole
Reclaimed Well
Date Reclaimed:
Materials Used:
Method of Drilling: Unknown
Flowing Well: No
Gas Present: No
Rate: Gallons
Oil Present: No
Proposed well use: Other
Anticipated Water Requirements/day 0 Gallons

6. Well Yield

Test Date(yyyy/mm/dd): Start Time:
Test Method:
Non pumping static level: FT
Rate of water removal: Gallons/Min
Depth of pump intake: FT
Water level at end of pumping: FT
Distance from top of casing to ground level: Inches

Depth To water level (feet)
Elapsed Time
Drawdown Minutes:Sec Recover

Total Drawdown: FT
If water removal was less than 2 hr duration, reason why:

Recommended pumping rate: Gallons/Min
Recommended pump intake: FT
Type pump installed
Pump type:
Pump model:
H.P.:
Any further pumptest information?

4. Formation Log

Depth from ground level (feet)	Lithology Description
5	Brown Till
15	Brownish Yellow Till
20	Brown Medium Grained Sandstone
24	Till
25	Brownish Yellow Shale
30	Light Gray Shale
35	Greenish Gray Shale
40	Light Gray Fine Grained Sandstone
75	Gray Fine Grained Shale & Sandstone
80	Gray Silty Shale & Sandstone
85	Gray Fine Grained Shale & Sandstone
90	Greenish Gray Fine Grained Shale & Sandstone
95	Greenish Gray Shale
100	Greenish Gray Fine Grained Shale & Sandstone
110	Greenish Gray Fine Grained Shale & Sandstone
120	Greenish Gray Bentonitic Shale & Sandstone
130	Greenish Gray Silty Shale & Sandstone
135	Brownish Gray Bentonitic Shale & Sandstone
145	Greenish Gray Shale & Sandstone
160	Brownish Gray Bentonitic Shale & Sandstone
165	Greenish Gray Bentonitic Shale & Sandstone
175	Brownish Green Bentonitic Shale & Sandstone
180	Brownish Gray Fine Grained Shale & Sandstone
185	Gray Fine Grained Shale & Sandstone
190	Brownish Gray Shale & Sandstone
195	Brownish Gray Bentonitic Shale & Sandstone
200	Brownish Gray Shale
205	Brown Shale & Coal
210	Brownish Gray Bentonitic Shale
215	Brownish Gray Bentonitic Shale & Sandstone
220	Dark Gray Bentonitic Shale
225	Gray Bentonitic Shale & Sandstone
235	Brownish Gray Fine Grained Shale & Sandstone
240	Dark Brown Carbonaceous Shale
245	Brown Shale
250	Brownish Gray Bentonitic Shale & Sandstone
260	Brownish Gray Shale

5. Well Completion

Date Started(yyyy/mm/dd):
Date Completed(yyyy/mm/dd): 1976/06/13
Well Depth: 674 FT
Borehole Diameter: 0 Inches
Casing Type:
Liner Type:
Size OD: 0 Inches
Size OD: 0 Inches
Wall Thickness: 0 Inches
Wall Thickness: 0 Inches
Bottom at: 0 FT
Top: 0 FT Bottom: 0 FT
Perforations
Perforations Size:
from: 0 FT to: 0 FT — 0 Inches x 0 Inches
from: 0 FT to: 0 FT — 0 Inches x 0 Inches
from: 0 FT to: 0 FT — 0 Inches x 0 Inches
Perforated by:
Seal:
from: 0 FT to: 0 FT
Seal:
from: 0 FT to: 0 FT
Seal:
from: 0 FT to: 0 FT
Screen Type:
from: 0 FT to: 0 FT
Screen ID: 0 Inches
Slot Size: 0 Inches
Screen Type:
from: 0 FT to: 0 FT
Screen ID: 0 Inches
Slot Size: 0 Inches
Screen Installation Method:
Fittings
Top:
Bottom:
Pack:
Grain Size:
Amount:
Geophysical Log Taken: ELECTRIC and GAMMA
Retained on Files: ELECTRIC yes and GAMMA yes
Additional Test and/or Pump Data
Chemistries taken By Driller: No
Held: 0
Documents Held: 6
Pitless Adapter Type:
Drop Pipe Type:
Length:
Diameter:
Comments:
345'-365' SHALE, SILT & FOSSILS

7. Contractor Certification

Driller's Name: UNKNOWN DRILLER
Certification No.:
This well was constructed in accordance with the Water Well regulation of the Alberta Environmental Protection & Enhancement Act. All information in this report is true.
Signature
Yr Mo Day

270	Brownish Gray Bentonitic Shale
275	Brownish Gray Bentonitic Shale & Sandstone
285	Gray Shale

Report

Water Well Drilling Report

Alberta Environment

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Well I.D.: 0194196
Map Verified: Not Verified
Date Report Received: 1969/12/10
Measurements: Imperial

1. Contractor & Well Owner Information

Company Name: HENNING DRILLING LTD.
Drilling Company Approval No.:
Mailing Address:
City or Town:
Postal Code:
WellOwner's Name: BARONS OIL
Well Location Identifier:
P.O. Box Number:
Mailing Address: BARONS
Postal Code:
City:
Province:
Country:

2. Well Location

1/4 or LSD	Sec	Twp	Rge	West M
14	15	012	23	4

Location in Quarter
0 FT from Bounda
0 FT from Bounda
Lot Block Plan
Well Elev: FT
How Obtain: Not Obtain

3. Drilling Information

Type of Work: New Well
Reclaimed Well
Date Reclaimed:
Materials Used:
Method of Drilling: Rotary
Flowing Well: No
Gas Present: No
Rate: Gallons
Oil Present: No
Proposed well use: Injection
Anticipated Water Requirements/day 0 Gallons

6. Well Yield

Test Date(yyyy/mm/dd):Start Time:
Test Method:
Non pumping static level: FT
Rate of water removal: Gallons/Min
Depth of pump intake: FT
Water level at end of pumping: FT
Distance from top of casing to ground level: Inches

Depth To water level (feet) Elapsed Time

Drawdown	Minutes:Sec	Recover

Total Drawdown: FT
If water removal was less than 2 hr duration, reason why:

Recommended pumping rate: Gallons/Min
Recommended pump intake: FT
Type pump installed
Pump type:
Pump model:
H.P.:
Any further pumptest information?

4. Formation Log

Depth from ground level (feet)	Lithology Description
4	Brown Clay
20	Shale
48	Dark Shale
49	Sandstone
381	Sandstone
391	Hard Unknown
532	Hard Unknown
542	Hard Unknown
556	Shale

5. Well Completion

Date Started(yyyy/mm/dd):
Date Completed(yyyy/mm/dd): 1967/02/01
Well Depth: 556 FT
Borehole Diameter: 0 Inches
Casing Type:
Liner Type: Unknown
Size OD: 0 Inches
Size OD: 0 Inches
Wall Thickness: 0 Inches
Wall Thickness: 0 Inches
Bottom at: 0 FT
Top: 0 FT Bottom: 547 FT
Perforations
from: 316 FT to: 354 FT
from: 370 FT to: 407 FT
from: 510 FT to: 547 FT
Perforations Size:
0 Inches x 0 Inches
0 Inches x 0 Inches
0 Inches x 0 Inches
Perforated by:
Seal:
from: 0 FT to: 0 FT
Seal:
from: 0 FT to: 0 FT
Seal:
from: 0 FT to: 0 FT
Screen Type:
from: 0 FT to: 0 FT
Screen ID: 0 Inches
Slot Size: 0 Inches
Screen Type:
from: 0 FT to: 0 FT
Screen ID: 0 Inches
Slot Size: 0 Inches
Screen Installation Method:
Fittings
Top:
Bottom:
Pack:
Grain Size:
Amount:
Geophysical Log Taken: ELECTRIC
Retained on Files: ELECTRIC yes
Additional Test and/or Pump Data
Chemistries taken By Driller: No
Held: 0
Documents Held: 7
Pitless Adapter Type:
Drop Pipe Type:
Length:
Diameter:
Comments:
OWNER STATES INJECTION TEST INCLUDED IN FILE.

7. Contractor Certification

Driller's Name: UNKNOWN DRILLER
Certification No.:
This well was constructed in accordance with the Water Well regulation of the Alberta Environmental Protection & Enhancement Act. All information in this report is true.
Signature
Yr Mo Day

APPENDIX B

APPENDIX B BOREHOLE LOGS

TERMS USED ON BOREHOLE LOGS

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE GRAINED SOILS (major portion retained on 0.075mm sieve): includes (1) clean gravels and sands, and (2) silty or clayey gravels and sands. Condition is rated according to relative density, as inferred from laboratory or in situ tests.

DESCRIPTIVE TERM	RELATIVE DENSITY	N (blows per 0.3m)
Very Loose	0 to 20%	0 to 4
Loose	20 to 40%	4 to 10
Compact	40 to 75%	10 to 30
Dense	75 to 90%	30 to 50
Very Dense	90 to 100%	greater than 50

The number of blows, N, on a 51mm O.D. split spoon sampler of a 63.5kg weight falling 0.76m, required to drive the sampler a distance of 0.3m from 0.15m to 0.45m.

FINE GRAINED SOILS (major portion passing 0.075mm sieve): includes (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength, as estimated from laboratory or in situ tests.

DESCRIPTIVE TERM	UNCONFINED COMPRESSIVE STRENGTH (kPa)
Very Soft	Less Than 25
Soft	25 to 50
Firm	50 to 100
Stiff	100 to 200
Very Stiff	200 to 400
Hard	Greater Than 400

NOTE: Slickensided and fissured clays may have lower unconfined compressive strengths than shown above, because of planes of weakness or cracks in the soil.

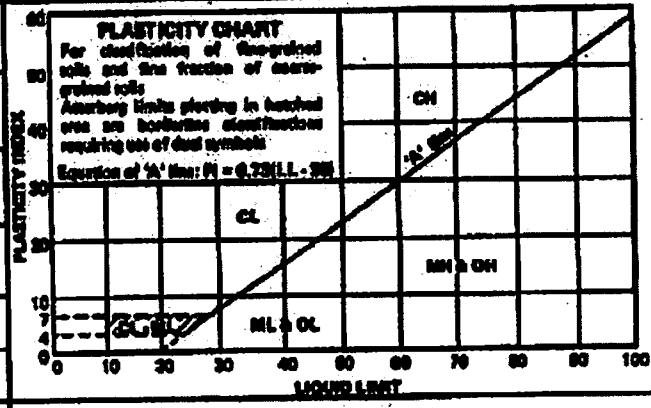
GENERAL DESCRIPTIVE TERMS

Slickensided	- having inclined planes of weakness that are slick and glossy in appearance.
Fissured	- containing shrinkage cracks, frequently filled with fine sand or silt; usually more or less vertical.
Laminated	- composed of thin layers of varying colour and texture.
Interbedded	- composed of alternate layers of different soil types.
Calcareous	- containing appreciable quantities of calcium carbonate.
Well Graded	- having wide range in grain sizes and substantial amounts of intermediate particle sizes.
Poorly graded	- predominantly of one grain size, or having a range of sizes with some intermediate size missing.

eba

UNIFIED SOIL CLASSIFICATION†

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES	CLASSIFICATION CRITERIA
COARSE-GRAINED SOILS (more than 50% retained on No. 200 sieve*)	GRAVELS (50% or more of coarse fraction retained on No. 4 sieve)	CLEAN GRAVELS	GW	Well-graded gravels and gravel-sand mixtures, little or no fines	$C_u = D_{60}/D_{10}$ Greater than 4 $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3
			GP	Poorly-graded gravels and gravel-sand mixtures, little or no fines	Not meeting both criteria for GW
		GRAVELS WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures	Atterberg limits plot below 'A' line or plasticity index less than 4 — Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
			GC	Clayey gravels, gravel-sand-clay mixtures	Atterberg limits plot above 'A' line and plasticity index greater than 7
	SANDS (More than 50% of coarse fraction passes No. 4 sieve)	CLEAN SANDS	SW	Well-graded sands and gravelly sands, little or no fines	$C_u = D_{60}/D_{10}$ Greater than 6 $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3
			SP	Poorly-graded sands and gravelly sands, little or no fines	Not meeting both criteria for SW
		SANDS WITH FINES	SM	Silty sands, sand-silt mixtures	Atterberg limits plot below 'A' line or plasticity index less than 4 — Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
			SC	Clayey sands, sand-clay mixtures	Atterberg limits plot above 'A' line and plasticity index greater than 7
FINE-GRAINED SOILS (50% or more passes No. 200 sieve*)	SILTS AND CLAYS (Liquid limit 50% or less)		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands	Classification on basis of percentage of fines (fraction passing No. 200 sieve): Less than 5% — GW, GP, SW, SP; More than 12% — GM, GC, SM, SC; 5% to 12% — Borderline cases requiring use of dual symbols
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
			OL	Organic silts and organic silty clays of low plasticity	
	SILTS AND CLAYS (Liquid limit greater than 50%)		MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts	
			CH	Inorganic clays of high plasticity, fat clays	
			OH	Organic clays of medium to high plasticity	
HIGHLY ORGANIC SOILS			PT	Peat, muck and other highly organic soils	



*Based on the material passing the 3 in. (76 mm) sieve
†ASTM Designation D 2487, for identification procedure see D 2488

GROUND ICE DESCRIPTION

ICE NOT VISIBLE

GROUP SYMBOLS	SYMBOLS	SUBGROUP DESCRIPTION
N	Nf	Poorly-bonded or friable
	Nbn	No excess ice, well-bonded
	Nbe	Excess ice, well-bonded

VISIBLE ICE LESS THAN 50% BY VOLUME

GROUP SYMBOLS	SYMBOLS	SUBGROUP DESCRIPTION
V	Vx	Individual ice crystals or inclusions
	Vc	Ice coatings on particles
	Vr	Random or irregularly oriented ice formations
	Vs	Stratified or distinctly oriented ice formations

VISIBLE ICE GREATER THAN 50% BY VOLUME

ICE	ICE + Soil Type	Ice with soil inclusions
	ICE	Ice without soil inclusions (greater than 25 mm (1 in.) thick)

NOTE:
1. *Dual symbols are used to indicate borderline or mixed ice classifications*
2. *Visual estimates of ice contents indicated on borehole logs ± 5%*
3. *This system of ground ice description has been modified from NRC Technical Memo 79, Guide to the Field Description of Permafrost for Engineering Purposes*

LEGEND
Soil ■ Ice ■

PROJECT: PHASE II DRILLING	CLIENT: VILLAGE OF BARONS	PROJECT NO. - BOREHOLE NO.
ADDRESS: 124 MAIN STREET	DRILL METHOD: 150mm SOLID STEM AUGER	L22101183.001 - 08MW01
CITY: BARONS, AB	PROJECT ENGINEER: DERYCK MASTERMAN	ELEVATION: 98.64m

SAMPLE TYPE: DISTURBED | NO RECOVERY | SPT | A-CASING | SHELBY TUBE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	HYDROCARBONS (ppm) 200 400 600 800	NOTES & COMMENTS	Monitoring well	Elevation (m)
0	TOPSOIL - clay, silty, sandy, damp, dark brown, roots, organics						
	CLAY - silty, sandy, damp, stiff, low to medium plastic, brown, trace roots						
	... trace to some sand, medium to high plastic, dark brown		B1				98.0
1	... moist, dark grey brown						
			B2				97.0
	... brown with dark brown mottling, high plastic clay inclusions						
2			B3				
	3/26/2009		B4				96.0
3							
	... damp		B5				
	... moist		B6				95.0
4							
	... sandy, very moist to wet, soft to firm, low to medium plastic, sandstone fragments		B7				
	BEDROCK - claystone, silty, damp, low to moderate, strength, weathered, grey, sandstone inclusions						94.0
5			B8				
			B9				93.0
6							
	End of Borehole @ 6.1m		B10				
	No Seepage or Sloughing on Completion 50mm PVC Standpipe Installed to 6.1m, Bottom 4.5m screened						92.0
7							
							91.0
8							
							90.0
9							
							89.0
10							

EBA Engineering Consultants Ltd.

LOGGED BY: JL	COMPLETION DEPTH: 6.1m
REVIEWED BY: DM	COMPLETE: 11/8/2008
DRAWING NO: B1	Page 1 of 1

PROJECT: PHASE II DRILLING	CLIENT: VILLAGE OF BARONS	PROJECT NO. - BOREHOLE NO.
ADDRESS: 124 MAIN STREET	DRILL METHOD: 150mm SOLID STEM AUGER	L22101183.001 - 08BH02
CITY: BARONS, AB	PROJECT ENGINEER: DERYCK MASTERMAN	

SAMPLE TYPE: DISTURBED | NO RECOVERY | SPT | A-CASING | SHELBY TUBE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	HYDROCARBONS (ppm) 200 400 600 800	NOTES & COMMENTS	Depth (ft)
0	TOPSOIL - clay, silty, sandy, damp, dark brown, roots, organics					0
	CLAY - silty, sandy, damp, stiff, low to medium plastic, brown, trace roots		B1			
1	... dark brown mottling, high plastic clay inclusions		B2			5
	... trace sand, damp to moist, high plastic		B3			
2			B4			
3			B5			10
	... sandy, moist, low to medium plastic, sandstone fragments		B6			
4			B7			15
	BEDROCK - claystone, silty, damp, low to moderate, strength, weathered, grey brown					
5			B8			
			B9			20
6			B10			
	End of Borehole @ 6.1m					
	No Seepage or Sloughing on Completion Backfilled with Cuttings & Bentonite					25
7						
8						30
9						
10						33

EBA Engineering Consultants Ltd.

LOGGED BY: JL	COMPLETION DEPTH: 6.1m
REVIEWED BY: DM	COMPLETE: 11/8/2008
DRAWING NO: B2	Page 1 of 1

PROJECT: PHASE II DRILLING	CLIENT: VILLAGE OF BARONS	PROJECT NO. - BOREHOLE NO.
ADDRESS: 124 MAIN STREET	DRILL METHOD: 150mm SOLID STEM AUGER	L22101183.001 - 08MW03
CITY: BARONS, AB	PROJECT ENGINEER: DERYCK MASTERMAN	ELEVATION: 98.71m

SAMPLE TYPE: DISTURBED | NO RECOVERY | SPT | A-CASING | SHELBY TUBE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	HYDROCARBONS (ppm) 200 400 600 800	NOTES & COMMENTS	Monitoring well	Elevation (m)
0	TOPSOIL - clay, silty, sandy, damp, dark brown, roots, organics						
	CLAY - silty, trace to some sand, damp, stiff, medium plastic, grey brown						
			B1	■			98.0
1							
	... brown with dark brown mottling, high plastic clay inclusions		B2	■			
	... moist						97.0
2			B3	■			
	3/26/2008						
	... damp to moist		B4	■			
3							96.0
	... very moist to wet, soft to firm		B5	■			
	... sandy, very moist to wet, soft to firm, low to medium plastic, sandstone fragments						
			B6	■			95.0
4	BEDROCK - claystone, silty, damp, low to moderate, strength, weathered, yellow brown						
	... grey brown		B7	■			
							94.0
5			B8	■			
			B9	■			93.0
6							
			B10	■			
	End of Borehole @ 6.1m						
	No Seepage or Sloughing on Completion 50mm PVC Standpipe Installed to 6.1m, Bottom 4.5m screened						92.0
7							
							91.0
8							
							90.0
9							
							89.0
10							

EBA Engineering Consultants Ltd.

LOGGED BY: JL	COMPLETION DEPTH: 6.1m
REVIEWED BY: DM	COMPLETE: 11/8/2008
DRAWING NO: B3	Page 1 of 1

PROJECT: PHASE II DRILLING	CLIENT: VILLAGE OF BARONS	PROJECT NO. - BOREHOLE NO.
ADDRESS: 124 MAIN STREET	DRILL METHOD: 160mm SOLID STEM AUGER	L22101183.001 - 08BH04
CITY: BARONS, AB	PROJECT ENGINEER: DERYCK MASTERMAN	

SAMPLE TYPE: DISTURBED | NO RECOVERY | SPT | A-CASING | SHELBY TUBE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	HYDROCARBONS (ppm) 200 400 600 800	NOTES & COMMENTS	Depth (ft)
0	TOPSOIL - clay, silty, sandy, damp, dark brown, roots, organics					0
	CLAY - silty, trace to some sand, moist, stiff, medium plastic, grey brown					
			B1			
1	... damp to moist, dark brown mottling, high plastic clay inclusions					
			B2			5
2	...moist		B3			
			B4			
3	... sandy, moist, low to medium plastic, sandstone fragments		B5			10
			B6			
4	BEDROCK - claystone, silty, damp, low to moderate, strength, weathered, grey brown					
			B7			15
5			B8			
			B9			
	... grey					
6			B10			20
	End of Borehole @ 6.1m					
	No Seepage or Sloughing on Completion					
	Backfilled with Cuttings & Bentonite					
7						25
8						
9						30
10						33

EBA Engineering Consultants Ltd.

LOGGED BY: JL	COMPLETION DEPTH: 6.1m
REVIEWED BY: DM	COMPLETE: 11/8/2008
DRAWING NO: B4	Page 1 of 1

PROJECT: PHASE II DRILLING	CLIENT: VILLAGE OF BARONS	PROJECT NO. - BOREHOLE NO.
ADDRESS: 124 MAIN STREET	DRILL METHOD: 150mm SOLID STEM AUGER	L22101183.001 - 08BH05
CITY: BARONS, AB	PROJECT ENGINEER: DERYCK MASTERMAN	

SAMPLE TYPE: DISTURBED | NO RECOVERY | SPT | A-CASING | SHELBY TUBE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	HYDROCARBONS (ppm) 200 400 600 800	NOTES & COMMENTS	Depth (ft)
0	TOPSOIL - clay, silty, sandy, damp, dark brown, roots, organics					0
	CLAY - silty, trace to some sand, damp, stiff, medium plastic, grey brown					
			B1	■		
1	... damp to moist, dark brown mottling, high plastic clay inclusions		B2	■		5
	...moist					
2			B3	■		
			B4	■		
3	... very moist to wet, firm		B5	■		10
			B6	■		
4	... sandy, moist, low to medium plastic, sandstone fragments					
			B7	■		15
	BEDROCK - claystone, silty, damp, low to moderate, strength, weathered, grey brown					
5			B8	■		
			B9	■		20
	... grey					
6			B10	■		
	End of Borehole @ 6.1m					
	No Seepage or Sloughing on Completion					25
	Backfilled with Cuttings & Bentonite					
7						
8						30
9						
10						33

EBA Engineering Consultants Ltd.

LOGGED BY: JL	COMPLETION DEPTH: 6.1m
REVIEWED BY: DM	COMPLETE: 11/8/2008
DRAWING NO: B5	Page 1 of 1

PROJECT: PHASE II DRILLING	CLIENT: VILLAGE OF BARONS	PROJECT NO. - BOREHOLE NO.
ADDRESS: 124 MAIN STREET	DRILL METHOD: 150mm SOLID STEM AUGER	L22101183.001 - 08MW06
CITY: BARONS, AB	PROJECT ENGINEER: DERYCK MASTERMAN	ELEVATION: 98.63m

SAMPLE TYPE: DISTURBED | NO RECOVERY | SPT | A-CASING | SHELBY TUBE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	HYDROCARBONS (ppm) 200 400 600 800	NOTES & COMMENTS	Monitoring well	Elevation (m)
0	ASPHALT Concrete (100mm)						
	CLAY (FILL) - silty, sandy, trace gravel to 30mm, moist, firm to stiff, low to medium plastic, yellow brown						
	CLAY - silty, trace to some sand, damp, stiff, medium plastic, dark brown		B1				98.0
1	... dark grey to black staining, strong hydrocarbon odor						
	... moist		B2				97.0
	... brown with dark brown mottling, high plastic clay inclusions						
2	... grey mottling		B3	2500			
	3/28/2008		B4	1250			96.0
3			B5				
	... brown, no staining, trace odor						
	... sandy, very moist to wet, soft to firm, low to medium plastic, sandstone fragments		B6				95.0
4	BEDROCK - claystone, silty, damp, low to moderate, strength, weathered, yellow brown, trace odor		B7				
	... light grey		B8				94.0
5							
							93.0
6	End of Borehole @ 6.1m						
	No Seepage or Sloughing on Completion 50mm PVC Standpipe Installed to 6.1m, Bottom 4.5m screened						92.0
7							
							91.0
8							
							90.0
9							
							89.0
10							

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LOGGED BY: JL	COMPLETION DEPTH: 6.1m
REVIEWED BY: DM	COMPLETE: 11/8/2008
DRAWING NO: B6	Page 1 of 1

PROJECT: PHASE II DRILLING	CLIENT: VILLAGE OF BARONS	PROJECT NO. - BOREHOLE NO.
ADDRESS: 124 MAIN STREET	DRILL METHOD: 150mm SOLID STEM AUGER	L22101183.001 - 08MW07
CITY: BARONS, AB	PROJECT ENGINEER: DERYCK MASTERMAN	ELEVATION: 98.47m

SAMPLE TYPE: DISTURBED | NO RECOVERY | SPT | A-CASING | SHELBY TUBE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	HYDROCARBONS (ppm) 200 400 600 800	NOTES & COMMENTS	Monitoring well	Elevation (m)
0	ASPHALT Concrete (100mm)						
	CLAY (FILL) - silty, sandy, trace gravel to 30mm, moist, firm to stiff, low to medium plastic, yellow brown						
1	CLAY - silty, trace to some sand, damp, stiff, medium plastic, dark grey brown		B1				98.0
			B2				97.0
	... brown with dark brown mottling, high plastic clay inclusions						
2	... grey mottling		B3				
	3/26/2009		B4				96.0
3			B5				
	... sandy, very moist to wet, soft to firm, low to medium plastic, sandstone fragments						95.0
			B6				
4	BEDROCK - claystone, silty, damp, low to moderate, strength, weathered, yellow brown, trace odor						
			B7				94.0
	... light grey						
5			B8				
			B9				93.0
6	... yellow brown		B10				
	End of Borehole @ 6.1m						
	No Seepage or Sloughing on Completion 50mm PVC Standpipe Installed to 6.1m, Bottom 4.5m screened						92.0
7							
							91.0
8							
							90.0
9							
							89.0
10							

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LOGGED BY: JL	COMPLETION DEPTH: 6.1m
REVIEWED BY: DM	COMPLETE: 11/8/2008
DRAWING NO: B7	Page 1 of 1

PROJECT: PHASE II DRILLING	CLIENT: VILLAGE OF BARONS	PROJECT NO. - BOREHOLE NO.
ADDRESS: 124 MAIN STREET	DRILL METHOD: 150mm CORE	L22101183.001 - 08MW08
CITY: BARONS, AB	PROJECT ENGINEER: DERYCK MASTERMAN	ELEVATION: 98.64m

SAMPLE TYPE: DISTURBED | NO RECOVERY | SPT | A-CASING | SHELBY TUBE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	HYDROCARBONS (ppm) 200 400 600 800	NOTES & COMMENTS	Monitoring well	Elevation (m)
0	CLAY (FILL) - silty, some sand, trace gravel, damp, stiff, medium plastic, dark brown						98.0
1	CLAY - silty, trace to some sand, damp, stiff, medium plastic, grey brown		B1				97.0
2	... brown with dark brown mottling, high plastic clay inclusions		B2				96.0
3	3/28/2008		B3				95.0
4	... sandy, very moist to wet, soft to firm, low to medium plastic, sandstone fragments		B4				94.0
5	BEDROCK - claystone, silty, damp, low to moderate, strength, weathered, grey		C1				93.0
6							92.0
7	... yellow brown						91.0
8	... light grey		C2				90.0
9							89.0
10	... yellow brown						88.0
11	... dark brown shells and coal specks		C3				87.0
12							86.0
13							85.0
14	End of Borehole @ 13.7m No Seepage or Sloughing on Completion 50mm PVC Standpipe Installed to 12.7m, Bottom 4.5m screened						84.0
15							83.0
16							

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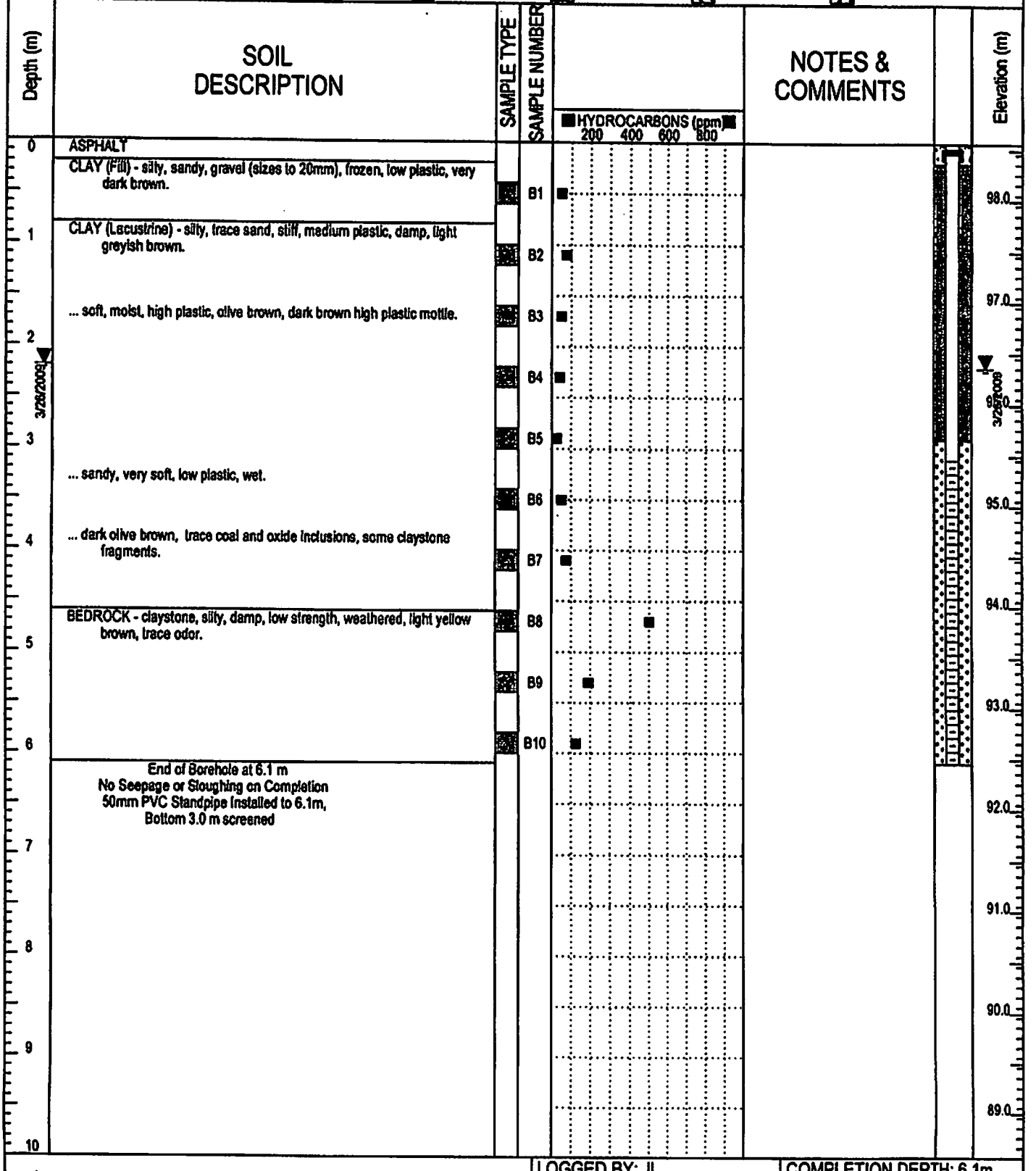
LOGGED BY: JL	COMPLETION DEPTH: 13.7m
REVIEWED BY: DM	COMPLETE: 11/8/2008
DRAWING NO: B8	Page 1 of 1

PROJECT: PHASE II DRILLING	CLIENT: VILLAGE OF BARONS	PROJECT NO. - BOREHOLE NO.
ADDRESS: 124 MAIN STREET	DRILL METHOD: 150mm SOLID STEM AUGER	L22101183.001 - 09MW09
CITY: BARONS, AB	PROJECT ENGINEER: DERYCK MASTERMAN	ELEVATION: 98.56m

SAMPLE TYPE: DISTURBED | NO RECOVERY | SPT | A-CASING | SHELBY TUBE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND



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LOGGED BY: JL	COMPLETION DEPTH: 6.1m
REVIEWED BY: DM	COMPLETE: 3/11/2009
DRAWING NO: B9	Page 1 of 1

PROJECT: PHASE II DRILLING	CLIENT: VILLAGE OF BARONS	PROJECT NO. - BOREHOLE NO.
ADDRESS: 124 MAIN STREET	DRILL METHOD: 150mm SOLID STEM AUGER	L22101183.001 - 09BH10
CITY: BARONS, AB	PROJECT ENGINEER: DERYCK MASTERMAN	

SAMPLE TYPE: DISTURBED | NO RECOVERY | SPT | A-CASING | SHELBY TUBE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	HYDROCARBONS (ppm) 200 400 600 800	NOTES & COMMENTS	Depth (ft)
0	ASPHALT					0
	CLAY (Fill) - silty, sandy, gravel (sizes to 25mm), frozen, low plastic, very dark brown.		B1			
1	CLAY (Lacustrine) - silty, trace sand, stiff, medium plastic, damp, light greyish brown, trace white precipitates.		B2			5
	... soft, moist, high plastic, olive brown, dark brown high plastic mottle.		B3			
2	... grey to black staining and strong odor.		B4			
	... no staining or odor.		B5			10
3	... sandy, very soft, low plastic, wet.		B6			
	... dark olive brown, trace coal and oxide inclusions, some claystone fragements.		B7			
4	BEDROCK - claystone, silty, damp, low strength, weathered, greyish brown, trace odor		B8			15
5	... yellowish brown.		B9			
6			B10			20
	End of Borehole at 6.1 m					
7						25
8						
9						30
10						33

EBA Engineering Consultants Ltd.

LOGGED BY: JL	COMPLETION DEPTH: 6.1m
REVIEWED BY: DM	COMPLETE: 3/11/2009
DRAWING NO: B10	Page 1 of 1

PROJECT: PHASE II DRILLING	CLIENT: VILLAGE OF BARONS	PROJECT NO. - BOREHOLE NO.
ADDRESS: 124 MAIN STREET	DRILL METHOD: 150mm SOLID STEM AUGER	L22101183.001 - 09MW11
CITY: BARONS, AB	PROJECT ENGINEER: DERYCK MASTERMAN	ELEVATION: 98.82m

SAMPLE TYPE: DISTURBED | NO RECOVERY | SPT | A-CASING | SHELBY TUBE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	HYDROCARBONS (ppm) 200 400 600 800	NOTES & COMMENTS	Monitoring well	Elevation (m)
0	RED SHALE						
	CLAY (Fill) - silty, sandy, gravel (sizes to 20mm), frozen, low plastic, very dark brown, trace white precipitates.		B1				
1	CLAY (Lacustrine) - silty, trace sand, firm, medium to high plastic, damp, light olive brown, dark brown high plastic mottle.		B2				98.0
	... soft, moist.		B3				
2			B4				97.0
3	3/25/2009		B5				96.0
	... some gravel (sizes to 30 mm), very soft, wet, low plastic, dark olive brown, trace white precipitates, trace coal and oxide inclusions, some claystone fragments.		B6				3/28/2009
4			B7				95.0
	BEDROCK - claystone, silty, damp, low strength, weathered, light grey, trace odor		B8				94.0
5	... yellowish brown.		B9				
6			B10				93.0
	End of Borehole at 6.1 m No Seepage or Sloughing on Completion 50mm PVC Standpipe installed to 6.1m, Bottom 3.0 m screened						92.0
7							
8							91.0
9							90.0
10							89.0

EBA Engineering Consultants Ltd.

LOGGED BY: JL	COMPLETION DEPTH: 6.1m
REVIEWED BY: DM	COMPLETE: 3/11/2009
DRAWING NO: B11	Page 1 of 1

PROJECT: PHASE II DRILLING	CLIENT: VILLAGE OF BARONS	PROJECT NO. - BOREHOLE NO.
ADDRESS: 124 MAIN STREET	DRILL METHOD: 150mm SOLID STEM AUGER	L22101183.001 - 09BH12
CITY: BARONS, AB	PROJECT ENGINEER: DERYCK MASTERMAN	

SAMPLE TYPE: DISTURBED | NO RECOVERY | SPT | A-CASING | SHELBY TUBE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	HYDROCARBONS (ppm) 200 400 600 800	NOTES & COMMENTS	Depth (ft)
0	ASPHALT					0
	CLAY (Fill) - silty, sandy, gravel (sizes to 25mm), frozen, low plastic, very dark brown, trace white precipitates.		B1			
1	CLAY (Lacustrine) - silty, trace sand, firm, medium plastic, damp, light greyish brown, trace white precipitates.		B2			5
	... soft, moist, high plastic, olive brown, dark brown high plastic mottle.		B3			
2			B4			
3			B5			10
	... sandy, some gravel (sizes to 20 mm), low plastic, dark brown, trace coal and oxide inclusions, some claystone fragements.		B6			
4			B7			
	BEDROCK - claystone, silty, damp, low strength, weathered, grey.		B8			15
5	... yellowish brown.		B9			
6			B10			20
	End of Borehole at 6.1 m					
7						25
8						
9						30
10						33

EBA Engineering Consultants Ltd.

LOGGED BY: JL	COMPLETION DEPTH: 6.1m
REVIEWED BY: DM	COMPLETE: 3/11/2009
DRAWING NO: B12	Page 1 of 1

PROJECT: PHASE II DRILLING	CLIENT: VILLAGE OF BARONS	PROJECT NO. - BOREHOLE NO.
ADDRESS: 124 MAIN STREET	DRILL METHOD: 150mm SOLID STEM AUGER	L22101183.001 - 09MW13
CITY: BARONS, AB	PROJECT ENGINEER: DERYCK MASTERMAN	ELEVATION: 98.77m

SAMPLE TYPE: DISTURBED | NO RECOVERY | SPT | A-CASING | SHELBY TUBE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	HYDROCARBONS (ppm) 200 400 600 800	NOTES & COMMENTS	Monitoring well	Elevation (m)
0	ASPHALT						
	CLAY (Fill) - silty, sandy, gravel (sizes to 20mm), frozen, low plastic, very dark brown, trace white precipitates.		B1				
1	CLAY (Lacustrine) - silty, trace sand, firm, medium plastic, damp, light greyish brown, trace white precipitates.		B2				98.0
	... soft, moist, dark brown high plastic mottle, olive brown.		B3				97.0
2			B4				
3	3/26/2009		B5				96.0
	... some gravel (sizes to 20 mm), soft, moist, low plastic, dark brown, trace white precipitates, trace coal and oxide inclusions, some claystone fragments.		B6				95.0
4			B7				
	BEDROCK - claystone, silty, damp, low strength, weathered, light grey.		B8				94.0
5			B9				
6	... yellowish brown.		B10				93.0
	End of Borehole at 6.1 m No Seepage or Sloughing on Completion 50mm PVC Standpipe Installed to 6.1m, Bottom 3.0 m screened						92.0
7							
8							91.0
9							90.0
10							89.0

EBA Engineering Consultants Ltd.

LOGGED BY: JL	COMPLETION DEPTH: 6.1m
REVIEWED BY: DM	COMPLETE: 3/11/2009
DRAWING NO: B13	Page 1 of 1

PROJECT: PHASE II DRILLING	CLIENT: VILLAGE OF BARONS	PROJECT NO. - BOREHOLE NO.
ADDRESS: 124 MAIN STREET	DRILL METHOD: 150mm SOLID STEM AUGER	L22101183.001 - 09BH14
CITY: BARONS, AB	PROJECT ENGINEER: DERYCK MASTERMAN	

SAMPLE TYPE: DISTURBED | NO RECOVERY | SPT | A-CASING | SHELBY TUBE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	HYDROCARBONS (ppm) 200 400 600 800	NOTES & COMMENTS	Depth (ft)
0	TOPSOIL					0
	CLAY (Fill) - silty, sandy, gravel (sizes to 20mm), frozen, low plastic, very dark brown.		B1			
1	CLAY (Lacustrine) - silty, trace sand, firm, medium to high plastic, damp, greyish brown, trace white precipitates.		B2			5
	... very soft, moist.					
	... dark brown high plastic mottle, olive brown.		B3			
2			B4			
3			B5			10
	... sandy, wet.		B6			
	... some gravel (sizes to 20 mm), very soft, wet, low plastic, greyish brown, trace white precipitates, trace coal and oxide inclusions, some claystone fragments.		B7			
4						15
	BEDROCK - claystone, silty, damp, low strength, weathered, greyish brown.		B8			
5			B9			
	... yellowish brown.		B10			20
6	End of Borehole at 6.1 m					
7						25
8						
9						30
10						33

EBA Engineering Consultants Ltd.

LOGGED BY: JL	COMPLETION DEPTH: 6.1m
REVIEWED BY: DM	COMPLETE: 3/11/2009
DRAWING NO: B14	Page 1 of 1

APPENDIX C

APPENDIX C LABORATORY CERTIFICATES

Your Project #: L22101183.001, AMA SITE 9558
Site: BARONS, AB
Your C.O.C. #: 117000, 117001

Attention: DERYCK MASTERMAN
EBA ENGINEERING CONSULTANTS LTD.
442-10n STREET NORTH
LETHBRIDGE, AB
CANADA T1H 2C7

Report Date: 2008/11/25

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A863942
Received: 2008/11/20, 9:50

Sample Matrix: Soil
Samples Received: 16

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS (MeOH extract)	10	2008/11/20	2008/11/21	CAL SOP-00104	EPA 8260 C
BTEX/F1 by HS GC/MS (MeOH extract)	5	2008/11/20	2008/11/22	CAL SOP-00104	EPA 8260 C
CCME Hydrocarbons (F2-F4 in soil)	15	2008/11/20	2008/11/22	CAL SOP-00086	CCME PHC-CWS
Moisture	16	N/A	2008/11/21	CAL SOP-00023	McKeague MSSMA 2.411
Lead	15	2008/11/21	2008/11/23	CAL SOP-00191	EPA SW-846 6020B
Particle Size by Sieve (75 micron)	3	N/A	2008/11/22	CAL SOP-00025	SSMA 47.4

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

Encryption Key

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

NICOLE CHAN,
Email: Nicole.Chan@MaxxamAnalytics.com
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. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 1

Maxxam Job #: A863942
Report Date: 2008/11/25

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA SITE 9558
Site Reference: BARONS, AB

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		M79796	M79796	M79799	M79800		
Sampling Date		2008/11/18	2008/11/18	2008/11/18	2008/11/18		
COC Number		117000	117000	117000	117000		
	Units	08MW01/1.2M	08MW01/1.2M Lab-Dup	08MW01/4.2M	08MW01/5.4M	RDL	QC Batch
Physical Properties							
Moisture	%	16	16	15	12	0.3	2752810
Sieve - Pan	%	92	N/A	N/A	N/A	0.2	2753046
Sieve - #200 (>0.075mm)	%	7.6	N/A	N/A	N/A	0.2	2753046
Grain Size	%	FINE	N/A	N/A	N/A	0.2	2753046

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		M79801	M79802	M79803	M79804		
Sampling Date		2008/11/18	2008/11/18	2008/11/18	2008/11/18		
COC Number		117000	117000	117000	117000		
	Units	08BH02/1.8M	08BH02/3.6M	08MW03/1.8M	08MW03/3.6M	RDL	QC Batch
Physical Properties							
Moisture	%	24	14	24	11	0.3	2752810

RDL = Reportable Detection Limit

Maxxam ID		M79806	M79807	M79808	M79808		
Sampling Date		2008/11/18	2008/11/18	2008/11/18	2008/11/18		
COC Number		117000	117000	117000	117000		
	Units	08MW03/4.8M	08MW06/0.6M	08MW06/1.8M	08MW06/1.8M Lab-Dup	RDL	QC Batch
Physical Properties							
Moisture	%	13	12	19	21	0.3	2752810
Sieve - Pan	%	87	N/A	N/A	N/A	0.2	2753046
Sieve - #200 (>0.075mm)	%	13	N/A	N/A	N/A	0.2	2753046
Grain Size	%	FINE	N/A	N/A	N/A	0.2	2753046

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: A863942
Report Date: 2008/11/25

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA SITE 9558
Site Reference: BARONS, AB

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		M79809	M79810	M79811	M79813		
Sampling Date		2008/11/18	2008/11/18	2008/11/18	2008/11/18		
COC Number		117000	117000	117001	117001		
	Units	08MW06/3.6M	08MW06/4.5M	08MW07/0.6M	08MW07/2.4M	RDL	QC Batch
Physical Properties							
Moisture	%	17	7.1	12	23	0.3	2752810
Sieve - Pan	%	N/A	N/A	N/A	90	0.2	2753046
Sieve - #200 (>0.075mm)	%	N/A	N/A	N/A	10	0.2	2753046
Grain Size	%	N/A	N/A	N/A	FINE	0.2	2753046

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		M79815	M79816		
Sampling Date		2008/11/18	2008/11/18		
COC Number		117001	117001		
	Units	08MW07/4.2M	08MW07/4.8M	RDL	QC Batch
Physical Properties					
Moisture	%	14	9.5	0.3	2752810

RDL = Reportable Detection Limit

Maxxam Job #: A863942
Report Date: 2008/11/25

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA SITE 9558
Site Reference: BARONS, AB

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		M79796	M79796	M79799	M79800		
Sampling Date		2008/11/18	2008/11/18	2008/11/18	2008/11/18		
COC Number		117000	117000	117000	117000		
	Units	08MW01/1.2M	08MW01/1.2M Lab-Dup	08MW01/4.2M	08MW01/5.4M	RDL	QC Batch
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	<10	10	2753271
F3 (C16-C34 Hydrocarbons)	mg/kg	<10	<10	<10	<10	10	2753271
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	<10	<10	<10	10	2753271
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	2753271
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	98	96	100	100	N/A	2753271

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		M79801	M79802	M79803	M79804		
Sampling Date		2008/11/18	2008/11/18	2008/11/18	2008/11/18		
COC Number		117000	117000	117000	117000		
	Units	08BH02/1.8M	08BH02/3.6M	08MW03/1.8M	08MW03/3.6M	RDL	QC Batch
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	<10	10	2753271
F3 (C16-C34 Hydrocarbons)	mg/kg	<10	<10	<10	<10	10	2753271
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	<10	<10	<10	10	2753271
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	2753271
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	97	97	98	116	N/A	2753271

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: A863942
Report Date: 2008/11/25

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA SITE 9558
Site Reference: BARONS, AB

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		M79806	M79807	M79808	M79809		
Sampling Date		2008/11/18	2008/11/18	2008/11/18	2008/11/18		
COC Number		117000	117000	117000	117000		
	Units	08MW03/4.6M	08MW06/0.6M	08MW06/1.8M	08MW06/3.6M	RDL	QC Batch
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	370	<10	10	2753271
F3 (C16-C34 Hydrocarbons)	mg/kg	<10	<10	<10	<10	10	2753271
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	<10	<10	<10	10	2753271
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	2753271
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	118	118	112	114	N/A	2753271

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		M79810	M79811	M79815	M79816		
Sampling Date		2008/11/18	2008/11/18	2008/11/18	2008/11/18		
COC Number		117000	117001	117001	117001		
	Units	08MW06/4.5M	08MW07/0.6M	08MW07/4.2M	08MW07/4.8M	RDL	QC Batch
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	<10	10	2753271
F3 (C16-C34 Hydrocarbons)	mg/kg	<10	<10	<10	<10	10	2753271
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	<10	<10	<10	10	2753271
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	2753271
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	110	115	115	116	N/A	2753271

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: A863942
Report Date: 2008/11/25

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA SITE 9558
Site Reference: BARONS, AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		M79796	M79796	M79799	M79800	M79801		
Sampling Date		2008/11/18	2008/11/18	2008/11/18	2008/11/18	2008/11/18		
COC Number		117000	117000	117000	117000	117000		
	Units	08MW01/1.2M	08MW01/1.2M Lab-Dup	08MW01/4.2M	08MW01/5.4M	08BH02/1.8M	RDL	QC Batch
Elements								
Total Lead (Pb)	mg/kg	7	7	8	17	11	1	2755669
RDL = Reportable Detection Limit								

Maxxam ID		M79802	M79803	M79804	M79806	M79807		
Sampling Date		2008/11/18	2008/11/18	2008/11/18	2008/11/18	2008/11/18		
COC Number		117000	117000	117000	117000	117000		
	Units	08BH02/3.6M	08MW03/1.8M	08MW03/3.6M	08MW03/4.8M	08MW06/0.6M	RDL	QC Batch
Elements								
Total Lead (Pb)	mg/kg	9	11	8	14	62	1	2755669
RDL = Reportable Detection Limit								

Maxxam ID		M79808	M79809	M79810	M79811	M79815		
Sampling Date		2008/11/18	2008/11/18	2008/11/18	2008/11/18	2008/11/18		
COC Number		117000	117000	117000	117001	117001		
	Units	08MW06/1.8M	08MW06/3.6M	08MW06/4.5M	08MW07/0.6M	08MW07/4.2M	RDL	QC Batch
Elements								
Total Lead (Pb)	mg/kg	32	9	8	7	12	1	2755669
RDL = Reportable Detection Limit								

Maxxam ID		M79816		
Sampling Date		2008/11/18		
COC Number		117001		
	Units	08MW07/4.8M	RDL	QC Batch
Elements				
Total Lead (Pb)	mg/kg	11	1	2755669
RDL = Reportable Detection Limit				

Maxxam Job #: A863942
Report Date: 2008/11/25

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA SITE 9558
Site Reference: BARONS, AB

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		M79796	M79796	M79799		
Sampling Date		2008/11/18	2008/11/18	2008/11/18		
COC Number		117000	117000	117000		
	Units	08MW01/1.2M	08MW01/1.2M Lab-Dup	08MW01/4.2M	RDL	QC Batch
Volatiles						
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	2752557
Toluene	mg/kg	<0.020	<0.020	<0.020	0.020	2752557
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	0.010	2752557
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	0.040	2752557
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	0.040	2752557
o-Xylene	mg/kg	<0.020	<0.020	<0.020	0.020	2752557
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	12	2752557
(C6-C10)	mg/kg	<12	<12	<12	12	2752557
Surrogate Recovery (%)						
4-BROMOFLUOROBENZENE (sur.)	%	96	94	95	N/A	2752557
D10-ETHYLBENZENE (sur.)	%	81	82	81	N/A	2752557
D4-1,2-DICHLOROETHANE (sur.)	%	101	101	102	N/A	2752557
D8-TOLUENE (sur.)	%	96	94	95	N/A	2752557

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: A863942
Report Date: 2008/11/25

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA SITE 9558
Site Reference: BARONS, AB

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		M79800	M79801	M79802	M79803		
Sampling Date		2008/11/18	2008/11/18	2008/11/18	2008/11/18		
COC Number		117000	117000	117000	117000		
	Units	08MW01/5.4M	08BH02/1.8M	08BH02/3.6M	08MW03/1.8M	RDL	QC Batch
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	2752557
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	2752557
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	2752557
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	2752557
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	2752557
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	2752557
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	12	2752557
(C6-C10)	mg/kg	<12	<12	<12	<12	12	2752557
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	94	93	95	93	N/A	2752557
D10-ETHYLBENZENE (sur.)	%	83	80	85	80	N/A	2752557
D4-1,2-DICHLOROETHANE (sur.)	%	104	100	100	102	N/A	2752557
D8-TOLUENE (sur.)	%	94	95	94	93	N/A	2752557

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: A863942
Report Date: 2008/11/25

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA SITE 9558
Site Reference: BARONS, AB

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		M79804	M79806	M79807		
Sampling Date		2008/11/18	2008/11/18	2008/11/18		
COC Number		117000	117000	117000		
	Units	08MW03/3.6M	08MW03/4.8M	08MW06/0.6M	RDL	QC Batch
Volatiles						
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	2752557
Toluene	mg/kg	<0.020	<0.020	<0.020	0.020	2752557
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	0.010	2752557
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	0.040	2752557
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	0.040	2752557
o-Xylene	mg/kg	<0.020	<0.020	<0.020	0.020	2752557
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	12	2752557
(C6-C10)	mg/kg	<12	<12	<12	12	2752557
Surrogate Recovery (%)						
4-BROMOFLUOROBENZENE (sur.)	%	94	93	92	N/A	2752557
D10-ETHYLBENZENE (sur.)	%	84	86	82	N/A	2752557
D4-1,2-DICHLOROETHANE (sur.)	%	100	99	102	N/A	2752557
D8-TOLUENE (sur.)	%	96	95	95	N/A	2752557

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: A863942
Report Date: 2008/11/25

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA SITE 9558
Site Reference: BARONS, AB

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		M79808	M79809	M79810		
Sampling Date		2008/11/18	2008/11/18	2008/11/18		
COC Number		117000	117000	117000		
	Units	08MW06/1.8M	08MW06/3.6M	08MW06/4.5M	RDL	QC Batch
Volatiles						
Benzene	mg/kg	0.076	0.011	<0.0050	0.0050	2752557
Toluene	mg/kg	0.15	<0.020	<0.020	0.020	2752557
Ethylbenzene	mg/kg	12	0.12	<0.010	0.010	2752557
Xylenes (Total)	mg/kg	29	0.32	<0.040	0.040	2752557
m & p-Xylene	mg/kg	23	0.23	<0.040	0.040	2752557
o-Xylene	mg/kg	6.2	0.085	<0.020	0.020	2752557
F1 (C6-C10) - BTEX	mg/kg	570	36	<12	12	2752557
(C6-C10)	mg/kg	610	36	<12	12	2752557
Surrogate Recovery (%)						
4-BROMOFLUOROBENZENE (sur.)	%	117	100	98	N/A	2752557
D10-ETHYLBENZENE (sur.)	%	104	82	86	N/A	2752557
D4-1,2-DICHLOROETHANE (sur.)	%	104	100	102	N/A	2752557
D8-TOLUENE (sur.)	%	94	93	95	N/A	2752557

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: A863942
Report Date: 2008/11/25

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA SITE 9558
Site Reference: BARONS, AB

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		M79811	M79815	M79816		
Sampling Date		2008/11/18	2008/11/18	2008/11/18		
COC Number		117001	117001	117001		
	Units	08MW07/0.6M	08MW07/4.2M	08MW07/4.8M	RDL	QC Batch
Volatiles						
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	2752557
Toluene	mg/kg	<0.020	<0.020	<0.020	0.020	2752557
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	0.010	2752557
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	0.040	2752557
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	0.040	2752557
o-Xylene	mg/kg	<0.020	<0.020	<0.020	0.020	2752557
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	12	2752557
(C6-C10)	mg/kg	<12	<12	<12	12	2752557
Surrogate Recovery (%)						
4-BROMOFLUOROBENZENE (sur.)	%	93	94	94	N/A	2752557
D10-ETHYLBENZENE (sur.)	%	83	82	84	N/A	2752557
D4-1,2-DICHLOROETHANE (sur.)	%	100	102	99	N/A	2752557
D8-TOLUENE (sur.)	%	94	92	95	N/A	2752557

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: A863942
Report Date: 2008/11/25

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA SITE 9558
Site Reference: BARONS, AB

Package 1	5.0°C

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

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL) Comments

Sample M79796-01 Lead: Matrix Spike exceeds acceptance limits for Pb,due to matrix interference. Reanalysis yields similar results. (Recovery:73%, limits75-125%)

Results relate only to the items tested.

EBA ENGINEERING CONSULTANTS LTD.
Attention: DERYCK MASTERMAN
Client Project #: L22101183.001, AMA SITE 9558
P.O. #:
Site Reference: BARONS, AB

Quality Assurance Report

Maxxam Job Number: CA863942

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2752557 PX	Calibration Check	4-BROMOFLUOROBENZENE (sur.)	2008/11/21		99	%	60 - 140
		D10-ETHYLBENZENE (sur.)	2008/11/21		86	%	30 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2008/11/21		100	%	60 - 140
		D8-TOLUENE (sur.)	2008/11/21		93	%	60 - 140
		Benzene	2008/11/21		90	%	85 - 115
		Toluene	2008/11/21		90	%	85 - 115
		Ethylbenzene	2008/11/21		90	%	85 - 115
		m & p-Xylene	2008/11/21		98	%	85 - 115
		o-Xylene	2008/11/21		94	%	85 - 115
		(C6-C10)	2008/11/21		98	%	70 - 130
	MATRIX SPIKE [M79796-01]	4-BROMOFLUOROBENZENE (sur.)	2008/11/21		97	%	60 - 140
		D10-ETHYLBENZENE (sur.)	2008/11/21		74	%	30 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2008/11/21		97	%	60 - 140
		D8-TOLUENE (sur.)	2008/11/21		90	%	60 - 140
		Benzene	2008/11/21		91	%	60 - 140
		Toluene	2008/11/21		90	%	60 - 140
		Ethylbenzene	2008/11/21		89	%	60 - 140
		m & p-Xylene	2008/11/21		103	%	60 - 140
		o-Xylene	2008/11/21		97	%	60 - 140
		(C6-C10)	2008/11/21		112	%	60 - 140
	SPIKE	4-BROMOFLUOROBENZENE (sur.)	2008/11/21		96	%	60 - 140
		D10-ETHYLBENZENE (sur.)	2008/11/21		83	%	30 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2008/11/21		97	%	60 - 140
		D8-TOLUENE (sur.)	2008/11/21		95	%	60 - 140
		Benzene	2008/11/21		96	%	75 - 125
		Toluene	2008/11/21		100	%	75 - 125
		Ethylbenzene	2008/11/21		99	%	75 - 125
		m & p-Xylene	2008/11/21		107	%	75 - 125
		o-Xylene	2008/11/21		105	%	75 - 125
		(C6-C10)	2008/11/21		106	%	70 - 130
	BLANK	4-BROMOFLUOROBENZENE (sur.)	2008/11/21		94	%	60 - 140
		D10-ETHYLBENZENE (sur.)	2008/11/21		88	%	30 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2008/11/21		100	%	60 - 140
		D8-TOLUENE (sur.)	2008/11/21		92	%	60 - 140
		Benzene	2008/11/21	<0.0050		mg/kg	
		Toluene	2008/11/21	<0.020		mg/kg	
		Ethylbenzene	2008/11/21	<0.010		mg/kg	
		Xylenes (Total)	2008/11/21	<0.040		mg/kg	
		m & p-Xylene	2008/11/21	<0.040		mg/kg	
		o-Xylene	2008/11/21	<0.020		mg/kg	
		F1 (C6-C10) - BTEX	2008/11/21	<12		mg/kg	
		(C6-C10)	2008/11/21	<12		mg/kg	
	RPD [M79796-01]	Benzene	2008/11/21	NC		%	50
		Toluene	2008/11/21	NC		%	50
		Ethylbenzene	2008/11/21	NC		%	50
		Xylenes (Total)	2008/11/21	NC		%	50
		m & p-Xylene	2008/11/21	NC		%	50
		o-Xylene	2008/11/21	NC		%	50
		F1 (C6-C10) - BTEX	2008/11/21	NC		%	50
		(C6-C10)	2008/11/21	NC		%	50
2752810 RM2	RPD [M79796-01]	Moisture	2008/11/21	0.6		%	20
	RPD [M79808-01]	Moisture	2008/11/21	9.7		%	20
2753046 FV	QC STANDARD	Sieve - Pan	2008/11/22		100	%	90 - 110
		Sieve - #200 (>0.075mm)	2008/11/22		99	%	90 - 110

EBA ENGINEERING CONSULTANTS LTD.
Attention: DERYCK MASTERMAN
Client Project #: L22101183.001, AMA SITE 9558
P.O. #:
Site Reference: BARONS, AB

Quality Assurance Report (Continued)

Maxxam Job Number: CA863942

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2753046 FV	RPD	Sieve - Pan	2008/11/22	2.6		%	35
		Sieve - #200 (>0.075mm)	2008/11/22	5.2		%	35
2753271 MR5	Calibration Check	F2 (C10-C16 Hydrocarbons)	2008/11/21		105	%	80 - 120
		F3 (C16-C34 Hydrocarbons)	2008/11/21		100	%	80 - 120
		F4 (C34-C50 Hydrocarbons)	2008/11/21		85	%	80 - 120
	MATRIX SPIKE [M79796-01]	O-TERPHENYL (sur.)	2008/11/22		85	%	50 - 130
		F2 (C10-C16 Hydrocarbons)	2008/11/22		110	%	50 - 130
		F3 (C16-C34 Hydrocarbons)	2008/11/22		100	%	50 - 130
		F4 (C34-C50 Hydrocarbons)	2008/11/22		102	%	50 - 130
	SPIKE	O-TERPHENYL (sur.)	2008/11/22		83	%	50 - 130
		F2 (C10-C16 Hydrocarbons)	2008/11/22		110	%	80 - 120
		F3 (C16-C34 Hydrocarbons)	2008/11/22		97	%	80 - 120
		F4 (C34-C50 Hydrocarbons)	2008/11/22		101	%	80 - 120
	BLANK	O-TERPHENYL (sur.)	2008/11/22		93	%	50 - 130
		F2 (C10-C16 Hydrocarbons)	2008/11/22	<10		mg/kg	
		F3 (C16-C34 Hydrocarbons)	2008/11/22	<10		mg/kg	
		F4 (C34-C50 Hydrocarbons)	2008/11/22	<10		mg/kg	
	RPD [M79796-01]	F2 (C10-C16 Hydrocarbons)	2008/11/22	NC		%	50
		F3 (C16-C34 Hydrocarbons)	2008/11/22	NC		%	50
		F4 (C34-C50 Hydrocarbons)	2008/11/22	NC		%	50
2755669 LW	Calibration Check	Total Lead (Pb)	2008/11/23		103	%	75 - 125
	QC STANDARD	Total Lead (Pb)	2008/11/23		85	%	54 - 146
	BLANK	Total Lead (Pb)	2008/11/23	<1		mg/kg	
	RPD [M79796-01]	Total Lead (Pb)	2008/11/23	1.3		%	35

NC = Non-calculable
RPD = Relative Percent Difference

Sample Integrity Form

Invoice To:
EBA ENGINEERING CONSULTANTS LTD.
ATTN: DERYCK MASTERMAN
442-10n STREET NORTH
LETHBRIDGE, AB
CANADA T1H 2C7
Client Contact:
DERYCK MASTERMAN

Maxxam Job #:	A863942
Date Received:	2008/11/20
Your C.O.C. #:	117000
Your Project #:	L22101183.001, AMA SITE 9
Maxxam Project Manager:	NICOLE CHAN
Quote #:	A80250

No discrepancies noted.

Report Comments

Received Date: 2008/11/20 **Time:** 9:50 **By:** _____

Inspected Date: _____ **Time:** _____ **By:** _____

SIF Created Date: _____ **Time:** 00:00 **By:** _____

Validation Signature Page

Maxxam Job #: A863942

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

Junzhi Gao

JANET GAO,

KAZI RAHMAN,

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. SCC and CALA have approved this reporting process and electronic report format.

ANALYTICAL REQUEST FORM

Page 17 of 18

Maxxam Analytics
ANALYTICAL REQUEST FORM
BTEX (E-F)
Lead
Particle Size (Clay)

Your Project #: L22101183.001, BARONS SCC 9558
Site: BARONS, ALBERTA
Your C.O.C. #: 116995

Attention: DERYCK MASTERMAN
EBA ENGINEERING CONSULTANTS LTD.
442-10n STREET NORTH
LETHBRIDGE, AB
CANADA T1H 2C7

Report Date: 2008/12/05

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A865936
Received: 2008/11/29, 10:00

Sample Matrix: Water
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Lead (Dissolved)	5	N/A	2008/12/05	CAL SOP-00003, CAL SOP-00008, CAL SOP-00009	ICP-MS

Sample Matrix: Water
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 in Water by HS GC/MS	5	N/A	2008/12/03	CAL SOP-00104	EPA 8260 C
CCME Hydrocarbons in Water (F2; C10-C16)	1	2008/11/30	2008/12/01	CAL SOP-00087	CCME PHC-CWS
CCME Hydrocarbons in Water (F2; C10-C16)	4	2008/11/30	2008/12/04	CAL SOP-00087	CCME PHC-CWS

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

Encryption Key

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

NICOLE CHAN,
Email: Nicole.Chan@MaxxamAnalytics.com
Phone# (403) 291-3077

==========

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For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 1

Maxxam Job #: A865936
Report Date: 2008/12/05

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, BARONS SCC 9558
Site Reference: BARONS, ALBERTA
Sampler Initials: JL

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		M95064	M95065	M95066	M95067		
Sampling Date		2008/11/28 AM	2008/11/28 AM	2008/11/28 AM	2008/11/28 AM		
COC Number		116995	116995	116995	116995		
	Units	08MW01	08MW03	08MW06	08MW07	RDL	QC Batch
Elements							
Dissolved Lead (Pb)	mg/L	<0.0002	<0.0002	0.0031	0.0003	0.0002	2785705

RDL = Reportable Detection Limit

Maxxam ID		M95068		
Sampling Date		2008/11/28 AM		
COC Number		116995		
	Units	08MW08	RDL	QC Batch
Elements				
Dissolved Lead (Pb)	mg/L	<0.001	0.001	2785705

RDL = Reportable Detection Limit

Maxxam Job #: A865936
Report Date: 2008/12/05

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, BARONS SCC 9558
Site Reference: BARONS, ALBERTA
Sampler Initials: JL

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		M95064	M95065	M95066	M95067		
Sampling Date		2008/11/28 AM	2008/11/28 AM	2008/11/28 AM	2008/11/28 AM		
COC Number		116995	116995	116995	116995		
	Units	08MW01	08MW03	08MW06	08MW07	RDL	QC Batch
Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	mg/L	<0.1	<0.1	1.7	<0.1	0.1	2772786
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	105	115	100	113	N/A	2772786

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		M95068	M95068		
Sampling Date		2008/11/28 AM	2008/11/28 AM		
COC Number		116995	116995		
	Units	08MW08	08MW08 Lab-Dup	RDL	QC Batch
Hydrocarbons					
F2 (C10-C16 Hydrocarbons)	mg/L	<0.1	<0.1	0.1	2772786
Surrogate Recovery (%)					
O-TERPHENYL (sur.)	%	111	92	N/A	2772786

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: A865936
Report Date: 2008/12/05

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, BARONS SCC 9558
Site Reference: BARONS, ALBERTA
Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		M95064	M95065	M95066		
Sampling Date		2008/11/28 AM	2008/11/28 AM	2008/11/28 AM		
COC Number		116995	116995	116995		
	Units	08MW01	08MW03	08MW06	RDL	QC Batch
Volatiles						
Benzene	mg/L	<0.0004	<0.0004	0.068	0.0004	2775642
Toluene	mg/L	<0.0004	<0.0004	<0.0004	0.0004	2775642
Ethylbenzene	mg/L	<0.0004	<0.0004	0.036	0.0004	2775642
o-Xylene	mg/L	<0.0004	<0.0004	0.014	0.0004	2775642
m & p-Xylene	mg/L	<0.0008	<0.0008	0.059	0.0008	2775642
Xylenes (Total)	mg/L	<0.0008	<0.0008	0.072	0.0008	2775642
F1 (C6-C10) - BTEX	mg/L	<0.1	<0.1	1.6	0.1	2775642
(C6-C10)	mg/L	<0.1	<0.1	1.8	0.1	2775642
Surrogate Recovery (%)						
4-BROMOFLUOROBENZENE (sur.)	%	93	94	99	N/A	2775642
D4-1,2-DICHLOROETHANE (sur.)	%	122	121	90	N/A	2775642
D8-TOLUENE (sur.)	%	98	95	96	N/A	2775642

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: A865936
Report Date: 2008/12/05

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, BARONS SCC 9558
Site Reference: BARONS, ALBERTA
Sampler Initials: JL

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		M95067	M95068		
Sampling Date		2008/11/28 AM	2008/11/28 AM		
COC Number		116995	116995		
	Units	08MW07	08MW08	RDL	QC Batch
Volatiles					
Benzene	mg/L	<0.0004	<0.0004	0.0004	2775642
Toluene	mg/L	<0.0004	<0.0004	0.0004	2775642
Ethylbenzene	mg/L	<0.0004	<0.0004	0.0004	2775642
o-Xylene	mg/L	<0.0004	<0.0004	0.0004	2775642
m & p-Xylene	mg/L	<0.0008	<0.0008	0.0008	2775642
Xylenes (Total)	mg/L	<0.0008	<0.0008	0.0008	2775642
F1 (C6-C10) - BTEX	mg/L	<0.1	<0.1	0.1	2775642
(C6-C10)	mg/L	<0.1	<0.1	0.1	2775642
Surrogate Recovery (%)					
4-BROMOFLUOROBENZENE (sur.)	%	93	95	N/A	2775642
D4-1,2-DICHLOROETHANE (sur.)	%	97	91	N/A	2775642
D8-TOLUENE (sur.)	%	96	95	N/A	2775642

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: A865936
Report Date: 2008/12/05

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, BARONS SCC 9558
Site Reference: BARONS, ALBERTA
Sampler Initials: JL

Package 1	9.0°C

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

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER) Comments

Sample M95068-01 Lead (Dissolved): Detection limits raised due to sample matrix.

Results relate only to the items tested.

EBA ENGINEERING CONSULTANTS LTD.
Attention: DERYCK MASTERMAN
Client Project #: L22101183.001, BARONS SCC 9558
P.O. #:
Site Reference: BARONS, ALBERTA

Quality Assurance Report

Maxxam Job Number: CA865936

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2772786 AN4	MATRIX SPIKE	O-TERPHENYL (sur.)	2008/12/04		98	%	70 - 130
		F2 (C10-C16 Hydrocarbons)	2008/12/04		128	%	70 - 130
	SPIKE	O-TERPHENYL (sur.)	2008/12/04		97	%	70 - 130
		F2 (C10-C16 Hydrocarbons)	2008/12/04		118	%	70 - 130
	BLANK	O-TERPHENYL (sur.)	2008/12/04		110	%	70 - 130
		F2 (C10-C16 Hydrocarbons)	2008/12/04	<0.1		mg/L	
	RPD [M95068-02]	F2 (C10-C16 Hydrocarbons)	2008/12/03	NC		%	40
2775642 JC2	MATRIX SPIKE	4-BROMOFLUOROBENZENE (sur.)	2008/12/02		97	%	70 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2008/12/02		94	%	70 - 130
		D8-TOLUENE (sur.)	2008/12/02		96	%	70 - 130
		Benzene	2008/12/02		90	%	70 - 130
		Toluene	2008/12/02		94	%	70 - 130
		Ethylbenzene	2008/12/02		92	%	70 - 130
		o-Xylene	2008/12/02		96	%	70 - 130
		m & p-Xylene	2008/12/02		79	%	70 - 130
	SPIKE	4-BROMOFLUOROBENZENE (sur.)	2008/12/02		95	%	70 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2008/12/02		92	%	70 - 130
		D8-TOLUENE (sur.)	2008/12/02		96	%	70 - 130
		Benzene	2008/12/02		92	%	70 - 130
		Toluene	2008/12/02		96	%	70 - 130
		Ethylbenzene	2008/12/02		94	%	70 - 130
		o-Xylene	2008/12/02		96	%	70 - 130
		m & p-Xylene	2008/12/02		81	%	70 - 130
		(C6-C10)	2008/12/02		79	%	70 - 130
	BLANK	4-BROMOFLUOROBENZENE (sur.)	2008/12/02		103	%	70 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2008/12/02		124	%	70 - 130
		D8-TOLUENE (sur.)	2008/12/02		77	%	70 - 130
		Benzene	2008/12/02	<0.0004		mg/L	
		Toluene	2008/12/02	<0.0004		mg/L	
		Ethylbenzene	2008/12/02	<0.0004		mg/L	
		o-Xylene	2008/12/02	<0.0004		mg/L	
		m & p-Xylene	2008/12/02	<0.0008		mg/L	
		Xylenes (Total)	2008/12/02	<0.0008		mg/L	
		F1 (C6-C10) - BTEX	2008/12/02	<0.1		mg/L	
		(C6-C10)	2008/12/02	<0.1		mg/L	
	RPD	Benzene	2008/12/02	NC		%	40
		Toluene	2008/12/02	NC		%	40
		Ethylbenzene	2008/12/02	NC		%	40
		o-Xylene	2008/12/02	NC		%	40
		m & p-Xylene	2008/12/02	NC		%	40
		Xylenes (Total)	2008/12/02	NC		%	40
		F1 (C6-C10) - BTEX	2008/12/02	NC		%	40
		(C6-C10)	2008/12/02	NC		%	40
2785705 KC1	Calibration Check	Dissolved Lead (Pb)	2008/12/05		95	%	80 - 114
	BLANK	Dissolved Lead (Pb)	2008/12/05	<0.0002		mg/L	
	RPD	Dissolved Lead (Pb)	2008/12/05	0		%	20

NC = Non-calculable
RPD = Relative Percent Difference

Sample Integrity Form

Invoice To:
EBA ENGINEERING CONSULTANTS LTD.
ATTN: DERYCK MASTERMAN
442-10n STREET NORTH
LETHBRIDGE, AB
CANADA T1H 2C7
Client Contact:
DERYCK MASTERMAN

Maxxam Job #:	A865936
Date Received:	2008/11/29
Your C.O.C. #:	116995
Your Project #:	L22101183.001, BARONS S
Maxxam Project Manager:	NICOLE CHAN
Quote #:	A80250

No discrepancies noted.

Report Comments

Received Date: 2008/11/29 **Time:** 10:00 **By:** _____

Inspected Date: _____ **Time:** _____ **By:** _____

SIF Created Date: _____ **Time:** 00:00 **By:** _____

Validation Signature Page

Maxxam Job #: A865936

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

Junzhi Gao

JANET GAO, Senior Analyst, Organics Department

KAZI RAHMAN,

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Maxxam Analytics Inc

☑ Calgary: 2021 – 41st Ave. NE, T2E 6P2 Ph: (403) 291-3077 Fax: (403) 291-9468 Toll-free: (800) 386-7247
☐ Edmonton: 9619 – 42 Ave., T6E 5R2 Ph: (780) 465-1212 Fax: (780) 450-4187 Toll-free: (877) 485-8869
www.maxxamanalytics.com

ANALYTICAL REQUEST FORM

Page: 1 of 1

Invoice To: Require Report? Yes ☐ No ☐

Company Name: EBA Engineering
Contact Name: Derek Masterman
Address: 442 10 Street N.
Lethbridge, AB PC: T1K 2C7
Phone / Fax #: Ph: Fax:

Report To:

PC:
Ph: Fax:

PO # / AFE #:
Quotation #:
Project #: L22101183.001
Project Name: Barons SCC 9558
Location: Barons, Alberta
Sampler's Initials: BW JL

REGULATORY REQUIREMENTS:

☐ AT1 - Soil Contamination ☐ PST
☐ CCME ☐ CDWQG
☐ CCME FWAL ☐ G50
☐ Regulatory Limits to appear on Final report

REPORT DISTRIBUTION:

☐ Mail ☐ Fax
☑ PDF ☑ Excel ☐ Other:
☑ Email: dmasterman@eba.ca

SERVICE REQUESTED:

☐ RUSH (Please ensure you contact the lab)
Date Required:
☑ REGULAR Turnaround

METALS: (WATERS):

☐ Total ☐ Extractable ☐ Dissolved

ANALYSIS REQUESTED

	Sample Identification	Matrix	Date/Time Sampled	Sample Type Grab/Comp	Hold > 60 Days	Sample Container #	BTEX (F1 - F2)	Lead - dissolved
1	08MW01	H_2O	081128	bailer	☐	6	✓	✓
2	08 MW03	↓	(am)	↓		↓	✓	✓
3	08 MW06						✓	✓
4	08 MW07						✓	✓
5	08 MW08	↓	↓	↓		↓	✓	✓
6								
7								
8								
9								
10								
11								
12							F	P

**For water samples, please indicate if sample container has been preserved (P) and/or filtered (F).

Relinquished By: J. Lamontagne
Signature:
Date/Time: Nov 28/08 - 4:00 p.m.
COMMENTS/SPECIAL INSTRUCTIONS:

RECEIVED
NOV 29 2008
1000

Temperature: 9, 9, 9

COC # 116995

KEREQUESTFORM1 05-05

Your Project #: L22101183.001, AMA 9558
Site: BARONS, AB
Your C.O.C. #: 37163

Attention: DERYCK MASTERMAN
EBA ENGINEERING CONSULTANTS LTD.
442-10n STREET NORTH
LETHBRIDGE, AB
CANADA T1H 2C7

Report Date: 2009/03/23

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A911548
Received: 2009/03/14, 9:30

Sample Matrix: Soil
Samples Received: 12

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS (MeOH extract)	12	2009/03/16	2009/03/19	CAL SOP-00104	EPA 8260C/CCME
CCME Hydrocarbons (F2-F4 in soil)	11	2009/03/17	2009/03/19	CAL SOP-00086	CCME PHC-CWS
CCME Hydrocarbons (F2-F4 in soil)	1	2009/03/17	2009/03/20	CAL SOP-00086	CCME PHC-CWS
Moisture	12	N/A	2009/03/18	CAL SOP-00023	McKeague MSSMA 2.411
Lead	12	2009/03/18	2009/03/19	CAL SOP-00191	EPA SW846/6020B
Particle Size by Sieve (75 micron)	5	N/A	2009/03/20	CAL SOP-00025	SSMA 47.4

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

Encryption Key

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

NICOLE CHAN, Project Manager
Email: Nicole.Chan@MaxxamAnalytics.com
Phone# (403) 291-3077

==========

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For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 1

Maxxam Job #: A911548
Report Date: 2009/03/23

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA 9558
Site Reference: BARONS, AB
Sampler Initials: JL

AT1 BTEX, F1-F4, AND CHROMATOGRAM (SOIL)

Maxxam ID		O07631	O07633	O07634	O07635		
Sampling Date		2009/03/11	2009/03/11	2009/03/11	2009/03/11		
COC Number		37163	37163	37163	37163		
	Units	09BH09/6.0M	09BH10/3.0M	09BH10/4.6M	09BH11/3.6M	RDL	QC Batch
Physical Properties							
Moisture	%	13	26	21	20	0.3	2995430
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	<10	10	2998813
F3 (C16-C34 Hydrocarbons)	mg/kg	<10	<10	<10	<10	10	2998813
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	<10	<10	<10	10	2998813
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	2998813
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	2994369
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	2994369
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	2994369
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	2994369
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	2994369
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	2994369
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	12	2994369
(C6-C10)	mg/kg	<12	<12	<12	<12	12	2994369
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	86	82	83	81	N/A	2994369
D10-ETHYLBENZENE (sur.)	%	75	71	71	72	N/A	2994369
D4-1,2-DICHLOROETHANE (sur.)	%	99	98	99	95	N/A	2994369
D8-TOLUENE (sur.)	%	120	119	120	123	N/A	2994369
O-TERPHENYL (sur.)	%	100	95	105	75	N/A	2998813

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: A911548
Report Date: 2009/03/23

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA 9558
Site Reference: BARONS, AB
Sampler Initials: JL

AT1 BTEX, F1-F4, AND CHROMATOGRAM (SOIL)

Maxxam ID		O07636	O07638	O07640		
Sampling Date		2009/03/11	2009/03/11	2009/03/11		
COC Number		37163	37163	37163		
	Units	09BH11/4.8M	09BH13/4.8M	09BH14/4.8M	RDL	QC Batch
Physical Properties						
Moisture	%	15	14	12	0.3	2995430
Ext. Pet. Hydrocarbon						
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	10	2998813
F3 (C16-C34 Hydrocarbons)	mg/kg	<10	<10	<10	10	2998813
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	<10	<10	10	2998813
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	N/A	2998813
Volatiles						
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	2994369
Toluene	mg/kg	<0.020	<0.020	<0.020	0.020	2994369
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	0.010	2994369
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	0.040	2994369
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	0.040	2994369
o-Xylene	mg/kg	<0.020	<0.020	<0.020	0.020	2994369
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	12	2994369
(C6-C10)	mg/kg	<12	<12	<12	12	2994369
Surrogate Recovery (%)						
4-BROMOFLUOROBENZENE (sur.)	%	87	81	80	N/A	2994369
D10-ETHYLBENZENE (sur.)	%	75	75	75	N/A	2994369
D4-1,2-DICHLOROETHANE (sur.)	%	97	98	98	N/A	2994369
D8-TOLUENE (sur.)	%	121	119	117	N/A	2994369
O-TERPHENYL (sur.)	%	106	103	106	N/A	2998813

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: A911548
Report Date: 2009/03/23

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA 9558
Site Reference: BARONS, AB
Sampler Initials: JL

AT1 BTEX, F1-F4, SIEVE, & CHROMATOGRAM (SOIL)

Maxxam ID		O07629	O07629	O07630	O07630		
Sampling Date		2009/03/11	2009/03/11	2009/03/11	2009/03/11		
COC Number		37163	37163	37163	37163		
	Units	**09BH09/4.2M**	**09BH09/4.2M Lab-Dup**	**09BH09/4.8M**	**09BH09/4.8M Lab-Dup**	**RDL**	**QC Batch**
Physical Properties							
Moisture	%	13	N/A	11	11	0.3	2995444
Sieve - Pan	%	63	59	75	N/A	0.2	3000928
Sieve - #200 (>0.075mm)	%	37	41	25	N/A	0.2	3000928
Grain Size	%	FINE	FINE	FINE	N/A	0.2	3000928
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	N/A	10	2998813
F3 (C16-C34 Hydrocarbons)	mg/kg	<10	<10	<10	N/A	10	2998813
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	<10	<10	N/A	10	2998813
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	N/A	N/A	2998813
Volatiles							
Benzene	mg/kg	<0.0050	N/A	<0.0050	N/A	0.0050	2994369
Toluene	mg/kg	<0.020	N/A	<0.020	N/A	0.020	2994369
Ethylbenzene	mg/kg	<0.010	N/A	<0.010	N/A	0.010	2994369
Xylenes (Total)	mg/kg	<0.040	N/A	<0.040	N/A	0.040	2994369
m & p-Xylene	mg/kg	<0.040	N/A	<0.040	N/A	0.040	2994369
o-Xylene	mg/kg	<0.020	N/A	<0.020	N/A	0.020	2994369
F1 (C6-C10) - BTEX	mg/kg	<12	N/A	<12	N/A	12	2994369
(C6-C10)	mg/kg	<12	N/A	<12	N/A	12	2994369
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	84	N/A	90	N/A	N/A	2994369
D10-ETHYLBENZENE (sur.)	%	75	N/A	75	N/A	N/A	2994369
D4-1,2-DICHLOROETHANE (sur.)	%	99	N/A	100	N/A	N/A	2994369
D8-TOLUENE (sur.)	%	115	N/A	117	N/A	N/A	2994369
O-TERPHENYL (sur.)	%	106	108	102	N/A	N/A	2998813

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: A911548
Report Date: 2009/03/23

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA 9558
Site Reference: BARONS, AB
Sampler Initials: JL

AT1 BTEX, F1-F4, SIEVE, & CHROMATOGRAM (SOIL)

Maxxam ID		O07632	O07637	O07639	O07639		
Sampling Date		2009/03/11	2009/03/11	2009/03/11	2009/03/11		
COC Number		37163	37163	37163	37163		
	Units	09BH10/1.8M	09BH11/6.0M	09BH14/3.0M	09BH14/3.0M Lab-Dup	RDL	QC Batch
Physical Properties							
Moisture	%	19	13	15	15	0.3	2995430
Sieve - Pan	%	81	91	67	N/A	0.2	3000928
Sieve - #200 (>0.075mm)	%	19	9.2	33	N/A	0.2	3000928
Grain Size	%	FINE	FINE	FINE	N/A	0.2	3000928
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/kg	420	<10	<10	N/A	10	2998813
F3 (C16-C34 Hydrocarbons)	mg/kg	<10	<10	<10	N/A	10	2998813
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	<10	<10	N/A	10	2998813
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	N/A	N/A	2998813
Volatiles							
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	N/A	0.0050	2994369
Toluene	mg/kg	<0.020	<0.020	<0.020	N/A	0.020	2994369
Ethylbenzene	mg/kg	0.020	<0.010	<0.010	N/A	0.010	2994369
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	N/A	0.040	2994369
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	N/A	0.040	2994369
o-Xylene	mg/kg	<0.020	<0.020	<0.020	N/A	0.020	2994369
F1 (C6-C10) - BTEX	mg/kg	160	<12	<12	N/A	12	2994369
(C6-C10)	mg/kg	160	<12	<12	N/A	12	2994369
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	80	82	82	N/A	N/A	2994369
D10-ETHYLBENZENE (sur.)	%	81	74	73	N/A	N/A	2994369
D4-1,2-DICHLOROETHANE (sur.)	%	96	99	99	N/A	N/A	2994369
D8-TOLUENE (sur.)	%	117	120	120	N/A	N/A	2994369
O-TERPHENYL (sur.)	%	105	109	104	N/A	N/A	2998813

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: A911548
Report Date: 2009/03/23

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA 9558
Site Reference: BARONS, AB
Sampler Initials: JL

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		O07629	O07629	O07630	O07631	O07632		
Sampling Date		2009/03/11	2009/03/11	2009/03/11	2009/03/11	2009/03/11		
COC Number		37163	37163	37163	37163	37163		
	Units	09BH09/4.2M	09BH09/4.2M Lab-Dup	09BH09/4.8M	09BH09/6.0M	09BH10/1.8M	RDL	QC Batch
Elements								
Total Lead (Pb)	mg/kg	8	8	9	7	14	1	2999197

RDL = Reportable Detection Limit

Maxxam ID		O07633	O07634	O07635	O07636	O07637		
Sampling Date		2009/03/11	2009/03/11	2009/03/11	2009/03/11	2009/03/11		
COC Number		37163	37163	37163	37163	37163		
	Units	09BH10/3.0M	09BH10/4.8M	09BH11/3.6M	09BH11/4.8M	09BH11/6.0M	RDL	QC Batch
Elements								
Total Lead (Pb)	mg/kg	14	16	10	16	15	1	2999197

RDL = Reportable Detection Limit

Maxxam ID		O07638	O07639	O07640		
Sampling Date		2009/03/11	2009/03/11	2009/03/11		
COC Number		37163	37163	37163		
	Units	09BH13/4.8M	09BH14/3.0M	09BH14/4.8M	RDL	QC Batch
Elements						
Total Lead (Pb)	mg/kg	8	10	15	1	2999197

RDL = Reportable Detection Limit

Maxxam Job #: A911548
Report Date: 2009/03/23

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA 9558
Site Reference: BARONS, AB
Sampler Initials: JL

Package 1	10.0°C

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

General Comments

Results relate only to the items tested.

EBA ENGINEERING CONSULTANTS LTD.
Attention: DERYCK MASTERMAN
Client Project #: L22101183.001, AMA 9558
P.O. #:
Site Reference: BARONS, AB

Quality Assurance Report

Maxxam Job Number: CA911548

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2994369 PX	MATRIX SPIKE	4-BROMOFLUOROBENZENE (sur.)	2009/03/19		96	%	60 - 140
		D10-ETHYLBENZENE (sur.)	2009/03/19		70	%	30 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2009/03/19		95	%	60 - 140
		D8-TOLUENE (sur.)	2009/03/19		114	%	60 - 140
		Benzene	2009/03/19		80	%	60 - 140
		Toluene	2009/03/19		83	%	60 - 140
		Ethylbenzene	2009/03/19		77	%	60 - 140
		m & p-Xylene	2009/03/19		87	%	60 - 140
		o-Xylene	2009/03/19		84	%	60 - 140
		(C6-C10)	2009/03/19		104	%	60 - 140
	SPIKE	4-BROMOFLUOROBENZENE (sur.)	2009/03/19		97	%	60 - 140
		D10-ETHYLBENZENE (sur.)	2009/03/19		82	%	30 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2009/03/19		100	%	60 - 140
		D8-TOLUENE (sur.)	2009/03/19		115	%	60 - 140
		Benzene	2009/03/19		90	%	60 - 140
		Toluene	2009/03/19		91	%	60 - 140
		Ethylbenzene	2009/03/19		83	%	60 - 140
		m & p-Xylene	2009/03/19		94	%	60 - 140
		o-Xylene	2009/03/19		92	%	60 - 140
		(C6-C10)	2009/03/19		96	%	60 - 140
	BLANK	4-BROMOFLUOROBENZENE (sur.)	2009/03/19		84	%	60 - 140
		D10-ETHYLBENZENE (sur.)	2009/03/19		87	%	30 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2009/03/19		106	%	60 - 140
		D8-TOLUENE (sur.)	2009/03/19		114	%	60 - 140
		Benzene	2009/03/19	<0.0050		mg/kg	
		Toluene	2009/03/19	<0.020		mg/kg	
		Ethylbenzene	2009/03/19	<0.010		mg/kg	
		Xylenes (Total)	2009/03/19	<0.040		mg/kg	
		m & p-Xylene	2009/03/19	<0.040		mg/kg	
		o-Xylene	2009/03/19	<0.020		mg/kg	
		F1 (C6-C10) - BTEX	2009/03/19	<12		mg/kg	
		(C6-C10)	2009/03/19	<12		mg/kg	
	RPD	Benzene	2009/03/19	NC		%	50
		Toluene	2009/03/19	NC		%	50
		Ethylbenzene	2009/03/19	NC		%	50
		Xylenes (Total)	2009/03/19	NC		%	50
		m & p-Xylene	2009/03/19	NC		%	50
		o-Xylene	2009/03/19	NC		%	50
		F1 (C6-C10) - BTEX	2009/03/19	NC		%	50
		(C6-C10)	2009/03/19	NC		%	50
2995430 RM2	RPD [O07639-01]	Moisture	2009/03/18	2.6		%	20
2995444 RM2	RPD [O07630-01]	Moisture	2009/03/18	0.9		%	20
2998813 MR5	MATRIX SPIKE [O07629-01]	O-TERPHENYL (sur.)	2009/03/19		99	%	50 - 130
		F2 (C10-C16 Hydrocarbons)	2009/03/19		99	%	50 - 130
		F3 (C16-C34 Hydrocarbons)	2009/03/19		102	%	50 - 130
		F4 (C34-C50 Hydrocarbons)	2009/03/19		91	%	50 - 130
	SPIKE	O-TERPHENYL (sur.)	2009/03/19		99	%	50 - 130
		F2 (C10-C16 Hydrocarbons)	2009/03/19		89	%	80 - 120
		F3 (C16-C34 Hydrocarbons)	2009/03/19		89	%	80 - 120
		F4 (C34-C50 Hydrocarbons)	2009/03/19		87	%	80 - 120
	BLANK	O-TERPHENYL (sur.)	2009/03/19		101	%	50 - 130
		F2 (C10-C16 Hydrocarbons)	2009/03/19	<10		mg/kg	
		F3 (C16-C34 Hydrocarbons)	2009/03/19	<10		mg/kg	
		F4 (C34-C50 Hydrocarbons)	2009/03/19	<10		mg/kg	

EBA ENGINEERING CONSULTANTS LTD.
Attention: DERYCK MASTERMAN
Client Project #: L22101183.001, AMA 9558
P.O. #:
Site Reference: BARONS, AB

Quality Assurance Report (Continued)

Maxxam Job Number: CA911548

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2998813 MR5	RPD [O07629-01]	F2 (C10-C16 Hydrocarbons)	2009/03/19	NC		%	50
		F3 (C16-C34 Hydrocarbons)	2009/03/19	NC		%	50
		F4 (C34-C50 Hydrocarbons)	2009/03/19	NC		%	50
2999197 ST4	MATRIX SPIKE [O07629-01]	Total Lead (Pb)	2009/03/19		91	%	75 - 125
	QC STANDARD	Total Lead (Pb)	2009/03/19		106	%	54 - 146
	SPIKE	Total Lead (Pb)	2009/03/19		100	%	75 - 125
	BLANK	Total Lead (Pb)	2009/03/19	<1		mg/kg	
	RPD [O07629-01]	Total Lead (Pb)	2009/03/19	4.9		%	35
3000928 FV	QC STANDARD	Sieve - Pan	2009/03/20		100	%	89 - 111
		Sieve - #200 (>0.075mm)	2009/03/20		100	%	75 - 125
	RPD [O07629-01]	Sieve - Pan	2009/03/20	6.0		%	35
		Sieve - #200 (>0.075mm)	2009/03/20	9.3		%	35

NC = Non-calculable
RPD = Relative Percent Difference

Sample Integrity Form

Invoice To:
EBA ENGINEERING CONSULTANTS LTD.
ATTN: DERYCK MASTERMAN
442-10n STREET NORTH
LETHBRIDGE, AB
CANADA T1H 2C7
Client Contact:
DERYCK MASTERMAN

Maxxam Job #:	A911548
Date Received:	2009/03/14
Your C.O.C. #:	37163
Your Project #:	L22101183.001, AMA 9558
Maxxam Project Manager:	NICOLE CHAN
Quote #:	A80250

No discrepancies noted.

Report Comments

Received Date: 2009/03/14 **Time:** 9:30 **By:** _____

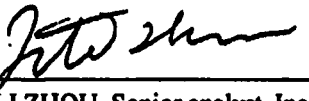
Inspected Date: _____ **Time:** _____ **By:** _____

SIF Created Date: _____ **Time:** 00:00 **By:** _____

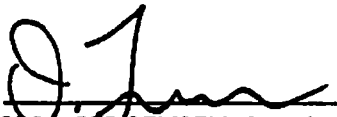
Validation Signature Page

Maxxam Job #: A911548

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



LILI ZHOU, Senior analyst, Inorganic department.



ORLA JORGENSEN, 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. SCC and CALA have approved this reporting process and electronic report format.

Maxxam Analytics Inc

☒ Calgary: 4000 19st St. NE, T2E 6P8 — Ph: (403) 291-3077 — Fax: (403) 735-2240 — Toll-free: (800) 386-7247
☐ Edmonton: 9619 – 42 Ave., T6E 5R2 — Ph: (780) 465-1212 — Fax: (780) 450-4187 — Toll-free: (877) 485-8839
www.maxxamanalytics.com

911548
37163

CHAIN OF CUSTODY

Page: 1 of 1

Invoice To: Require Report? Yes ☒ No ☐

Company Name: EBA ENGINEERING
Contact Name: Deryck Masterman
Address: 442-10th ST. N.
LETHBRIDGE PC: AB
Phone / Fax #: Ph: 329-9009 Fax: 328-8817

Report To:

Ph:

PO # / AFE #:
Quotation #:
Project #: 12210183.001
Project Name: AMA9558
Location: BARONS, AB.
Sampler's Initials:

REGULATORY REQUIREMENTS:

☒ AT1 - (1994) ☐ PST
☐ CCME ☐ CDWQG
☐ CCME FWAL ☐ G50
☐ Regulatory Limits to appear on Final report

SERVICE REQUESTED:

☐ RUSH (Please ensure you contact the lab)
Date Required:
☒ REGULAR Turnaround

REPORT DISTRIBUTION:

EMAIL ADDRESSES:
dmasterman@eba.ca
jlamontagne@eba.ca

	Sample Identification	Matrix S/W	Date & Time Sampled Year/Month/Day	SOILS: BTEX F1-F4	Grain (75 micron)	Salinity	Metals ☐ Extended ☐ CCME ☐ AT1	Mercury	Leachable BTEX	Leachable Metals	Paint Filter (Free Liquid)	Flashpoint	pH	WATERS: BTEX/F1-F4	Routine Water Package ☐	BOD	TOTAL Metals	DISS Metals	Mercury	PAHs	TKN	DRO	Lead						
1	09BH09 / 4.2m	Soil	March 11/09	X	X																		X						
2	09BH09 / 4.8m			X	X																		X						
3	09BH09 / 6.0m			X																			X						
4	09BH10 / 1.8m			X	X																		X						
5	09BH10 / 3.0m			X																			X						
6	09BH10 / 4.8m			X																			X						
7	09BH11 / 3.6m			X																			X						
8	09BH11 / 4.8m			X																			X						
9	09BH11 / 6.0m			X	X																		X						
10	09BH13 / 4.8m			X																			X						
11	09BH14 / 3.0m			X	X																		X						
12	09BH14 / 4.8m			X																			X						

"All samples are held for 60 days after sample receipt. For special requests please contact your Project Manager.

Relinquished By: JAMIE LAMONTAGNE (403)634-3566 Date/Time: MARCH 13/09 - 3:00pm
Signature:
COMMENTS/SPECIAL INSTRUCTIONS:

RECEIVED
Received
MAR 14 2009
9130 JFS

Temperature
10,10,10

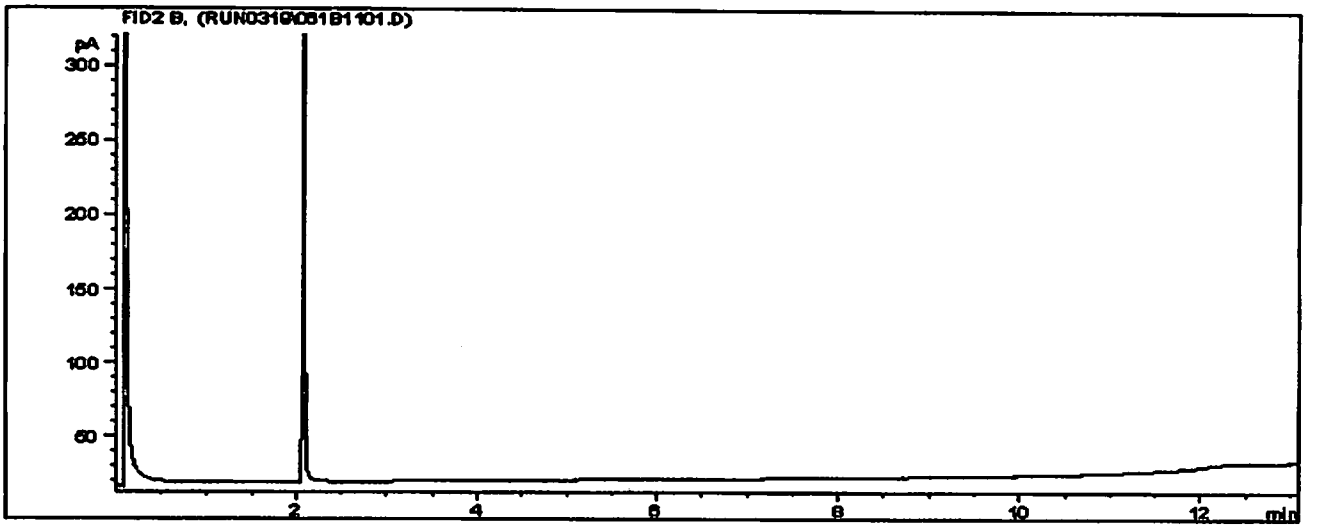
COC #

Maxxam Analytics Inc. CAL FCD-00357 Rev4 03/07

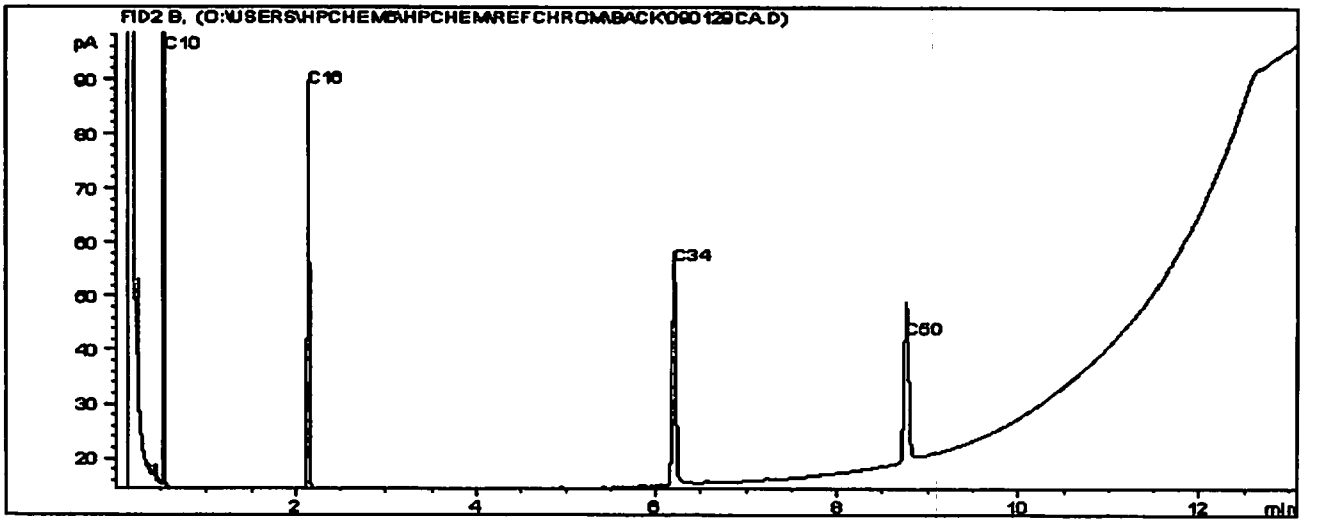
Report Date: 2009/03/23
Maxxam Job #: A911548
Maxxam Sample: O07629

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA 9558
Site Reference: BARONS, AB
Client ID: 09BH09/4.2M

CCME Hydrocarbons (F2-F4 in soil) 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+	

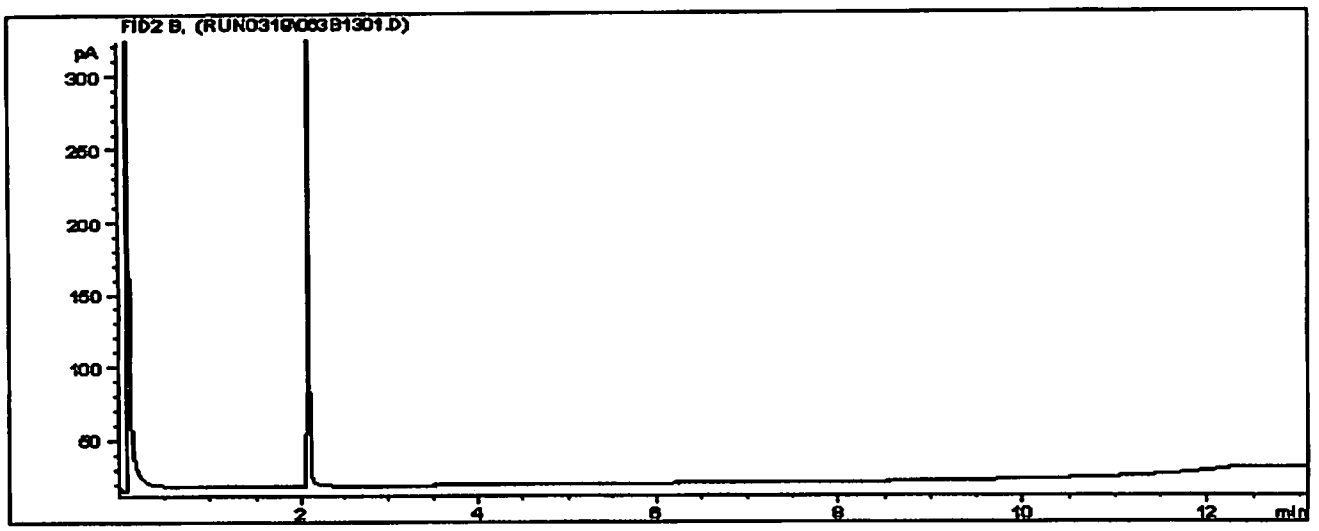
Page 1 of 1

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

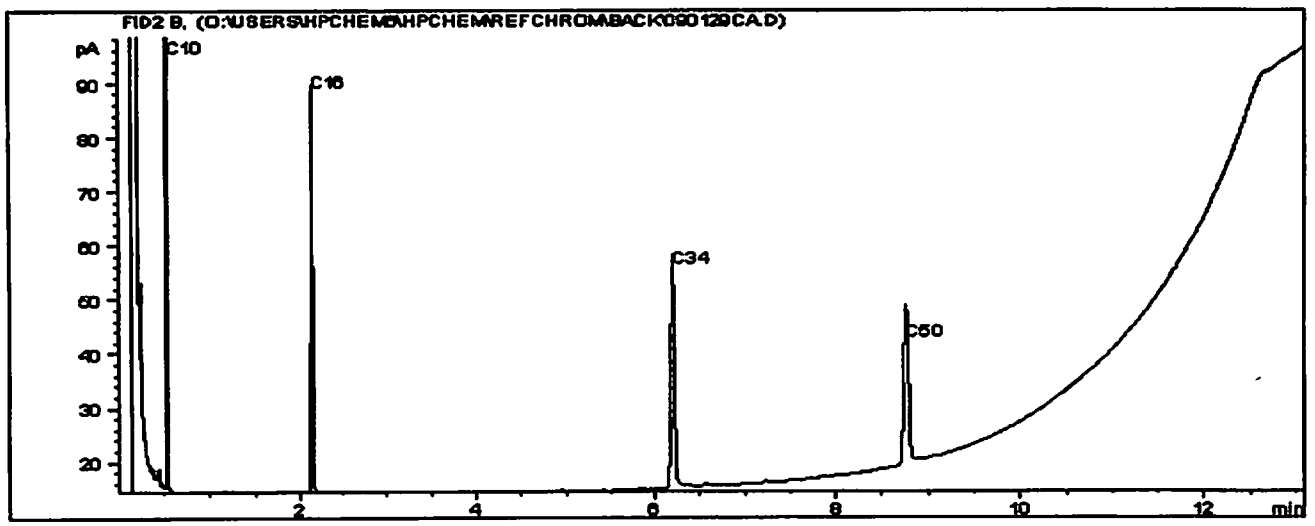
Report Date: 2009/03/23
Maxxam Job #: A911548
Maxxam Sample: O07629

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA 9558
Site Reference: BARONS, AB
Client ID: 09BH09/4.2M

CCME Hydrocarbons (F2-F4 in soil) Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

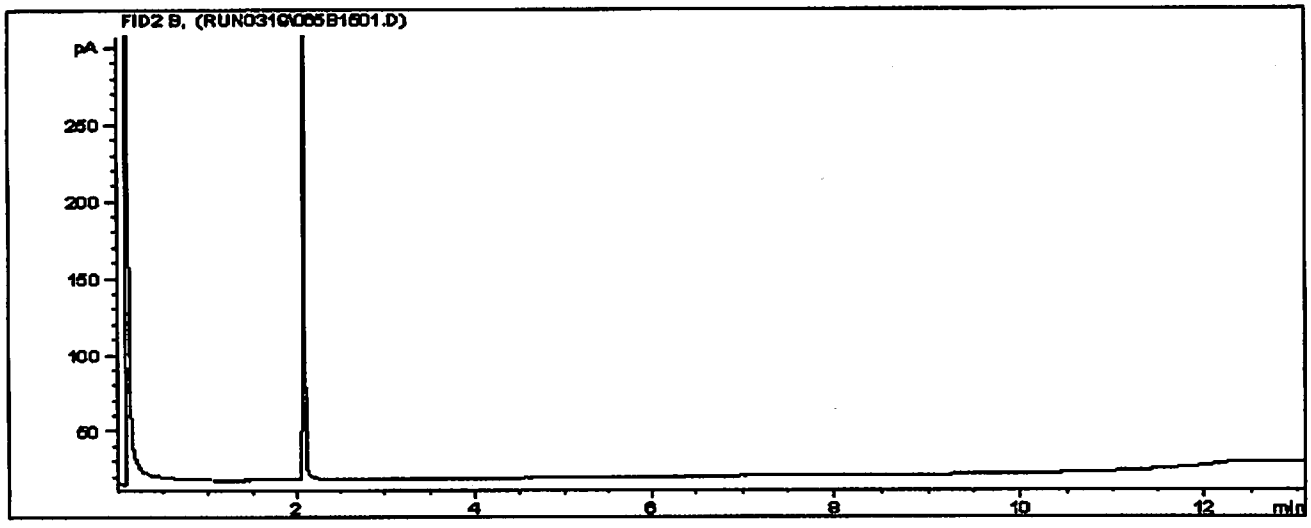
Gasoline:	C4 - C12		Diesel:	C8 - C22	
Varsol:	C8 - C12		Lubricating Oils:	C20 - C40	
Kerosene:	C7 - C16		Crude Oils:	C3 - C60+	

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

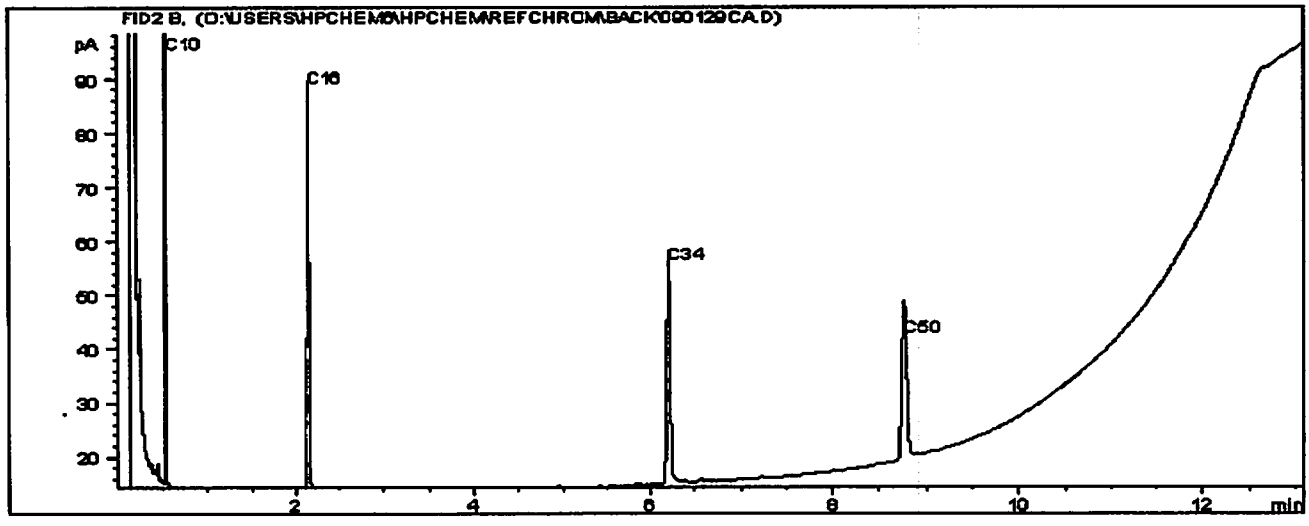
Report Date: 2009/03/23
Maxxam Job #: A911548
Maxxam Sample: O07630

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA 9558
Site Reference: BARONS, AB
Client ID: 09BH09/4.8M

CCME Hydrocarbons (F2-F4 in soil) 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+

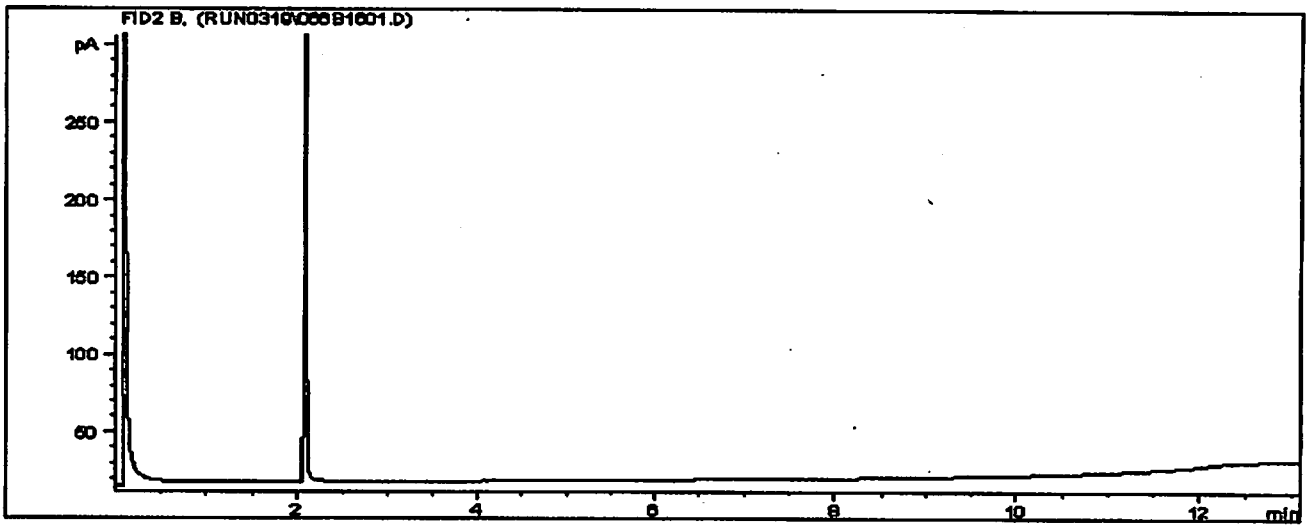
Page 1 of 1

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

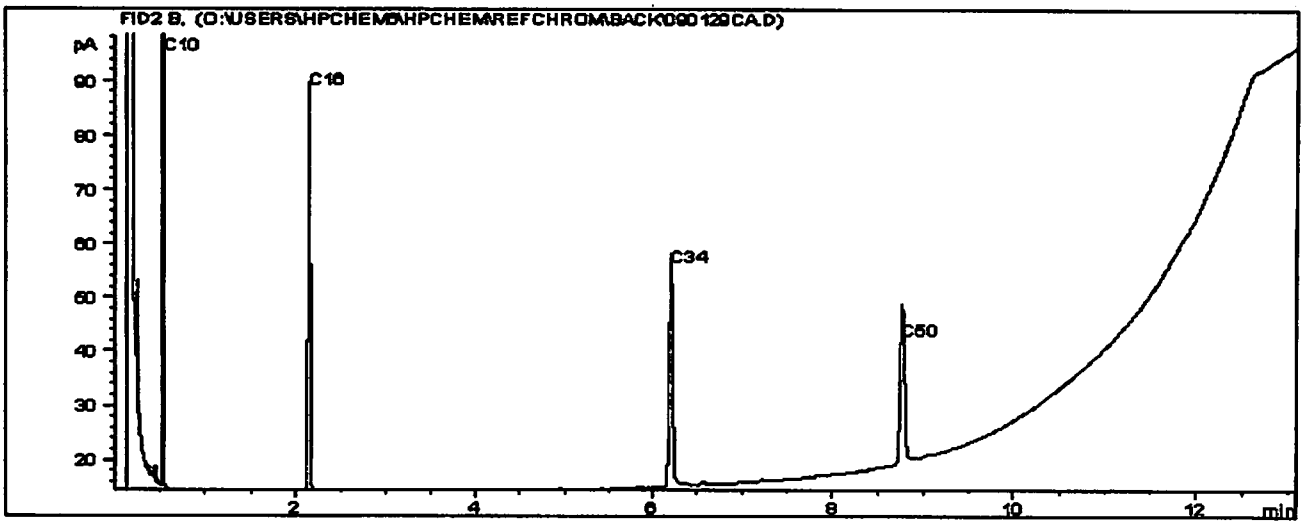
Report Date: 2009/03/23
Maxxam Job #: A911548
Maxxam Sample: O07631

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA 9558
Site Reference: BARONS, AB
Client ID: 09BH09/6.0M

CCME Hydrocarbons (F2-F4 in soil) 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+

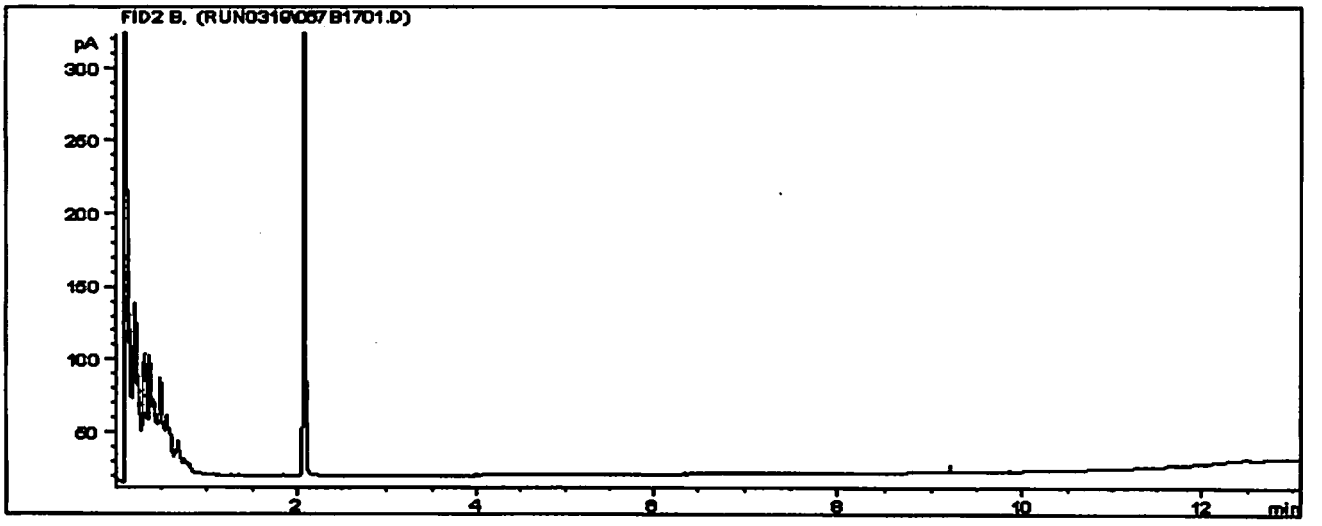
Page 1 of 1

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

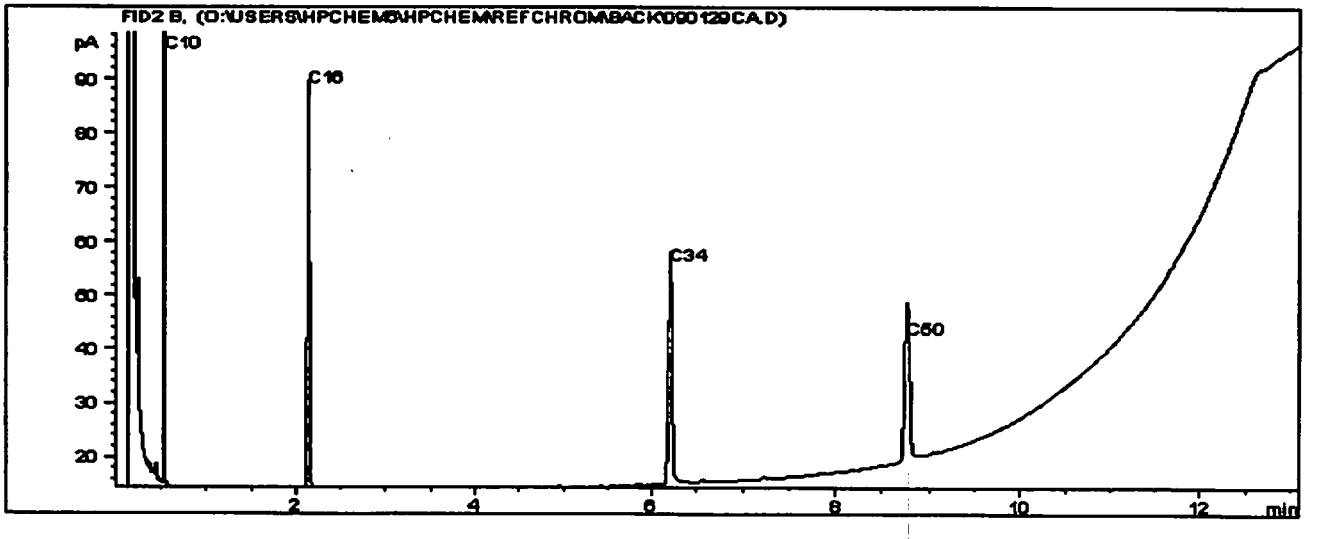
Report Date: 2009/03/23
Maxxam Job #: A911548
Maxxam Sample: O07632

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA 9558
Site Reference: BARONS, AB
Client ID: 09BH10/1.8M

CCME Hydrocarbons (F2-F4 in soil) 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+

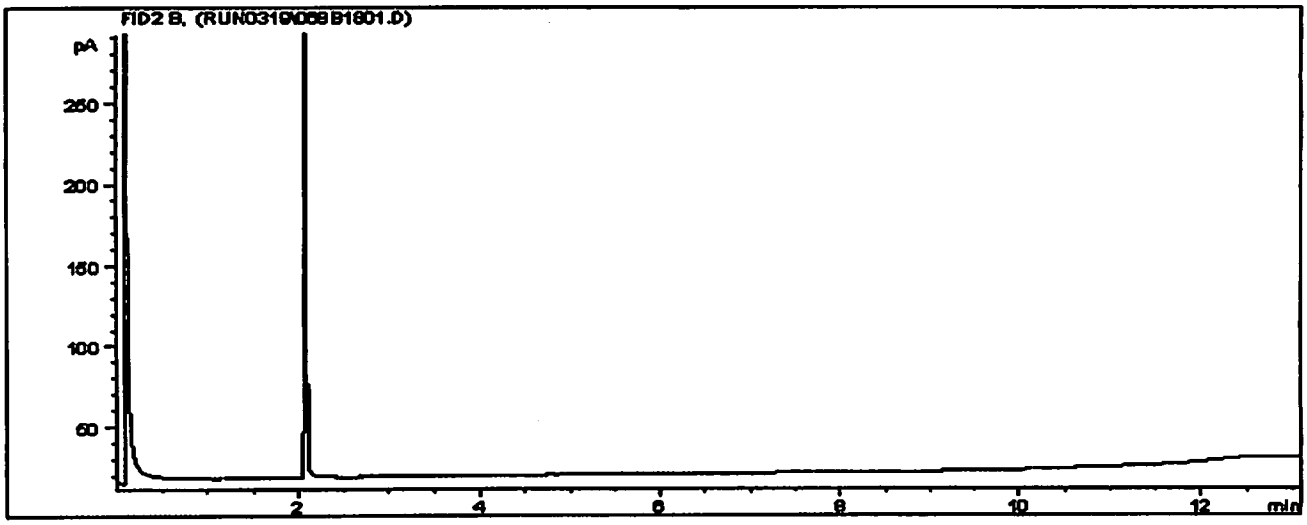
Page 1 of 1

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

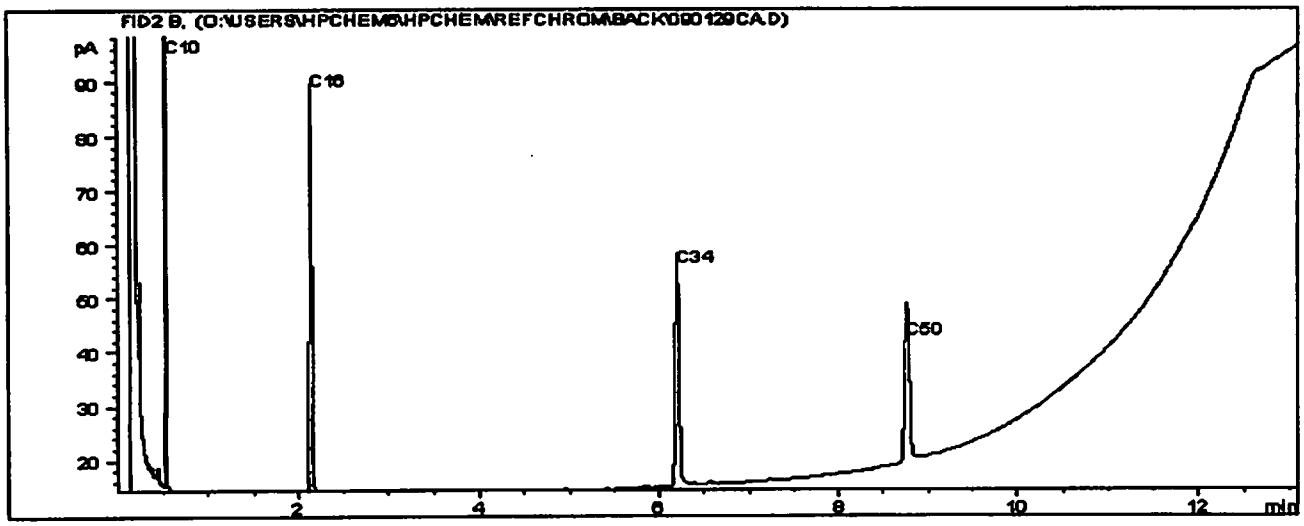
Report Date: 2009/03/23
Maxxam Job #: A911548
Maxxam Sample: O07633

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA 9558
Site Reference: BARONS, AB
Client ID: 09BH10/3.0M

CCME Hydrocarbons (F2-F4 in soil) 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+	

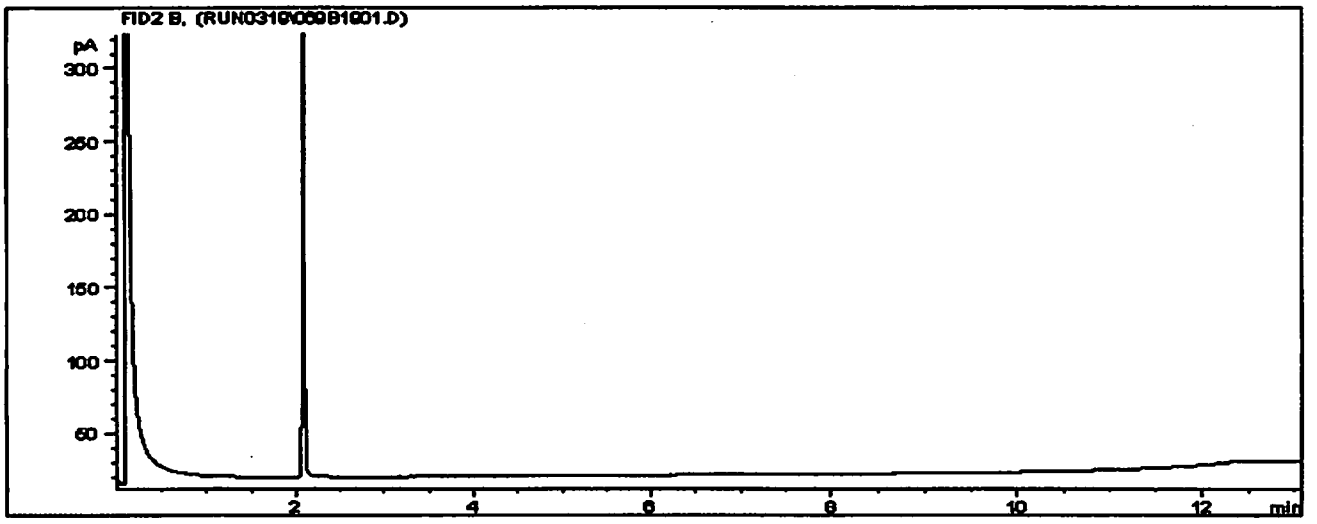
Page 1 of 1

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

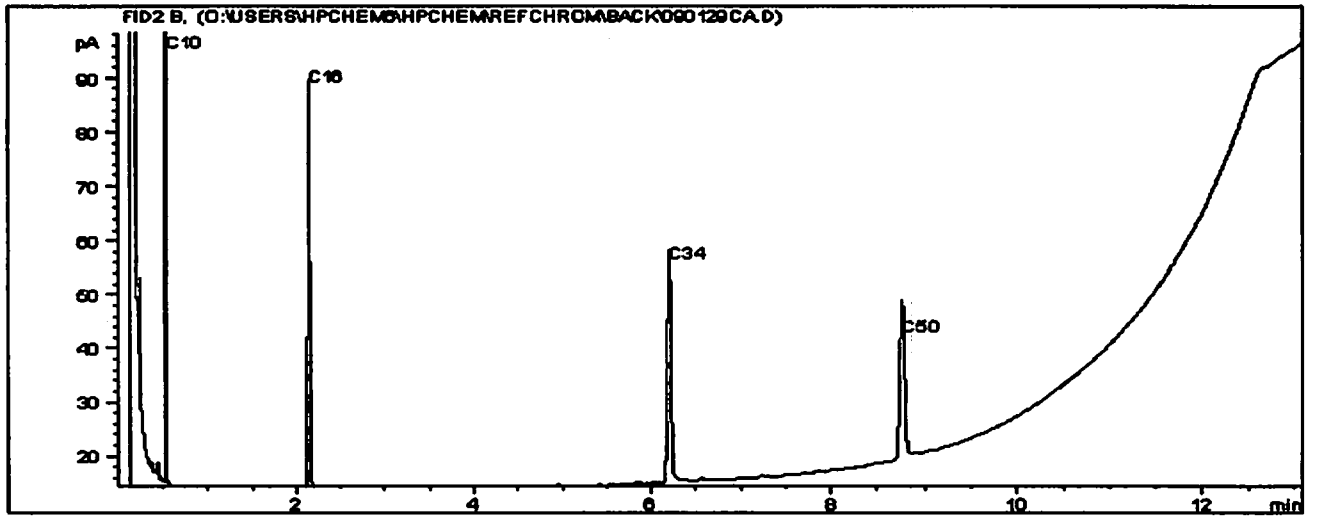
Report Date: 2009/03/23
Maxxam Job #: A911548
Maxxam Sample: O07634

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA 9558
Site Reference: BARONS, AB
Client ID: 09BH10/4.8M

CCME Hydrocarbons (F2-F4 in soil) 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+

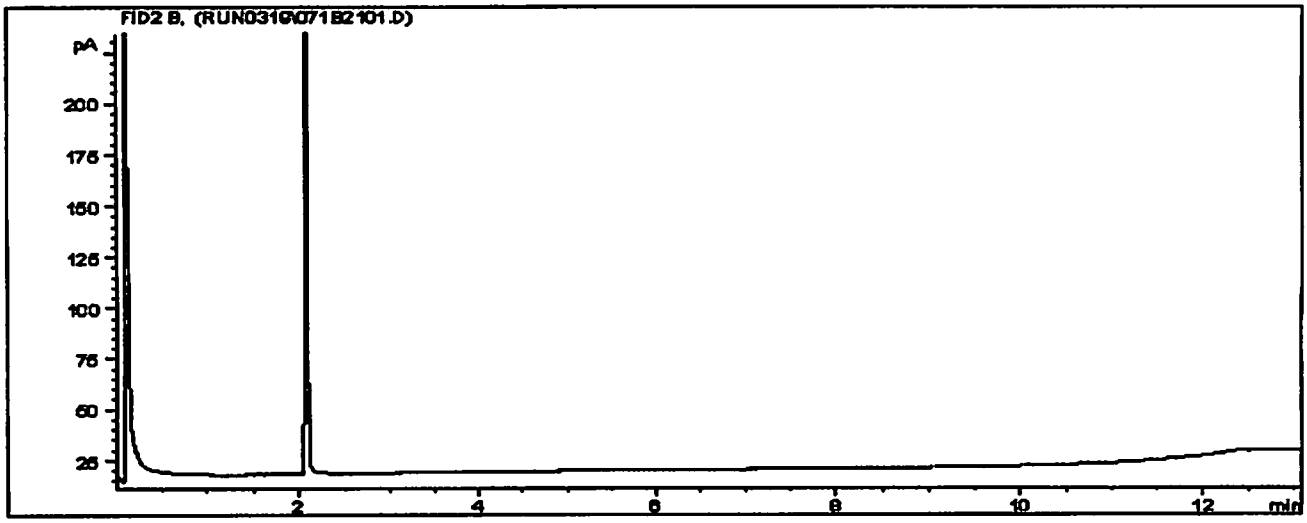
Page 1 of 1

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

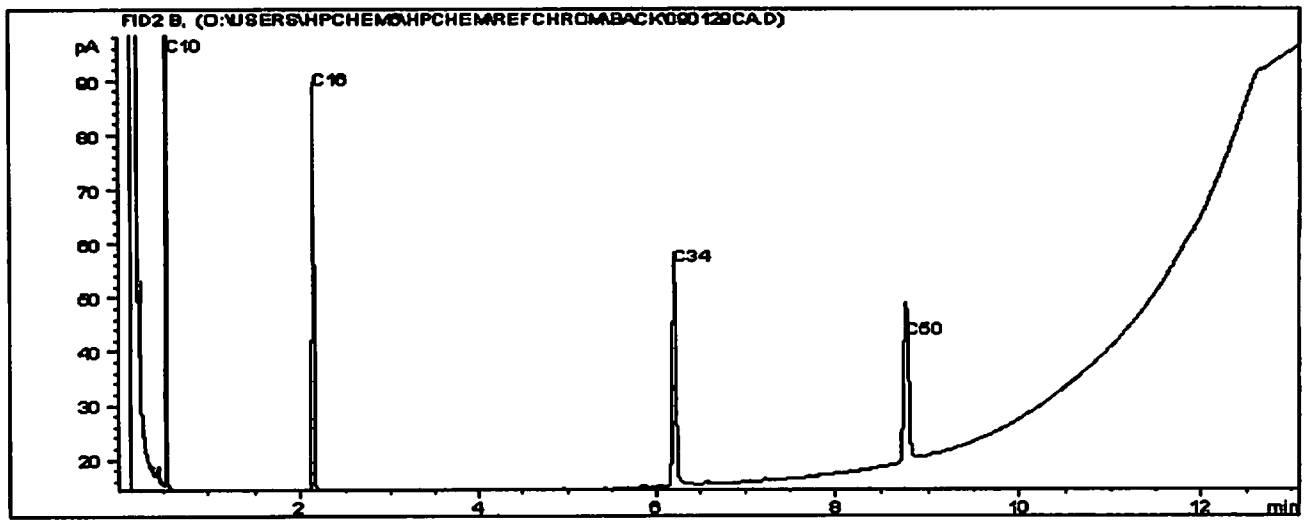
Report Date: 2009/03/23
Maxxam Job #: A911548
Maxxam Sample: O07635

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA 9558
Site Reference: BARONS, AB
Client ID: 09BH11/3.6M

CCME Hydrocarbons (F2-F4 in soil) 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+	

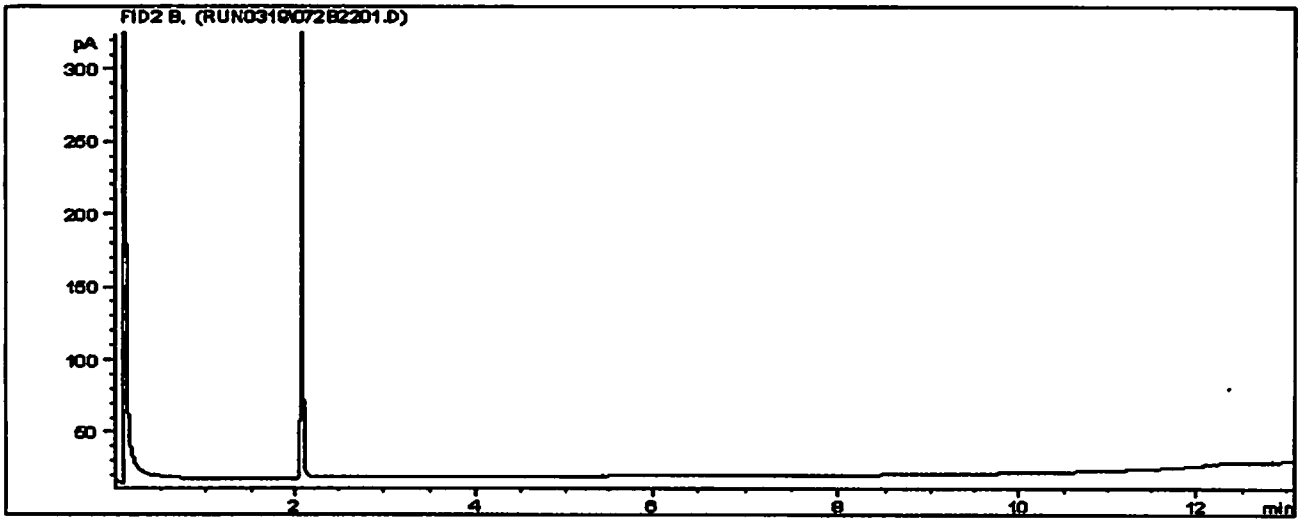
Page 1 of 1

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

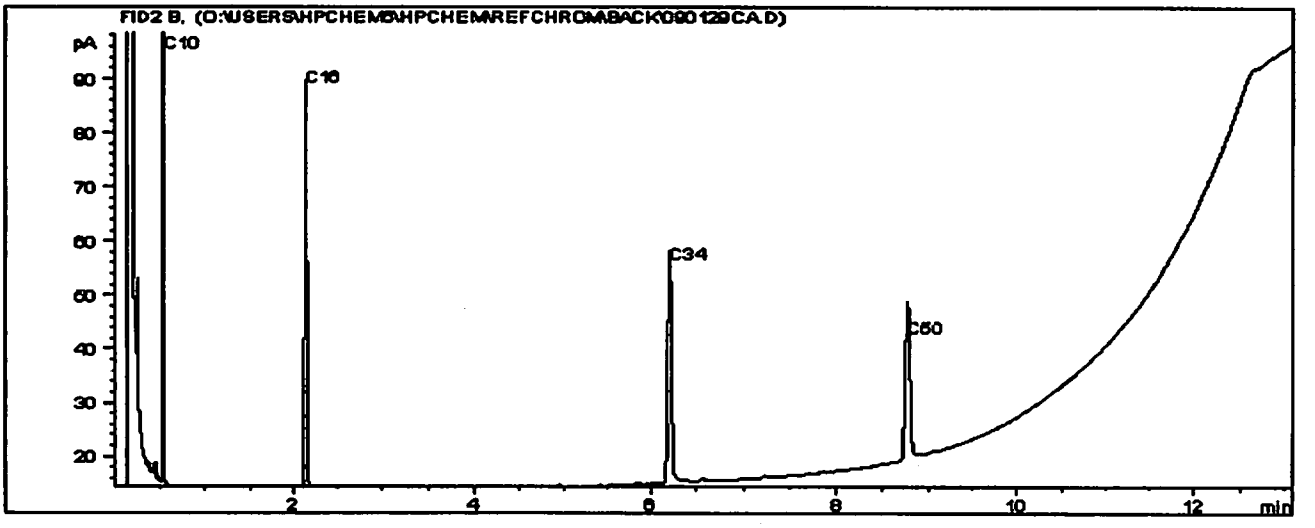
Report Date: 2009/03/23
Maxxam Job #: A911548
Maxxam Sample: O07636

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA 9558
Site Reference: BARONS, AB
Client ID: 09BH11/4.8M

CCME Hydrocarbons (F2-F4 in soil) Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

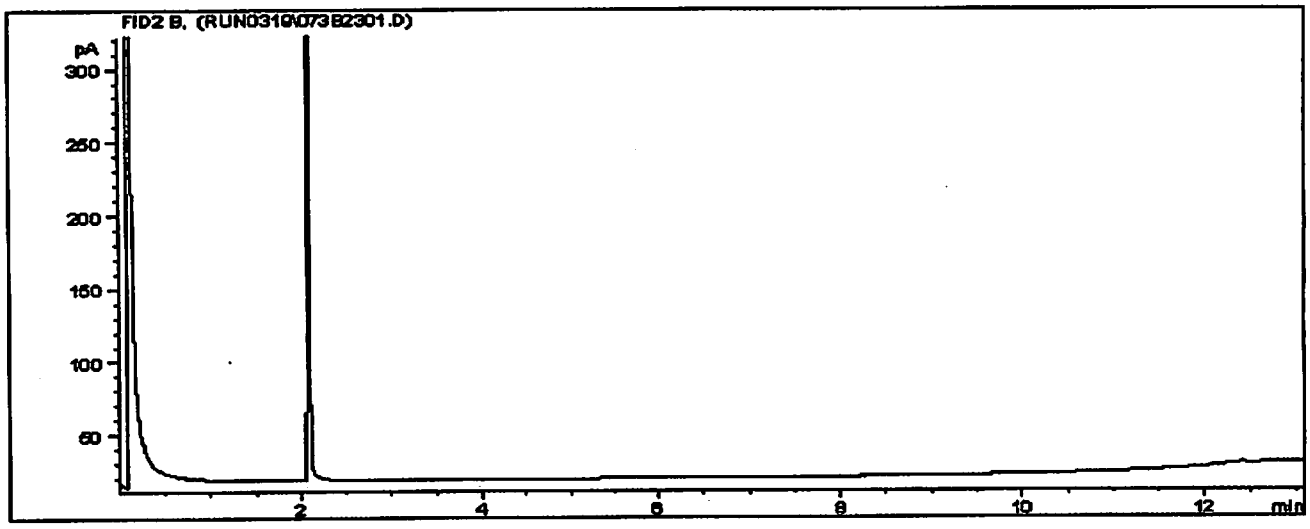
Gasoline:	C4 - C12		Diesel:	C8 - C22	
Varsol:	C8 - C12		Lubricating Oils:	C20 - C40	
Kerosene:	C7 - C16		Crude Oils:	C3 - C60+	

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

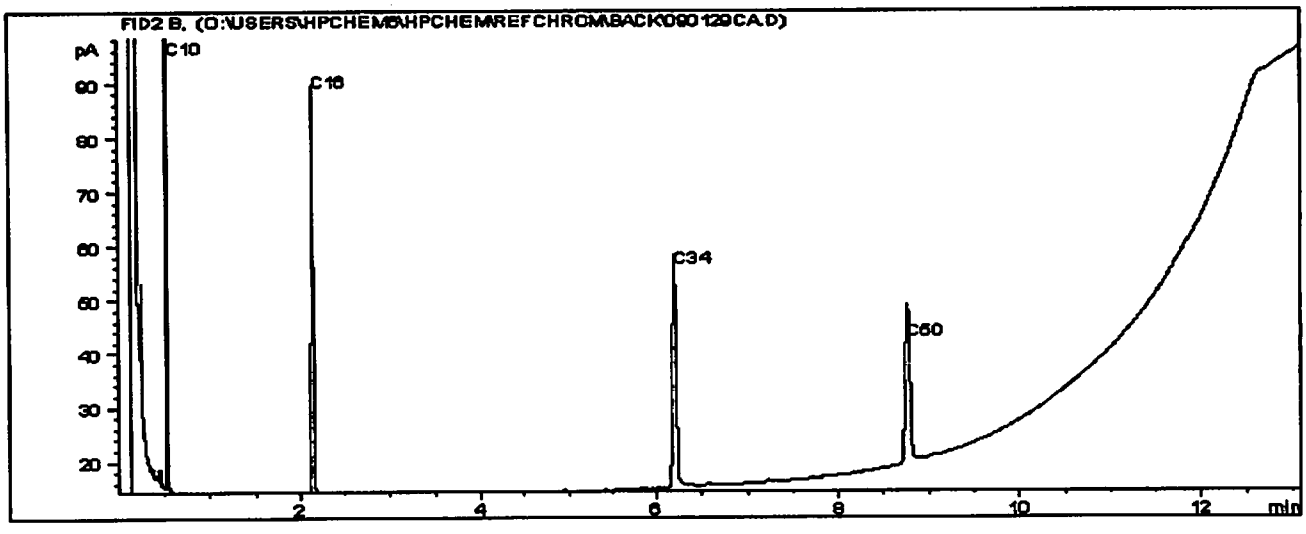
Report Date: 2009/03/23
Maxxam Job #: A911548
Maxxam Sample: O07637

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA 9558
Site Reference: BARONS, AB
Client ID: 09BH11/6.0M

CCME Hydrocarbons (F2-F4 in soil) 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+	

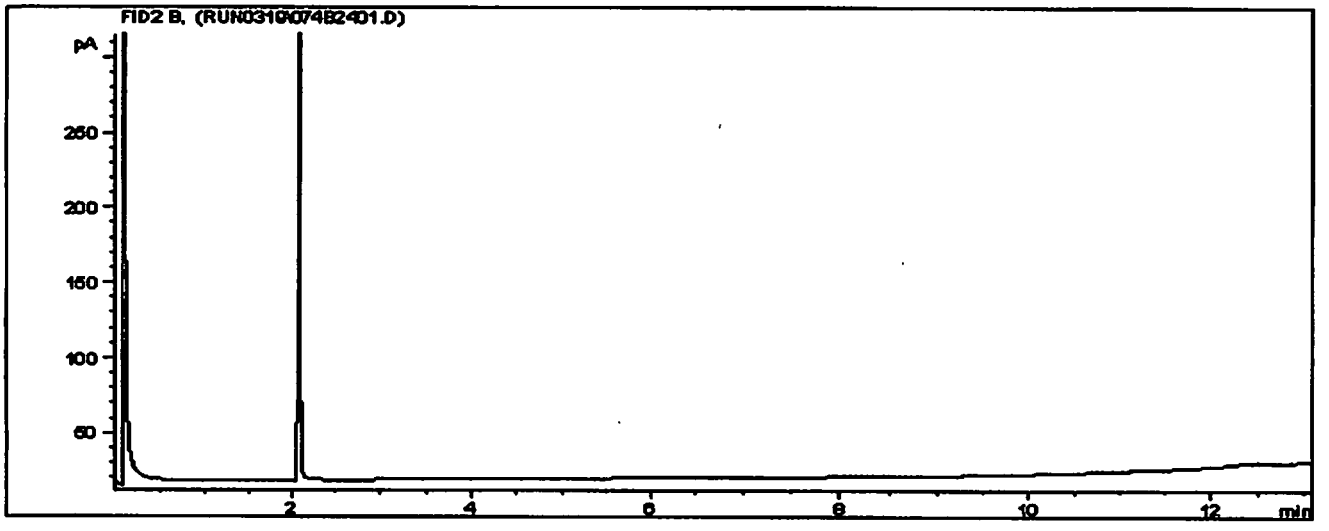
Page 1 of 1

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

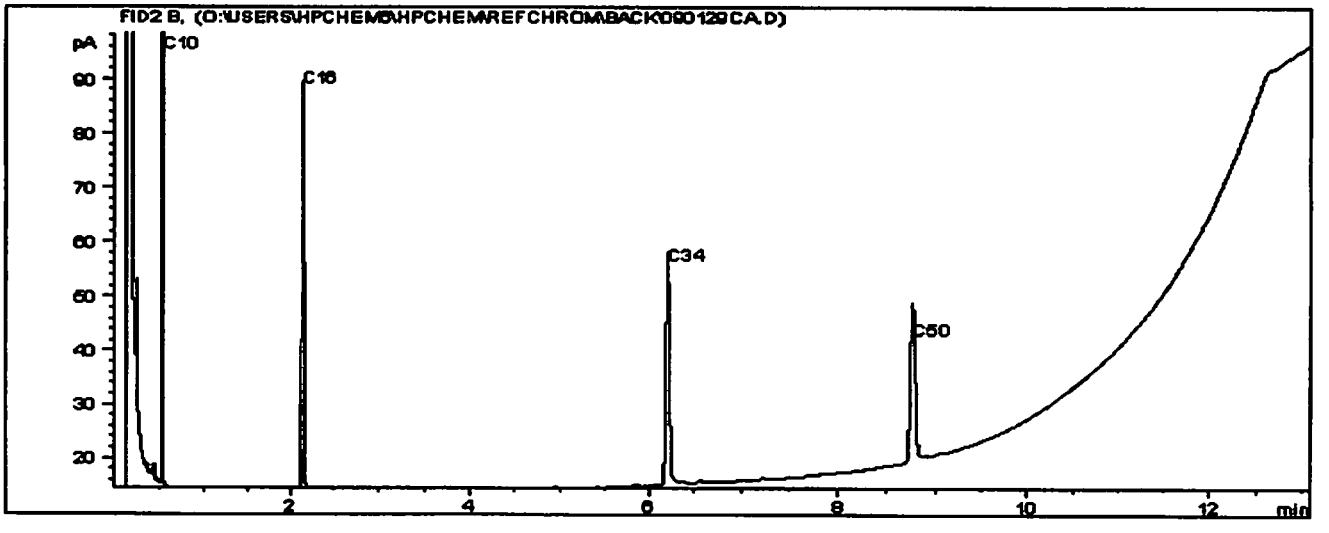
Report Date: 2009/03/23
Maxxam Job #: A911548
Maxxam Sample: O07638

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA 9558
Site Reference: BARONS, AB
Client ID: 09BH13/4.8M

CCME Hydrocarbons (F2-F4 in soil) 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+

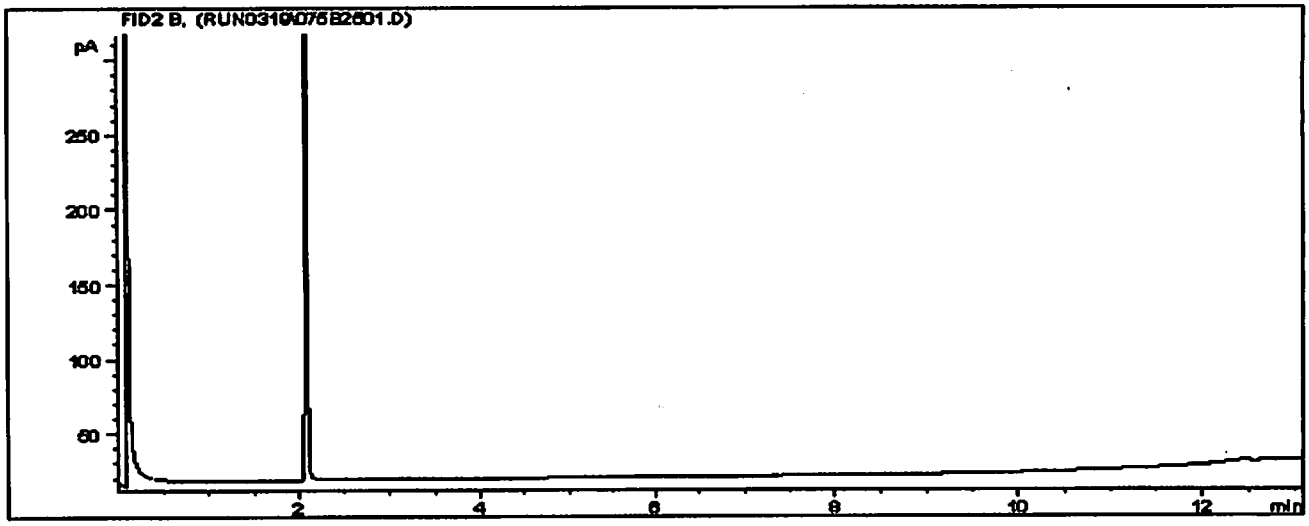
Page 1 of 1

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

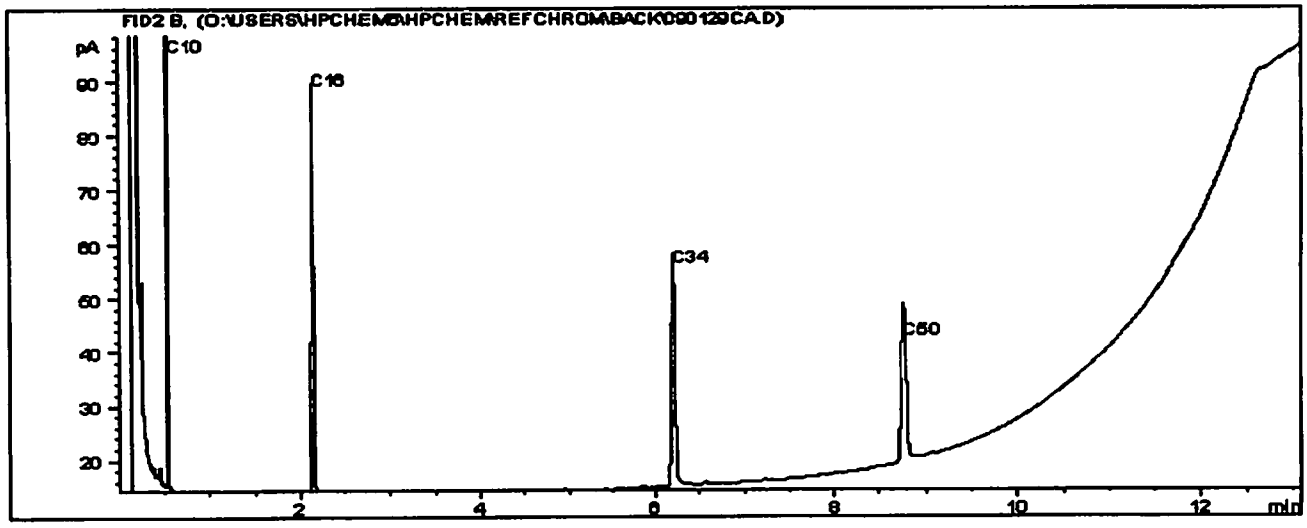
Report Date: 2009/03/23
Maxxam Job #: A911548
Maxxam Sample: O07639

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA 9558
Site Reference: BARONS, AB
Client ID: 09BH14/3.0M

CCME Hydrocarbons (F2-F4 in soil) 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+	

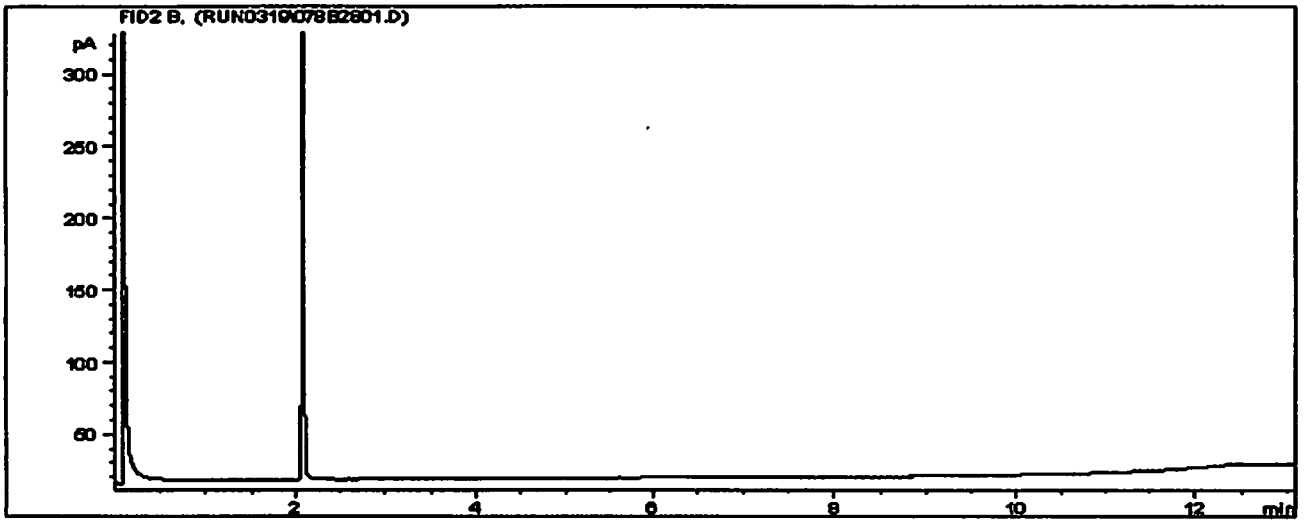
Page 1 of 1

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

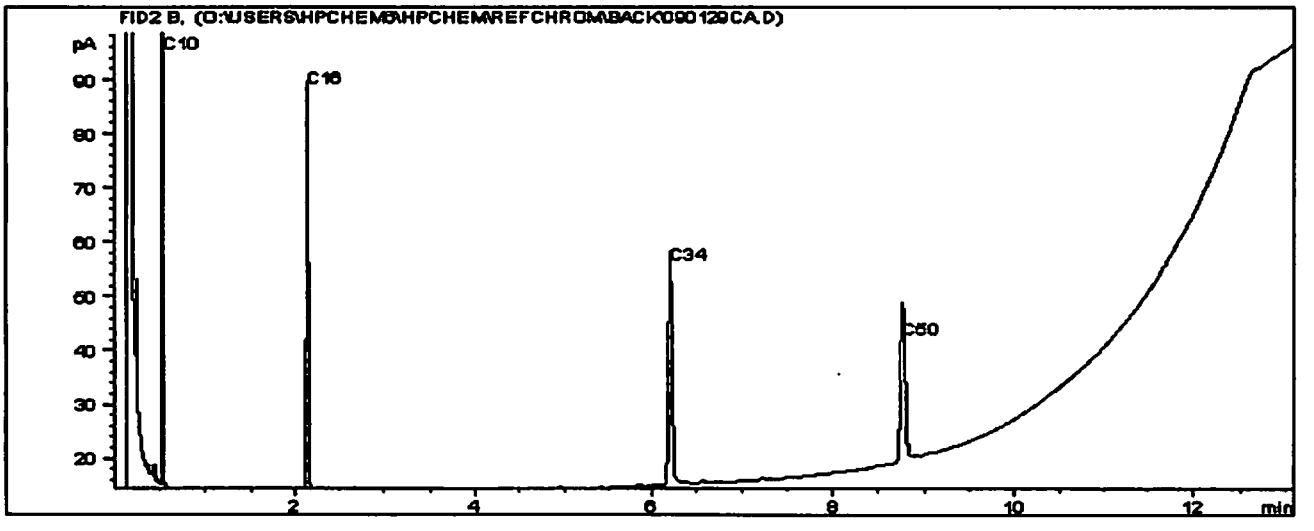
Report Date: 2009/03/23
Maxxam Job #: A911548
Maxxam Sample: O07640

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001, AMA 9558
Site Reference: BARONS, AB
Client ID: 09BH14/4.8M

CCME Hydrocarbons (F2-F4 in soil) 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+	

Page 1 of 1

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

Your Project #: L22101183.001
Your C.O.C. #: 23607

Attention: DERYCK MASTERMAN
EBA ENGINEERING CONSULTANTS LTD.
442-10n STREET NORTH
LETHBRIDGE, AB
CANADA T1H 2C7

Report Date: 2009/03/31

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A913848
Received: 2009/03/27, 8:30

Sample Matrix: Water
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 in Water by HS GC/MS	4	N/A	2009/03/31	CAL SOP-00104	EPA 8260 C / CCME
CCME Hydrocarbons in Water (F2; C10-C16)	4	2009/03/30	2009/03/30	CAL SOP-00087	CCME PHC-CWS
Lead (Dissolved)	4	N/A	2009/03/30	CAL SOP-00191	EPA SW-846 6020A

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

Encryption Key

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

NICOLE CHAN, Project Manager
Email: Nicole.Chan@MaxxamAnalytics.com
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. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 1

Maxxam Job #: A913848
Report Date: 2009/03/31

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001

Sampler Initials: JL

AT1 BTEX AND F1-F2 (WATER)

Maxxam ID		O23766	O23767	O23768	O23769		
Sampling Date		2009/03/26	2009/03/26	2009/03/26	2009/03/26		
COC Number		23607	23607	23607	23607		
	Units	09MW11	09MW13	09MW09	09DUP01	RDL	QC Batch
Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	mg/L	<0.1	<0.1	0.1	<0.1	0.1	3022305
Volatiles							
Benzene	mg/L	0.0057	<0.0004	0.0017	<0.0004	0.0004	3021832
Toluene	mg/L	<0.0004	<0.0004	<0.0004	<0.0004	0.0004	3021832
Ethylbenzene	mg/L	<0.0004	<0.0004	<0.0004	<0.0004	0.0004	3021832
o-Xylene	mg/L	<0.0004	<0.0004	0.0005	<0.0004	0.0004	3021832
m & p-Xylene	mg/L	<0.0008	<0.0008	<0.0008	<0.0008	0.0008	3021832
Xylenes (Total)	mg/L	<0.0008	<0.0008	<0.0008	<0.0008	0.0008	3021832
F1 (C6-C10) - BTEX	mg/L	0.1	<0.1	<0.1	<0.1	0.1	3021832
(C6-C10)	mg/L	0.1	<0.1	<0.1	<0.1	0.1	3021832
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	98	97	95	97	N/A	3021832
D4-1,2-DICHLOROETHANE (sur.)	%	94	91	91	94	N/A	3021832
D8-TOLUENE (sur.)	%	98	98	100	98	N/A	3021832
O-TERPHENYL (sur.)	%	86	83	101	85	N/A	3022305

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: A913848
Report Date: 2009/03/31

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001

Sampler Initials: JL

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		O23766	O23767	O23768	O23769		
Sampling Date		2009/03/26	2009/03/26	2009/03/26	2009/03/26		
COC Number		23607	23607	23607	23607		
	Units	09MW11	09MW13	09MW09	09DUP01	RDL	QC Batch
Elements							
Dissolved Lead (Pb)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	3020370

RDL = Reportable Detection Limit

Maxxam Job #: A913848
Report Date: 2009/03/31

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001

Sampler Initials: JL

Package 1	9.0°C

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

General Comments

Results relate only to the items tested.

EBA ENGINEERING CONSULTANTS LTD.
Attention: DERYCK MASTERMAN
Client Project #: L22101183.001
P.O. #:
Site Reference:

Quality Assurance Report

Maxxam Job Number: CA913848

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3020370 ST4	MATRIX SPIKE	Dissolved Lead (Pb)	2009/03/30		85	%	80 - 120
	SPIKE	Dissolved Lead (Pb)	2009/03/30		103	%	80 - 119
	BLANK	Dissolved Lead (Pb)	2009/03/30	<0.0002		mg/L	
	RPD	Dissolved Lead (Pb)	2009/03/30	NC		%	20
3021832 DV1	MATRIX SPIKE	4-BROMOFLUOROBENZENE (sur.)	2009/03/31		97	%	70 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2009/03/31		103	%	70 - 130
		D8-TOLUENE (sur.)	2009/03/31		95	%	70 - 130
		Benzene	2009/03/31		97	%	70 - 130
		Toluene	2009/03/31		99	%	70 - 130
		Ethylbenzene	2009/03/31		97	%	70 - 130
		o-Xylene	2009/03/31		100	%	70 - 130
		m & p-Xylene	2009/03/31		97	%	70 - 130
	SPIKE	4-BROMOFLUOROBENZENE (sur.)	2009/03/30		99	%	70 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2009/03/30		98	%	70 - 130
		D8-TOLUENE (sur.)	2009/03/30		99	%	70 - 130
		Benzene	2009/03/30		79	%	70 - 130
		Toluene	2009/03/30		81	%	70 - 130
		Ethylbenzene	2009/03/30		80	%	70 - 130
		o-Xylene	2009/03/30		84	%	70 - 130
		m & p-Xylene	2009/03/30		81	%	70 - 130
		(C6-C10)	2009/03/30		72	%	70 - 130
	BLANK	4-BROMOFLUOROBENZENE (sur.)	2009/03/30		96	%	70 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2009/03/30		92	%	70 - 130
		D8-TOLUENE (sur.)	2009/03/30		100	%	70 - 130
		Benzene	2009/03/30	<0.0004		mg/L	
		Toluene	2009/03/30	<0.0004		mg/L	
		Ethylbenzene	2009/03/30	<0.0004		mg/L	
		o-Xylene	2009/03/30	<0.0004		mg/L	
		m & p-Xylene	2009/03/30	<0.0008		mg/L	
		Xylenes (Total)	2009/03/30	<0.0008		mg/L	
		F1 (C6-C10) - BTEX	2009/03/30	<0.1		mg/L	
		(C6-C10)	2009/03/30	<0.1		mg/L	
	RPD	Benzene	2009/03/31	NC		%	40
		Toluene	2009/03/31	NC		%	40
		Ethylbenzene	2009/03/31	NC		%	40
		o-Xylene	2009/03/31	NC		%	40
		m & p-Xylene	2009/03/31	NC		%	40
		Xylenes (Total)	2009/03/31	NC		%	40
		F1 (C6-C10) - BTEX	2009/03/31	NC		%	40
		(C6-C10)	2009/03/31	NC		%	40
3022305 MR5	MATRIX SPIKE	O-TERPHENYL (sur.)	2009/03/30		81	%	70 - 130
		F2 (C10-C16 Hydrocarbons)	2009/03/30		96	%	70 - 130
	SPIKE	O-TERPHENYL (sur.)	2009/03/30		110	%	70 - 130
		F2 (C10-C16 Hydrocarbons)	2009/03/30		91	%	70 - 130
	BLANK	O-TERPHENYL (sur.)	2009/03/30		108	%	70 - 130
		F2 (C10-C16 Hydrocarbons)	2009/03/30	<0.1		mg/L	
	RPD	F2 (C10-C16 Hydrocarbons)	2009/03/30	NC		%	40

NC = Non-calculable
RPD = Relative Percent Difference

Sample Integrity Form

Invoice To:
EBA ENGINEERING CONSULTANTS LTD.
ATTN: DERYCK MASTERMAN
442-10n STREET NORTH
LETHBRIDGE, AB
CANADA T1H 2C7
Client Contact:
DERYCK MASTERMAN

Maxxam Job #:	A913848
Date Received:	2009/03/27
Your C.O.C. #:	23607
Your Project #:	L22101183.001
Maxxam Project Manager:	NICOLE CHAN
Quote #:	A80250

No discrepancies noted.

Report Comments

Received Date: 2009/03/27 **Time:** 8:30 **By:** _____

Inspected Date: _____ **Time:** _____ **By:** _____

SIF Created Date: _____ **Time:** 00:00 **By:** _____

Validation Signature Page

Maxxam Job #: A913848

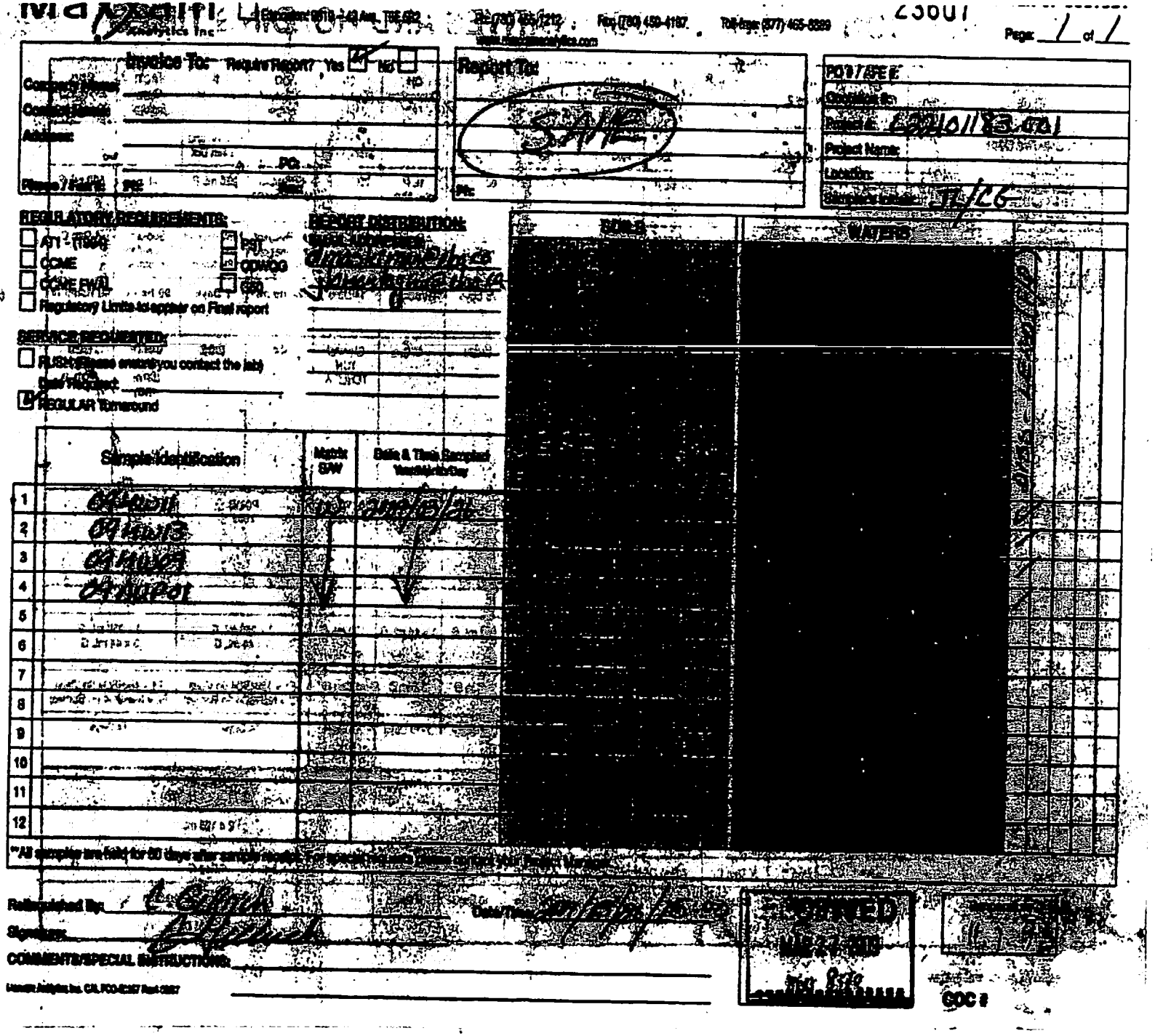
The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

LUBA SHYMUSHOVSKA, Senior Analyst, Organic Department

LILI ZHOU, Senior analyst, Inorganic department.

ORLA JORGENSEN, 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. SCC and CALA have approved this reporting process and electronic report format.



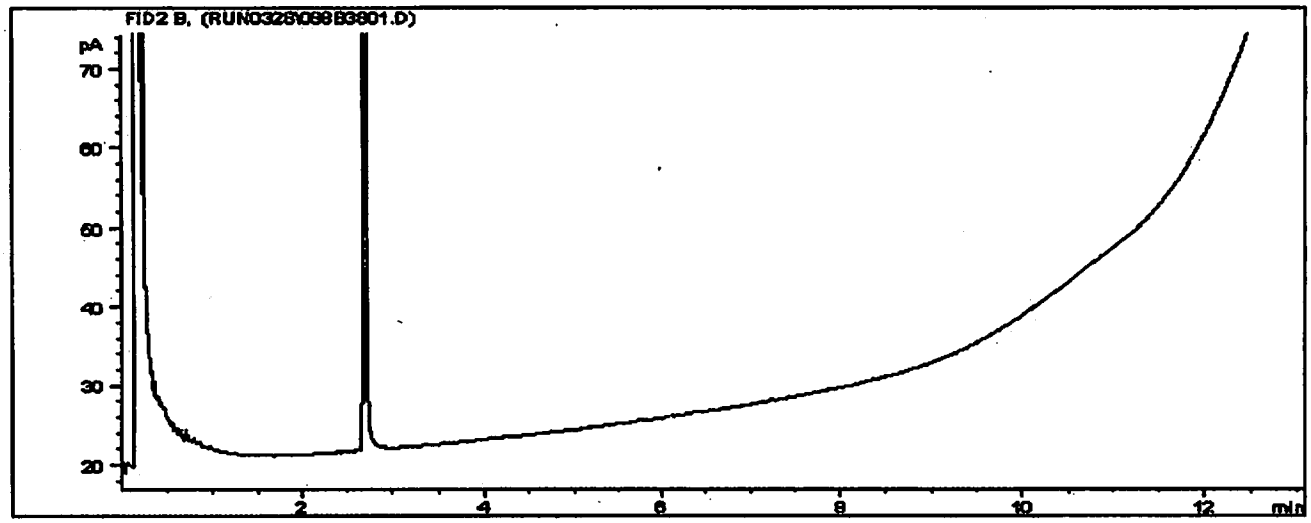
Page 8 of 12

Report Date: 2009/03/31
Maxxam Job #: A913848
Maxxam Sample: O23766

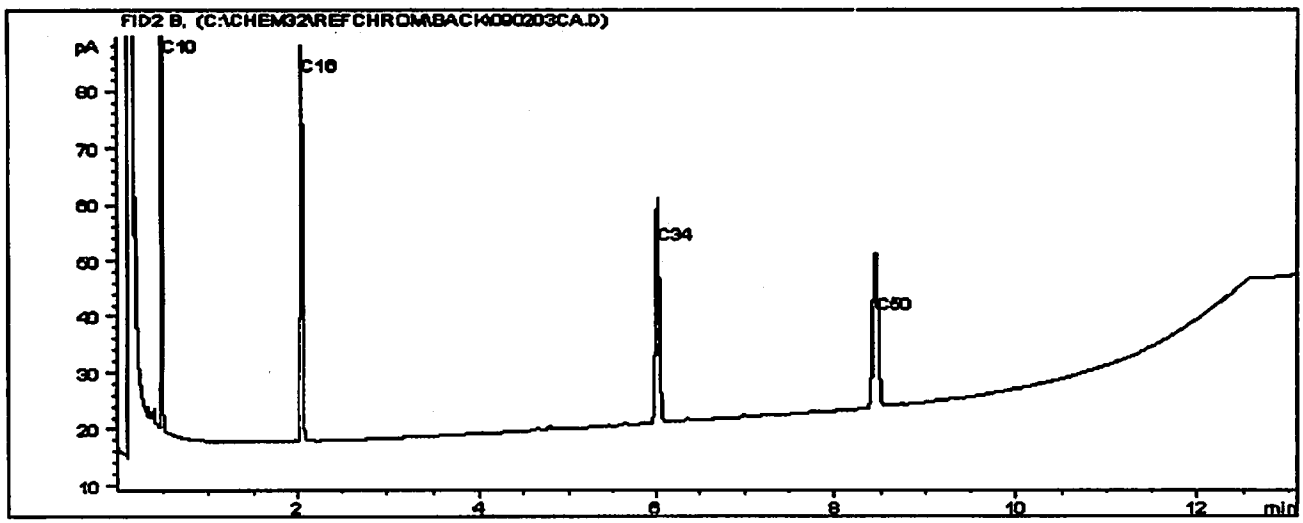
EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001

Client ID: 09MW11

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+

Page 1 of 1

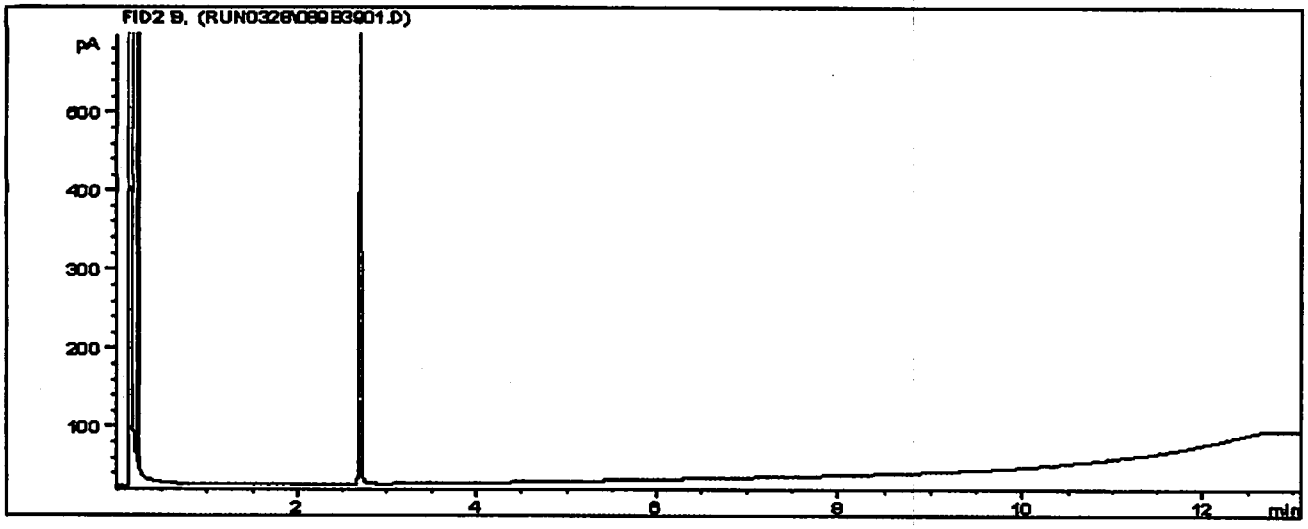
Note: This information is provided for reference purposes only. Should detailed chemist intrepretation or fingerprinting be required to please contact the laboratory.

Report Date: 2009/03/31
Maxxam Job #: A913848
Maxxam Sample: O23767

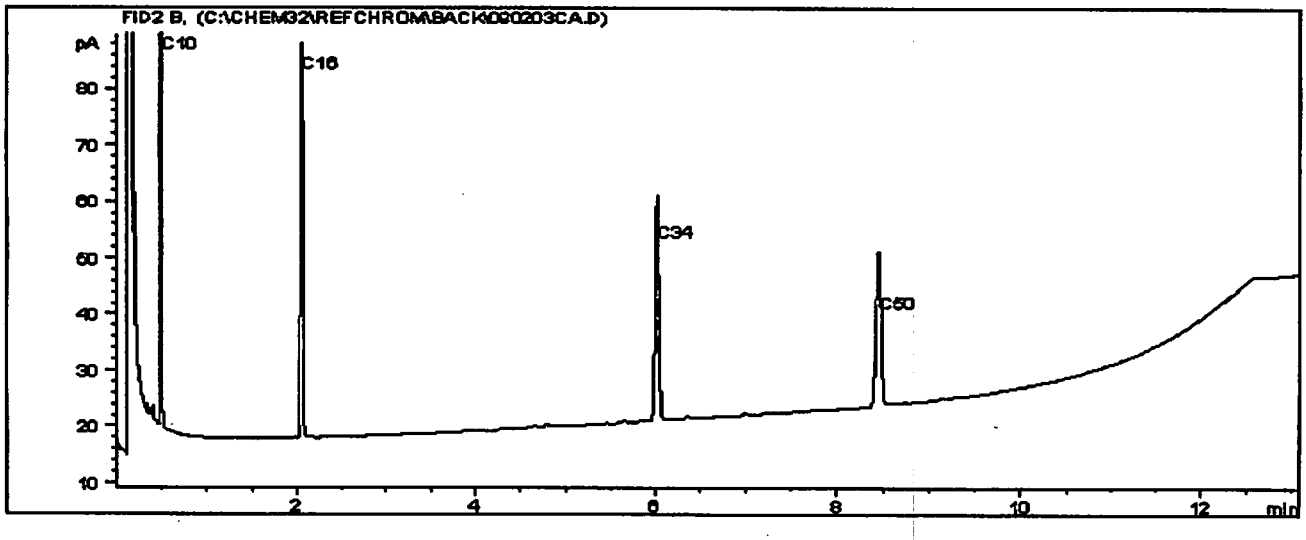
EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001

Client ID: 09MW13

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+

Page 1 of 1

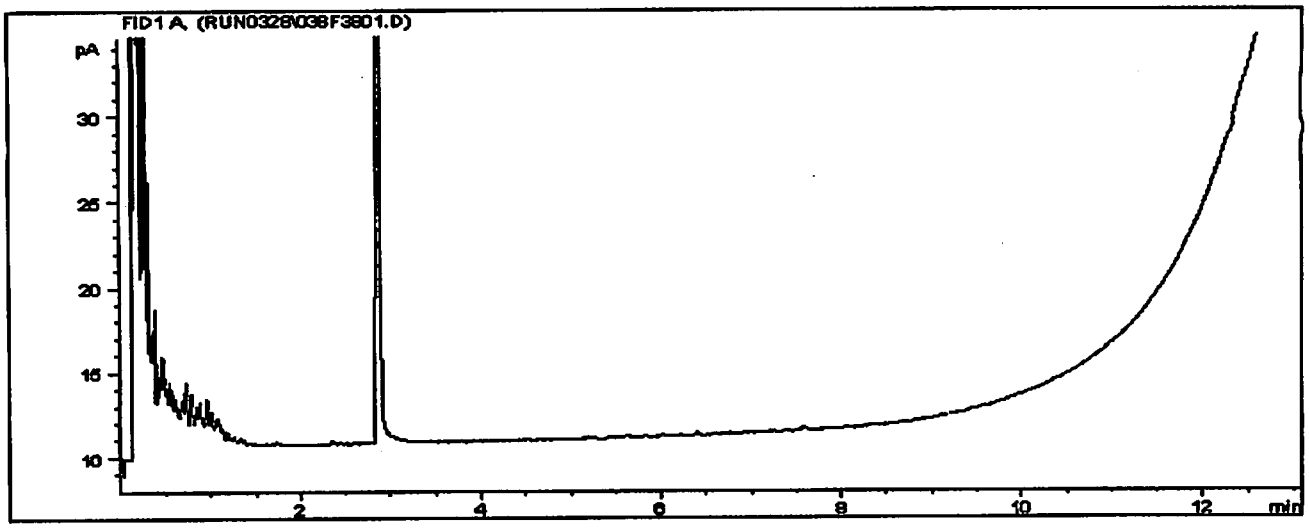
Note: This information is provided for reference purposes only. Should detailed chemist intrepretation or fingerprinting be required to please contact the laboratory.

Report Date: 2009/03/31
Maxxam Job #: A913848
Maxxam Sample: O23768

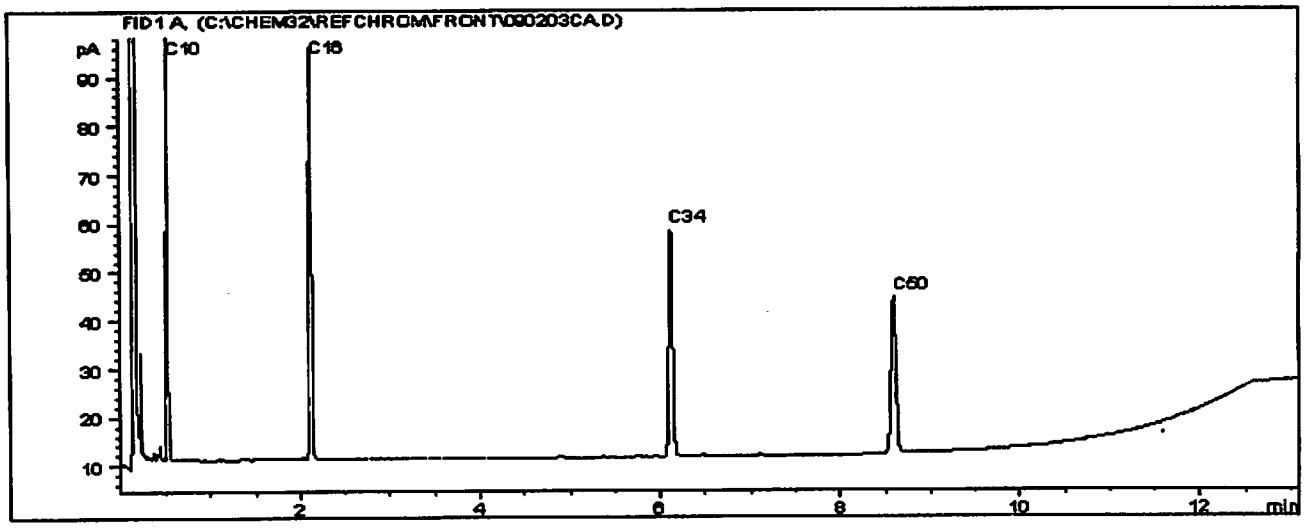
EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001

Client ID: 09MW09

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+

Page 1 of 1

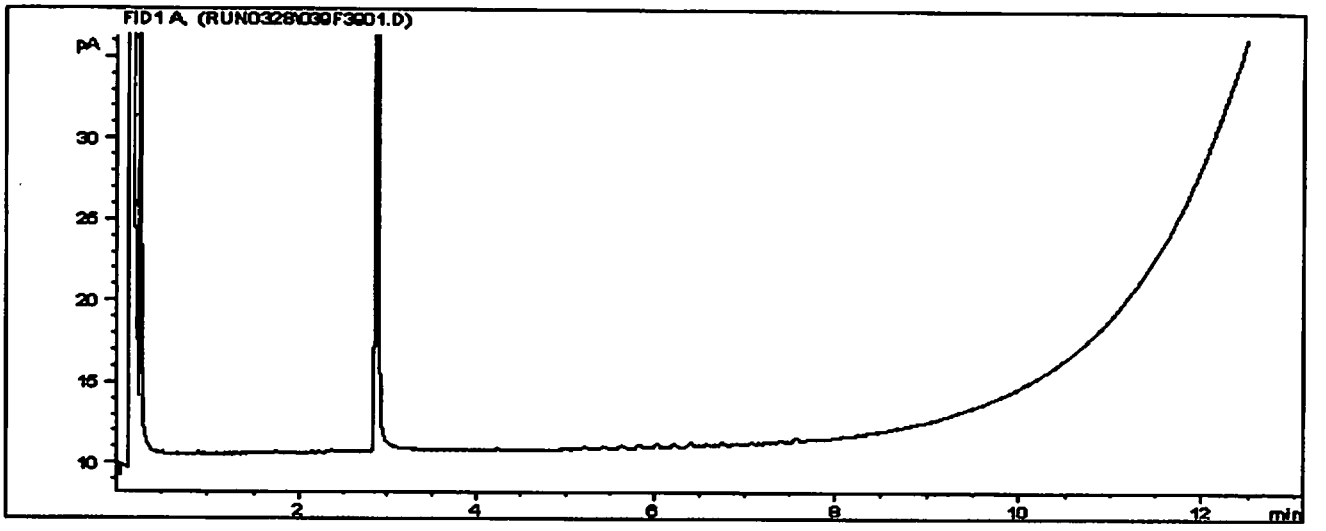
Note: This information is provided for reference purposes only. Should detailed chemist intrepretation or fingerprinting be required to please contact the laboratory.

Report Date: 2009/03/31
Maxxam Job #: A913848
Maxxam Sample: O23769

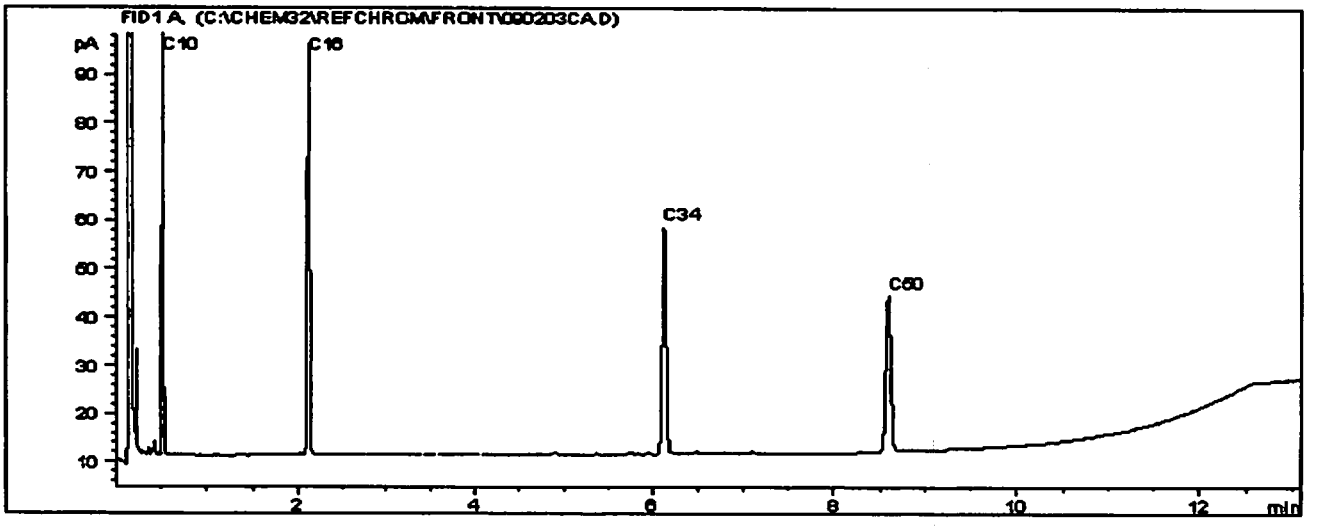
EBA ENGINEERING CONSULTANTS LTD.
Client Project #: L22101183.001

Client ID: 09DUP01

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+	

Page 1 of 1

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

APPENDIX D

APPENDIX D HAZARD ASSESSMENT REPORT

EBA ENGINEERING CONSULTANTS LTD.

HAZARD ALERT

Date: November 18, 2008	Location: 124 Main Street, Barons, AB

Equipment Involved: Drill rig and abandoned underground storage tank (UST).

HAZARD DESCRIPTION:

The top of an unmarked, abandoned UST was penetrated with a six inch solid stem auger while conducting a subsurface investigation of a former service station. The tank, located only about 0.5 m below surface elevation, had not been backfilled and no visible product was noted. Utility locates (Alberta 1 Call) and private locators (Alberta Line Find) had been contacted and the area had swept prior to the incident. With the exception of a municipal water main, no marked utilities or anomalous readings had been identified during the locating program. Prior to conducting the drilling investigation, EBA personnel had contacted long term resident to inquire about the site. Anecdotal information suggested that the tank had been removed and the excavation backfilled upon the closure of the service station. The PTMAA had also been contacted. No records were available for this site.

PREVENTION:

CAUSE:
The UST was not identified during the preliminary site investigation and utility locates.

PREVENTION:
Given the information that had been collected, the area was considered to be safe and had been marked clear of any hazards. No other reasonable measures were warranted prior to drilling.

The Village of Barons was immediately notified of the incident as the tanknest is partially located in the designated parking zone along Main Street. Given that the structural integrity of the tank had potentially been compromised, it was recommended that the tank either be backfilled with sand or gravel or the work area be barricaded.

In order to eliminate a potential tripping hazard, the annulus of the borehole was sealed with a flushmount casing.

Created by: Deryck Masterman	Date: November 19, 2008

APPENDIX E

APPENDIX E GEO-ENVIRONMENTAL REPORT – GENERAL CONDITIONS

GEO-ENVIRONMENTAL REPORT – GENERAL CONDITIONS

This report incorporates and is subject to these "General Conditions".

1.0 USE OF REPORT AND OWNERSHIP

This report pertains to a specific site, a specific development, and a specific scope of work. It is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site or proposed development would necessitate a supplementary investigation and assessment.

This report and the assessments and recommendations contained in it are intended for the sole use of EBA's client. EBA does not accept any responsibility for the accuracy of any of the data, the analysis or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than EBA's Client unless otherwise authorized in writing by EBA. Any unauthorized use of the report is at the sole risk of the user.

This report is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of EBA. Additional copies of the report, if required, may be obtained upon request.

2.0 ALTERNATE REPORT FORMAT

Where EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed EBA's instruments of professional service), only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by EBA shall be deemed to be the original for the Project.

Both electronic file and hard copy versions of EBA's instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except EBA. The Client warrants that EBA's instruments of professional service will be used only and exactly as submitted by EBA.

Electronic files submitted by EBA have been prepared and submitted using specific software and hardware systems. EBA makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

3.0 NOTIFICATION OF AUTHORITIES

In certain instances, the discovery of hazardous substances or conditions and materials may require that regulatory agencies and other persons be informed and the client agrees that notification to such bodies or persons as required may be done by EBA in its reasonably exercised discretion.