



Chemicals Assessment &
Management Division
Groundwater Protection Branch

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Lethbridge, Alberta
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December 18, 1996

FILE#.4040-BA04-1

Mr. Bradley Mersereau, P Eng
Canadian Turbo (1993) Inc.
400, 630 - 4 Avenue SW
Calgary, Alberta
T2P 0J9

Dear Mr. Mersereau.

Re: Barons Turbo Bulk Station

I have reviewed the Seacor Environmental Engineering November 1996 reports. I accept the remedial recommendations outlined in Section 3 0 of the Remedial Action Plan report. Please provide a consultant's report confirming the laboratory soil and vapour testing results of the side walls and base of the excavation. Also, concerning the risk management monitoring plan for the offsite monitoring wells, please confirm that the results of the risk management monitoring will be provided for my review.

Thank you for the site investigation work completed at this site. Please call me at 382-4255 if you require further discussion.

Yours truly,



Don Wyrstock

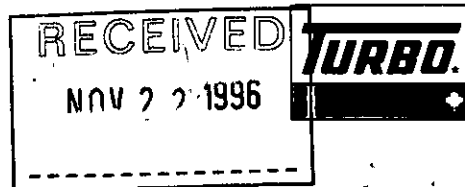
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*mailed
12/19/96*

4040-BA04-1

CANADIAN TURBO (1993) INC.

630 - 4th Avenue S W.,
Calgary, Alberta, Canada T2P 0J9
Telephone: (403) 294-6400
Fax: (403) 264-2327



November 21, 1996

**Alberta Environmental Protection
Chemicals Assessment & Management Div.**
Room 279, 2nd floor
2005 - 5 Avenue S.
Lethbridge, Alberta
T1J 4L1

Attention: Don Wyrostock

Dear Mr. Wyrostock:

**Re: Delineation Assessment - dated Nov. 13, 1996
Interpretive Report & Outline Remedial Action Plan - dated Nov. 13, 1996
Former Barons Turbo Bulk Station No. 2520
235 Main Street Barons, Alberta**

Please find enclosed the above mentioned reports prepared by Seacor Environmental Engineering Inc. job no. #H0031-093 on the above site. As these reports are confidential in nature, Turbo requests that Alberta Environmental Protection make all reasonable efforts to protect this confidentiality. Turbo requests that these reports not be copied, reproduced or disclosed to any party.

If you have any question and/or concerns, please feel free to call me at (403) 294 - 6463.

Yours very truly,

CANADIAN TURBO (1993) INC.

A handwritten signature in black ink, appearing to read "Bradley Mersereau". The signature is fluid and cursive, written over a horizontal line.

**Bradley Mersereau, P. Eng.
Health Safety and Environment**

**Enclosures: (Reports named as above)
Former Barons Turbo Bulk Station No. 2520
235 Main Street Barons, Alberta
Dated: November 13, 1996**

4040-BA04-1

RECEIVED

NOV 19 1996

FIELD SERVICES

SEACOR

Environmental Engineering, Inc.

RECEIVED

NOV 22 1996

**DELINEATION ASSESSMENT
FORMER BARONS TURBO BULK STATION NO. 2520
235 MAIN STREET
BARONS, ALBERTA**

SEACOR Job No. H0031-093

**Submitted by
SEACOR Environmental Engineering Inc.
Calgary, Alberta**

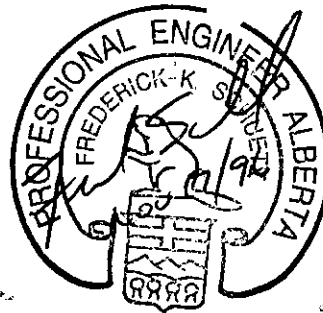
**for
Canadian Turbo (1993) Inc.
400, 630 - 4th Ave SW
Calgary, Alberta
T2P 0J9**

November 13, 1996

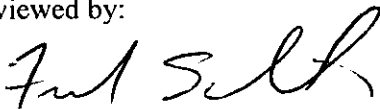
Prepared by:



Gene Chee, R.E.T.
Engineering Technologist



Reviewed by:



 Mark Humbert, P.Eng.
Senior Engineer

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Distribution:

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Canadian Turbo (1993) Inc.
SEACOR

Effective April 1, 2005
Available for Routine Disclosure
Per: Ministerial Order 23/2004
Reviewed by: 
Date: Jan 4/06

EXECUTIVE SUMMARY

SEACOR Environmental Engineering Inc. (SEACOR), of Calgary, Alberta was retained by Canadian Turbo (1993) Inc. (CTI) to conduct a delineation assessment at the former Barons Turbo Bulk Station #2520 at 235 Main Street, Barons, Alberta. The objective of the drilling program was to assess the extent and level of the on-site and off-site contamination related to past operations of the bulk facility.

In general, hydrocarbon components of gasoline residuals in excess of the AEP RMC *Niveau II* fine grained soil (FGS) criteria were present in the soils on-site in the loading rack area and off-site to the south underneath the Main Street boulevard. The impacted soil was encountered at depths of 1.5 to 3.0 m in the loading rack area and at 2.7 to 3.2 m underneath the Main Street boulevard. Based on 500 ppmv soil headspace vapour levels and laboratory analysis, delineation of the hydrocarbon plume was fully defined to the west, south, and east. Delineation of the hydrocarbon plume to the north was not possible due to the location of the above ground tank farm facility.

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1.0 INTRODUCTION

SEACOR Environmental Engineering Inc. (SEACOR), of Calgary, Alberta was retained by Canadian Turbo (1993) Inc. (CTI) to conduct a delineation assessment at the former Barons Turbo Bulk Station #2520 at 235 Main Street, Barons, Alberta. The objective of the drilling program was to assess the extent and level of the on-site and off-site contamination related to past operations of the bulk facility. Authorization to proceed with the project was received from Mr. Bradley Mersereau, P. Eng. of CTI on October 10, 1996.

This report summarizes the investigation methodology and presents the results of three field and laboratory programs conducted during the period of October 23 to November 8, 1996. The level of the hydrocarbon contamination has been related to the Alberta Environmental Protection (AEP) Risk Management Criteria (RMC) Guidelines "*Remediation Guidelines for Petroleum Storage Tank Sites*," July 1994.

The scope of work was set out by CTI and SEACOR in accordance with standard approved protocols. The subsurface investigation encompassed areas around the loading rack, tank farm, Main Street Boulevard to the south, and Progress Avenue boulevard to the east.

Appendix A contains the field and laboratory Methodology and Appendix B the Borehole Logs. The Analytical Chemistry Reports are presented in Appendix C with the Relevant Environmental Standards in Appendix D.

2.0 PREVIOUS SITE ASSESSMENTS

Previous site works included an environmental site assessment conducted in July 1993. The results were provided in the SEACOR report, "*Site Investigation, Barons Turbo Bulk Plant #9056, 235 Main Street, Barons, Alberta*," dated September 17, 1993. A summary of the report is as follows.

The field investigation included nine boreholes (BH's 1 to 9), four of which (BH's 1, 2, 3, and 4) were drilled in the area of the tank farm. Soil headspace vapour in the order of 30 % LEL (3300 ppmv) were detected in two of the boreholes. The soil analytical results detected benzene concentrations of 5.2 and 3.0 mg/kg in BH's 1 and 4, respectively. No groundwater samples were recovered from the tank farm area.

12

3.0 RESULTS OF THE ASSESSMENT

The October 1996 delineation environmental site assessment comprised the following field and laboratory work:

- Advancing fifteen boreholes (BH's 96-1 to 96-15) to depths of 4.6 to 6.1 m on October 25, 1996.
- Completing four boreholes (BH's 96-1, 96-4, 96-8, and 96-14) as 50 mm diameter groundwater monitoring wells.
- Field screening 100 soil samples for soil headspace vapour levels.
- Submitting twelve soil samples and four groundwater samples for laboratory analysis of hydrocarbon components.

SEACOR's drilling, well installation, soil and groundwater sampling, and laboratory methodologies are included in Appendix A. The locations of boreholes and underground utilities are illustrated on Figure 3.

3.1 SOIL

3.1.1 Stratigraphy

The description of the site soil profile was generated from data collected during the soil boring program. The soil profile generally encountered at the borehole locations consisted of a sand and gravel fill to 0.3 m followed by a native silt to depths of 1.5 to 1.8 m. The native silt was underlain by a native high plastic clay to depths of 2.8 to 3.7 m followed by a low plastic clay till to depths of 3.4 to 4.8 m. The native clay till was underlain by a weathered sandstone bedrock to a depth of 6.1 m, the maximum depth of the boreholes.

3.1.2 Field Observations

The soil characteristics observed during the field investigation of October 25, 1996 and site monitoring of November 7, 1996 are presented in Table 1. The detailed borehole logs are included in Appendix B.

Table 1: FIELD OBSERVATIONS						
Borehole No	Borehole Completion Depth (m)	Hydrocarbon Staining Interval (m)	Soil Vapour Levels > 500 ppmv (m)	Soil Headspace Vapours		Monitoring Well Vapour Levels (ppmv) Nov 7, 1996
				Max Level (ppmv)	Depth (m)	
BH96-1	6.1	none	none	40	2.9	60
BH96-2	5.5	none	none	60	4.4	-
BH96-3	6.1	3.1 - 3.4	4.2 - 4.7	900	4.4	-
BH96-4	6.1	none	none	40	5.3	30
BH96-5	4.6	1.5 - 3.1	none	400	2.3	-
BH96-6	4.6	2.4 - 3.1	none	85	2.9	-
BH96-7	4.6	2.1 - 3.1	none	250	2.3	-
BH96-8	4.6	none	none	45	3.8, 4.4	80
BH96-9	6.1	none	none	45	4.4	-
BH96-10	4.6	none	none	30	3.8	-
BH96-11	4.6	none	none	75	4.4	-
BH96-12	4.6	none	2.7 - 3.2	45	1.4, 4.4	-
BH96-13	4.6	none	none	1400	2.9	-
BH96-14	4.6	none	none	60	4.4	25
BH96-15	4.6	none	none	55	3.8	-

Notes: • ppmv - parts per million by volume total organic vapour

Hydrocarbon staining was noted in BH's 96-3, 96-5, 96-6, and 96-7 at depths of 1.5 to 3.4 m. No elevated headspace vapour readings were recorded from the soils sampled in the stained zone. Elevated soil headspace vapour levels greater than 500 ppmv were detected in BH96-3 and BH96-13 where a maximum soil headspace vapour level of 1400 ppmv was recorded in BH96-13 at a depth of 2.9 m. The monitoring well vapour level readings taken on November 7, 1996 ranged from 25 to 80 ppmv.

3.1.3 Soil Analytical Chemistry Results

Twelve soil samples were submitted for laboratory analysis to CHEMEX Labs Alberta Inc. (CHEMEX) in Calgary, Alberta. The selections were based on headspace vapour level readings to establish the maximum level and aerial extent of any hydrocarbon contamination present. The results of the laboratory analyses are summarized in Table 2. The detailed analytical reports are provided in Appendix C with the Relevant Environmental Standards in Appendix D. The inferred RMC *Level II* FGS soil contaminant plume is shown on Figure 4.

Table 2: SOIL ANALYTICAL RESULTS

Sample Location	Depth (m)	Vapour Level (ppmv)	Benzene	Toluene	Ethyl-benzene	Xylenes	TPH	Flashpoint °C
BH96-1	2.9	25	<0.0042	<0.0042	<0.0042	<0.0042	na	na
BH96-3	2.9	300	<0.0069	<0.0069	0.032	0.65	4.4	na
BH96-4	3.8	15	<0.0042	<0.0042	<0.0042	<0.0042	na	na
BH96-5	2.3	400	0.053	<0.0044	2.7	1.6	2590	na
BH96-6	2.9	85	<0.0079	<0.0079	<0.0079	0.019	641	na
BH96-7	2.3	250	<0.028	<0.028	0.26	1.5	3300	na
BH96-10	3.8	30	<0.0044	<0.0044	<0.0044	<0.0044	<0.08	na
BH96-11	2.3	55	<0.0074	<0.0074	<0.0074	<0.0074	320	na
BH96-12	4.4	45	<0.0036	<0.0036	<0.0036	<0.0036	na	na
BH96-13	2.9	1400	2.1	18	4.4	28	277	>100
BH96-14	3.8	55	<0.0041	<0.0041	<0.0041	<0.0041	na	na
BH96-15	3.8	55	<0.0042	<0.0042	<0.0042	<0.0042	na	na
AEP RMC <i>Level II</i> FGS			1.5	340	400	130	4,000	ns
<i>Level III</i> FGS			55	340	400	130	5,000	ns

- Notes:
- all concentrations in milligrams per dry kilogram (mg/kg) equivalent to parts per million (ppm)
 - ppmv - parts per million by volume total organic vapour
 - TPH - total petroleum hydrocarbons
 - < - less than analytical detection limit indicated
 - na - not analysed
 - ns - no applicable standard in AEP RMC guidelines
 - AEP RMC - risk management criteria for fine grained soil (FGS) as outlined in the Alberta Environmental Protection Guidelines "Remediation Guidelines for Petroleum Storage Tank Sites," July 1994
 - **bold** - indicates levels in excess of AEP RMC *Level II* FGS

The soil analytical results indicated that benzene concentrations in BH96-13 exceeded the AEP RMC *Level II* criteria for fine grained soil. The remaining constituents were less than the AEP RMC *Level II* FGS criteria. The flashpoint of the soil sampled from BH96-13 at 2.9 m was found to be greater than 100°C.

3.2 GROUNDWATER

3.2.1 Site Hydrogeology

Groundwater was encountered at depths of approximately 2.0 to 3.0 m below surface grade within the clay deposits. The groundwater elevation data taken on November 7, 1996 identified the groundwater gradient to be toward the southwest, as illustrated on the groundwater contour map in Figure 5. Phase-separated hydrocarbons were not encountered in any of the monitoring wells. The groundwater monitoring data is provided in Table 3.

Table 3: MONITORING WELL DATA					
Monitoring Well No	Well Elevation Top of Riser (m) ¹	Screened Interval (m)	Depth to Water (m)	Groundwater Elevation (m)	Product Thickness (mm)
BH96-1	98.58	5.5 - 0.9	2.12	96.46	nil
BH96-4	98.76	5.6 - 1.07	2.41	96.34	nil
BH96-8	98.89	4.6 - 1.5	1.99	96.90	nil
BH96-14	98.23	4.6 - 1.5	2.97	95.26	nil

- Notes:
- ¹ - relative elevation to ground surface at each of the monitoring wells
 - Temporary Bench Mark: top of fire hydrant east of site

3.2.2 Groundwater Analytical Chemistry Results

Groundwater samples were collected from BH's 96-1, 96-4, 96-8, and 96-14 and submitted to CHEMEX. The results of the laboratory analyses are summarized in Table 4 with detailed analytical reports provided in Appendix C. The Relevant Environmental Standards are provided in Appendix D.

Table 4: GROUNDWATER ANALYTICAL RESULTS				
Sample Location	Benzene	Toluene	Ethylbenzene	Xylenes
BH96-1	<0.0004	<0.0004	0.0005	0.0004
BH96-4	<0.0004	<0.0004	<0.0004	<0.0004
BH96-10	<0.0004	<0.0004	<0.0004	<0.0008
BH96-14	<0.0004	<0.0004	<0.0004	<0.0004
AEP RMC Level II FGS	4.2	240	50	80
Level III FGS	75	430	50	80

- Notes:
- all concentrations in parts per million (ppm) equivalent to milligrams per litre (mg/L)
 - < - less than analytical detection limit indicated
 - AEP RMC - risk management criteria for groundwater in fine grained soil (FGS) as outlined in the Alberta Environmental Protection Guideline "Remediation Guidelines for Petroleum Storage Tank Sites," July 1994

The results of the laboratory analysis indicated that all analyzed constituents were below the AEP RMC *Level II* FGS criteria for groundwater in fine grained soil.

3.0 EVALUATION

Residual hydrocarbons of gasoline derivatives were present both on-site and off-site in excess of the AEP RMC *Level II* FGS criteria for soil and groundwater. The location and extent of the contaminants are summarized in Table 5.

Table 5: SUMMARY OF SUBSURFACE HYDROCARBONS						
Location	Matrix	RMC Levels ¹	Component	Depth (m)	Sources	Reference Holes
On-site Loading Rack	Soil	> Level II	benzene	1.5 - 3.0	weathered gasoline	BH1 & BH4
	Groundwater	Prob > Level II				
Off-site Main Street Boulevard	Soil	> Level II	benzene	2.7 - 3.2	weathered gasoline	BH96-13
	Groundwater	< Level II				

- Notes:
- ¹Relative to AEP RMC fine grain soil guidelines
 - BH1, BH2, BH3, and BH4 - September 1993 Assessment Report

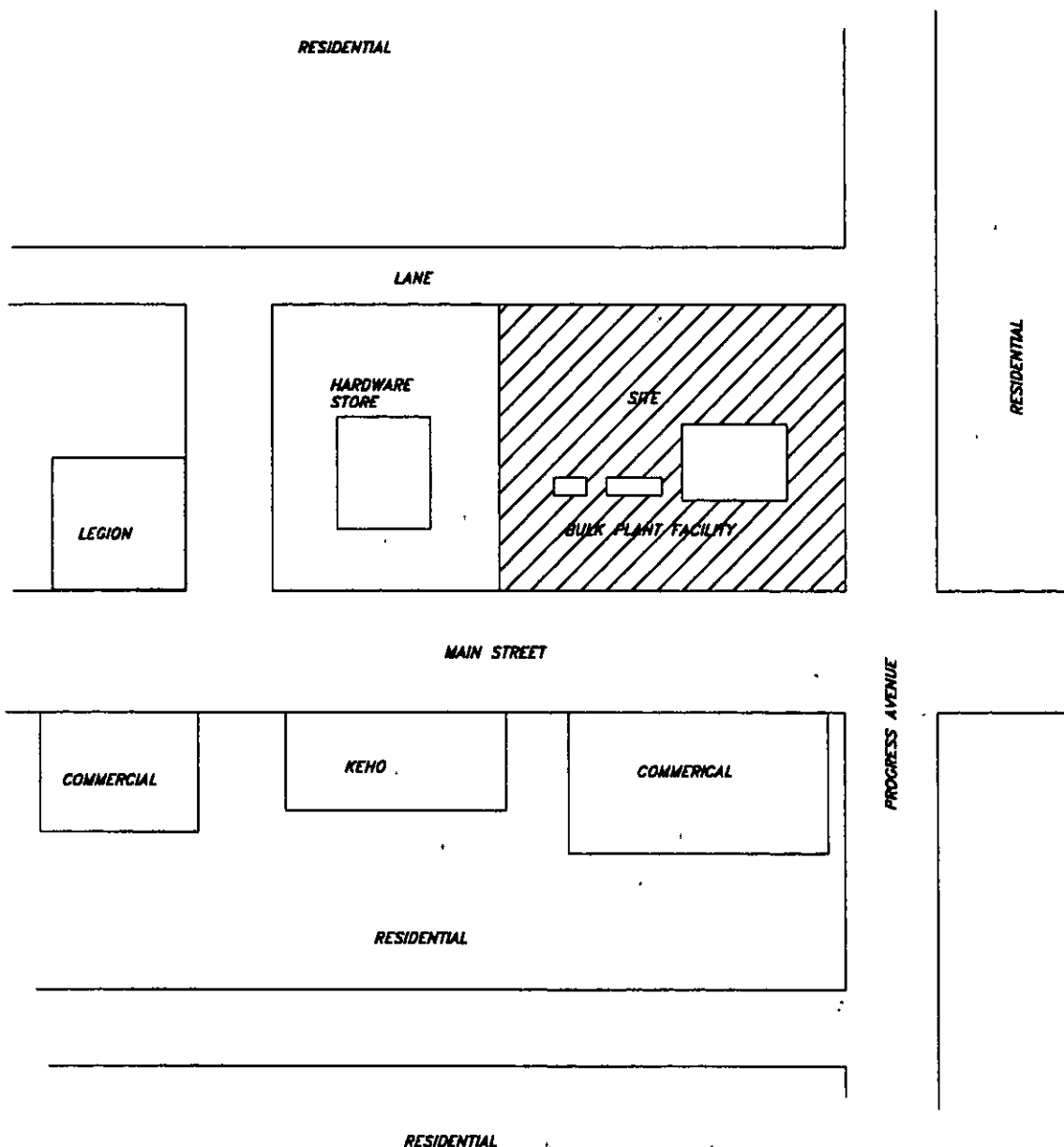
In general, hydrocarbon components of gasoline residuals in excess of the AEP RMC *Level II* FGS criteria were present in the soils on-site in the loading rack area and off-site to the south underneath the Main Street boulevard. The impacted soil was typically encountered at depths of 1.5 to 3.0 m in the loading rack area and 2.7 to 3.2 m underneath the Main Street boulevard. Based on 500 ppmv soil headspace vapour levels and laboratory analysis, delineation of the hydrocarbon plume was fully defined to the west, south, and east. Delineation of the hydrocarbon plume to the north was not possible due to the location of the above ground tank farm facility.

4.0 CLOSURE

The assessment and conclusions in this report are based on the interpretation of data collected from the field investigations and the results of the laboratory analyses, which were limited to the quantification of common hydrocarbon indicators in select samples expected at a service station site. SEACOR expresses no warranty with respect to the accuracy of the laboratory analyses, methodologies used or presentation of the analytical results by the laboratory. Actual hydrocarbon concentrations in the samples submitted may vary according to the extraction and testing procedures used. The evaluation and conclusions reported herein do not preclude the existence of other chemical compounds and/or that variation of conditions within the site may be possible. Hence, this report should be used for informational purposes only and should not be construed as a comprehensive hydrogeological or chemical characterization of the site.

This report is for the exclusive use of Canadian Turbo (1993) Inc. and its authorized agents. Third party use of this report, or any reliance on or decisions made on the information herein, is at the sole risk of the third party. SEACOR has no obligation to any third parties in the course of this work and therefore accepts no responsibility for damage suffered by any third party as a result of decisions or actions made based on this report.

FIGURES



SEACOR

ENVIRONMENTAL ENGINEERING INC.



BARON'S TURBO BULK STATION #2520
235 MAIN STREET
BARONS, ALBERTA

SURROUNDING LAND USE PLAN

SCALE:

NTS

DATE:

14 11 96

DRAWN:

GC / TS

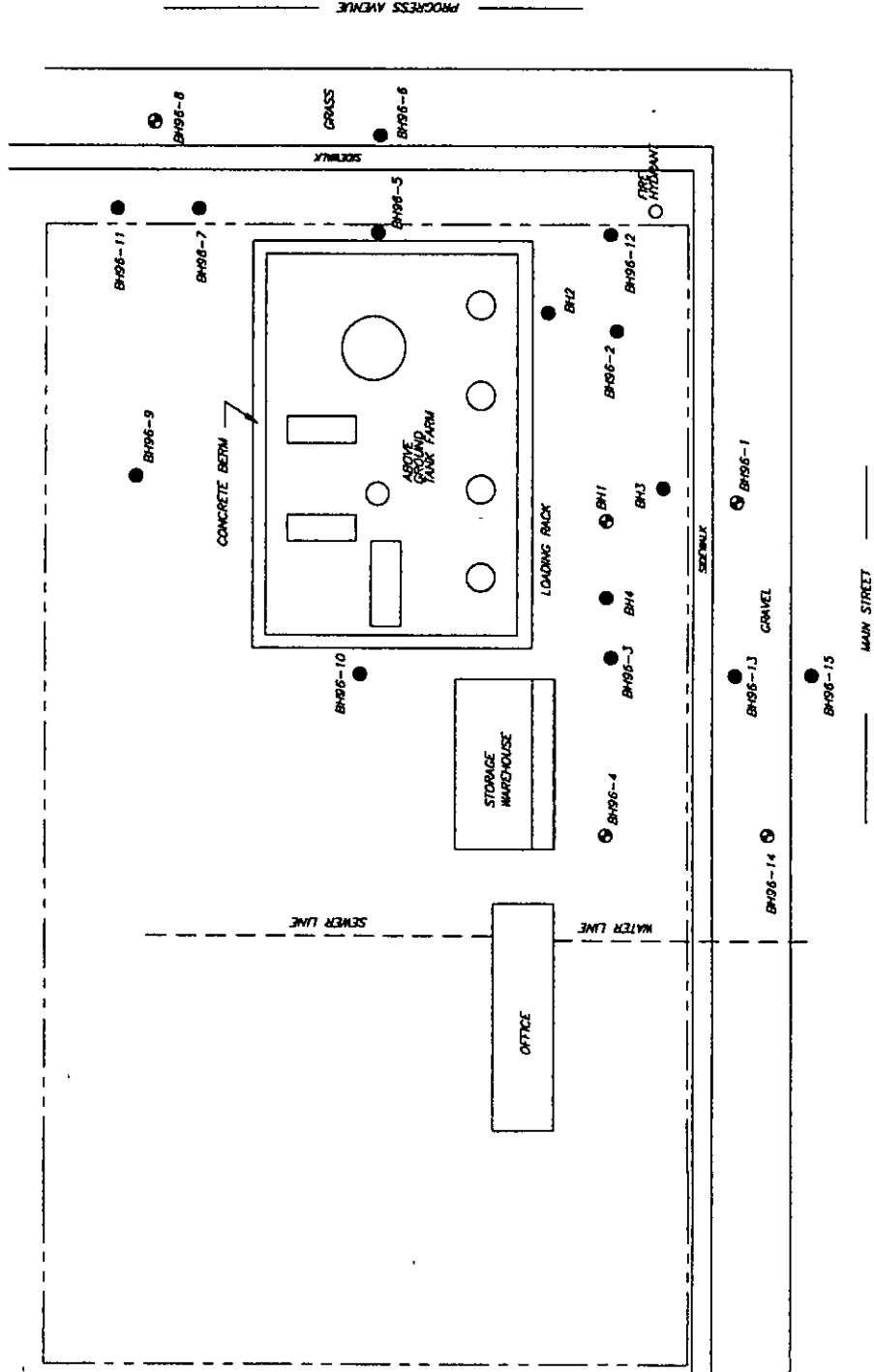
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H0031-093 2

FIGURE:

2



LEGEND:

--- PROPERTY LINE

● MONITORING WELL LOCATION

● BOREHOLE LOCATION

NOTE:

BH1 TO BH4 - JULY 1993
BH98-1 TO BH98-12 OCT 1998

REV.	DESCRIPTION	DATE	DRAWN	CHKD.
5				
4				
3				
2				
1				

SEACOR

ENVIRONMENTAL ENGINEERING INC.

CANADIAN TURBO (1993) INC
400-630 4th AVENUE SW
CALGARY, ALBERTA

BARONS TURBO BULK STATION #2520
235 MAIN STREET
BARONS, ALBERTA

SITE PLAN

NOTE: THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

SCALE: 1:250	DATE: 14 11 96	FILE NAME: 093-3
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		FIGURE: J



LEGEND:

--- PROPERTY LINE

● MONITORING WELL LOCATION

● BOREHOLE LOCATION

--- LIMITS OF EXCAVATION

NOTE:
BH1 TO BH4 - JULY 1993
BH96-1 TO BH96-12 - OCT. 1996

REV.	DESCRIPTION	DATE	DRAWN	CHKD.
5				
4				
3				
2				
1				

SEACOR

ENVIRONMENTAL ENGINEERING INC.

CANADIAN TURBO (1993) INC
400-630 4th AVENUE S.W
CALGARY, ALBERTA

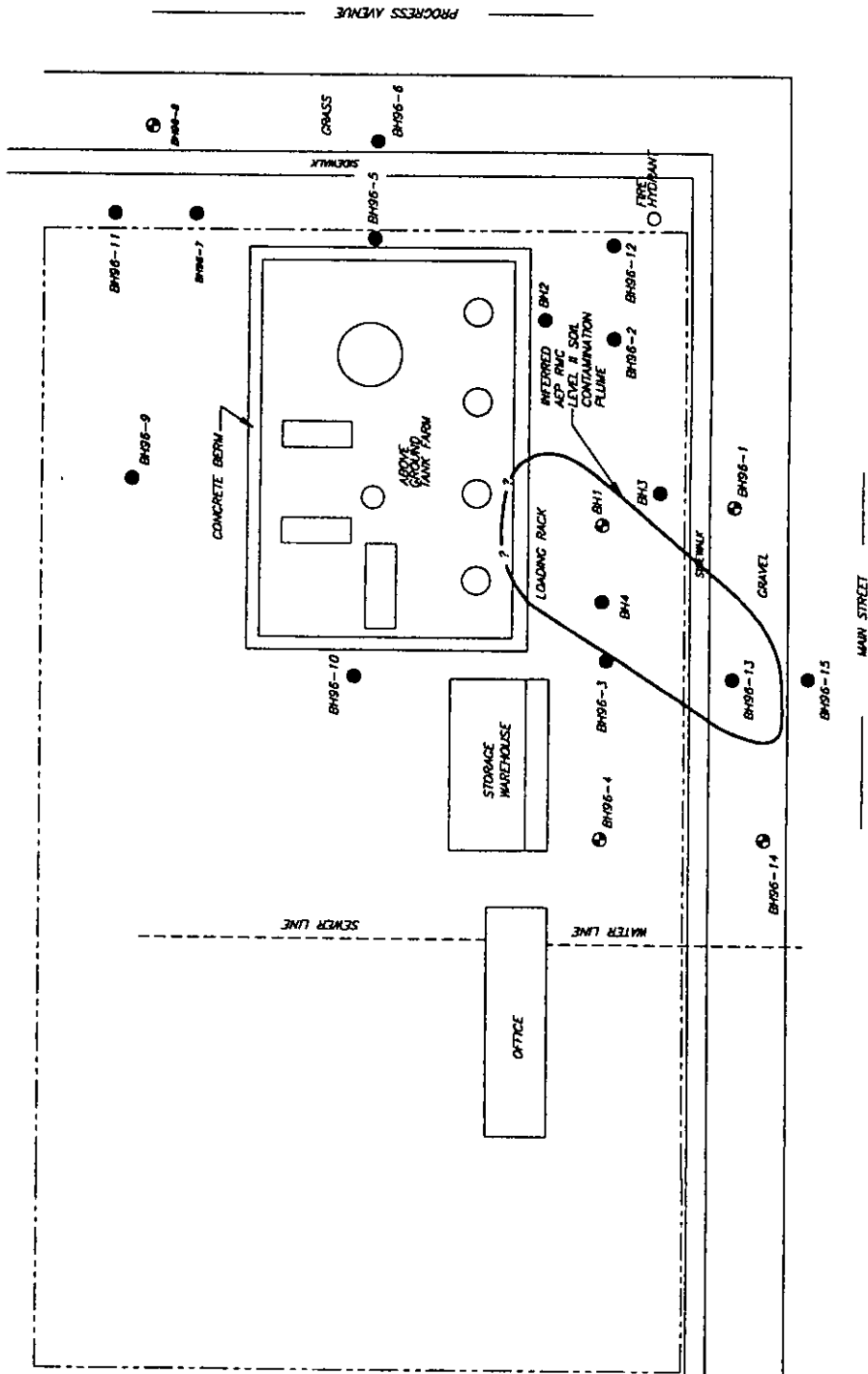
BARONS TURBO BULK STATION #2520
235 MAIN STREET
BARONS, ALBERTA

INFERRED SOIL CONTAMINATION PLUME

NOTE: THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

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FILE NAME: 093-4

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JOB NO. 10031-093
FIGURE 4





LEGEND:

PROPERTY LINE

MONITORING WELL LOCATION

BOREHOLE LOCATION

NOTE:
SITE TO BH4 - JULY 1993
BH56-1 TO BH56-12 - OCT. 1996

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
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1				

SEACOR

ENVIRONMENTAL ENGINEERING INC.

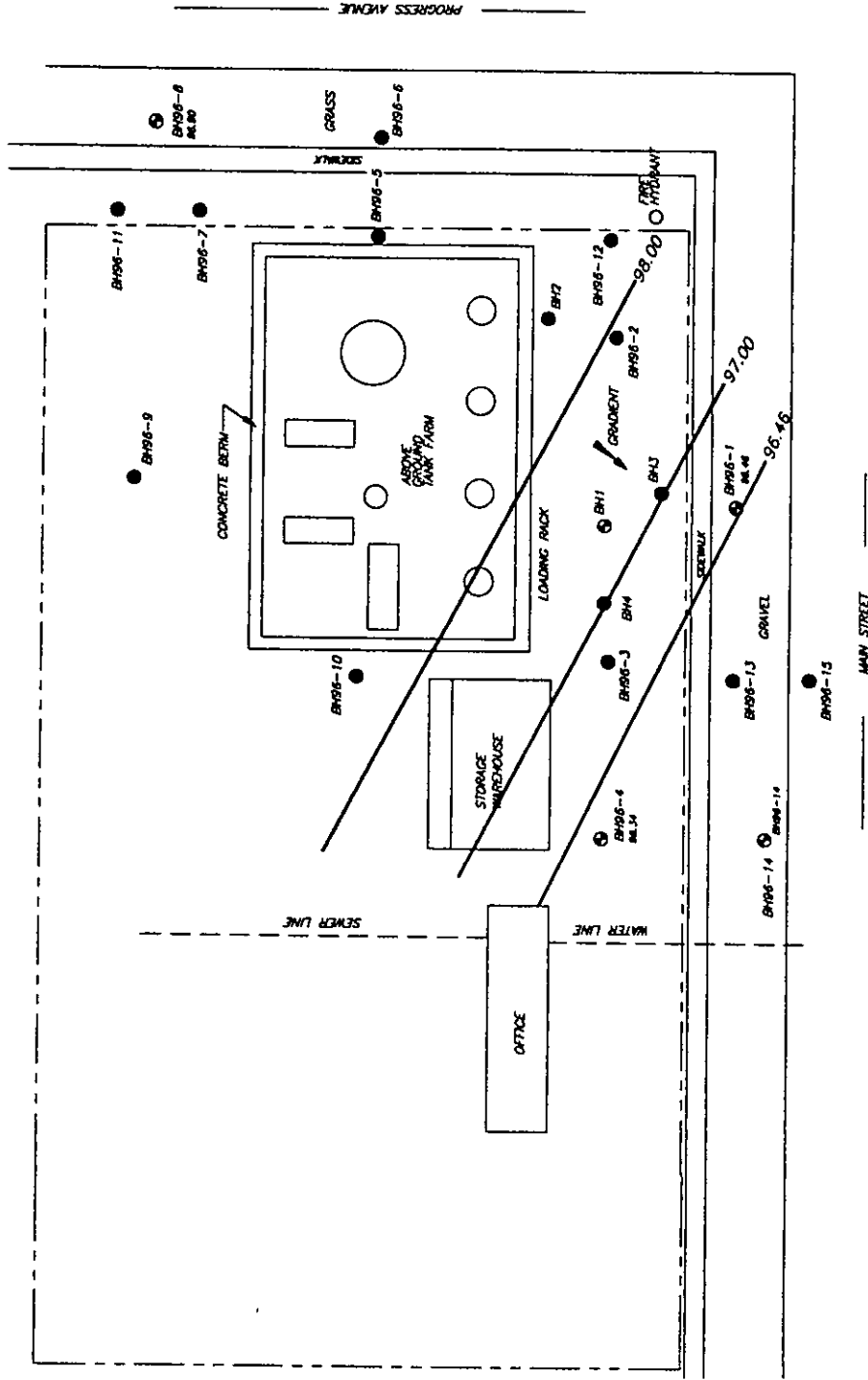
CANADIAN TURBO (1993) INC
400-630 4th. AVENUE S.W.
CALGARY, ALBERTA

BARONS TURBO BULK STATION #2520
235 MAIN STREET
BARONS, ALBERTA

INFERRED GROUNDWATER CONTOUR PLAN

NOTE: THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

SCALE: 1:250	DATE: 14 11 96	FILE NAME: 093-5
DRAWN: G.C./T.S.	CHECKED: H0031-093	FIGURE: 5



APPENDIX A

METHODOLOGY

METHODOLOGY

SOIL SAMPLING AND FIELD SCREENING

Soil samples were recovered from auger cuttings during drilling. Disturbed soil from the outside of the cuttings was removed to minimize potential cross-contamination. Soil samples were classified according to the Unified Modified Soil Classification system and visual indications of hydrocarbon contamination. All samples were screened for the presence of volatile vapour using a fixed volume headspace technique with a Gastech 1238 or Tracetehtor explosimeter. 375 ml jars were half filled with soil and sealed for about 15 minutes prior to analysing the headspace. The explosimeters record the quantity of volatile vapours in either % LEL (Lower Explosive Limit: 1.4% by volume for gasoline) or ppm TOV (parts per million, Total Organic Vapour). The test is dependent on temperature, soil type, and equipment calibration but independent of field personnel. Duplicate samples were retained for laboratory analyses by immediately sealing them in laboratory prepared glass jars, which were labelled and stored in an insulated cooler and packed in ice. The samples were subsequently transported to CHEMEX Labs Alberta Inc. of Calgary, for confirmatory analysis.

SITE SURVEY

All boreholes and monitoring wells were horizontally and vertically located at the completion of the field investigation. Horizontal measurements were referenced to the existing buildings and measured to within 0.5 m. The borehole and monitoring well elevations were referenced to the top of the fire hydrant located on the southeast corner of the site with an assumed elevation of 100.00 m.

MONITORING WELL INSTALLATION AND DEVELOPMENT

Installation

Fifty millimeter diameter PVC standpipe monitoring wells were installed in BH's 96-1, 96-4, 96-8, and 96-14 to establish groundwater levels and hydraulic gradient at the site and facilitate groundwater sampling. The well consisted of #20 slot screen from the bottom of the borehole to 0.9 to 1.5 m and solid riser pipe to the ground surface. Sand was backfilled to at least 0.3 m above the top of the screen. A bentonite seal was placed at the top of each borehole to prevent the infiltration of any subsurface runoff and then capped with a steel protective casing and cover plate.

Well Vapour Survey

The monitoring wells were screened for the presence of volatile organic vapours with a Gastech 1238 explosimeter. Vapour readings were collected by slowly removing the protective cap of each well and inserting the Gastech probe into the well riser pipe. The greatest meter response in a time period of five to ten seconds after insertion was recorded for each monitoring well.

Water Level/Phase-Separated Hydrocarbon Measurements

Static water level and phase-separated hydrocarbon thicknesses were measured with a Solinst Model 121 Interface meter. The measurements were referenced to the top of the riser pipe.

LABORATORY ANALYSIS

Soil samples were submitted to CHEMEX for testing of various hydrocarbon compounds. The tests included:

- BTEX (benzene, toluene, ethylbenzene, xylene) - reflects light-end gasoline-type hydrocarbons, analysed with GC/MS.
- T. Purg. (total purgeable hydrocarbons) - reflects light end hydrocarbon components found in gasoline and diesel, normally in the range C₃ to C₁₀ in Alberta.
- TEH (total extractable hydrocarbons) - reflects long chained hydrocarbon compounds of gasoline and diesel fuels analysed with EPA 3500/8105 quantified against n chain hydrocarbons.
- TPH (total petroleum hydrocarbons) - combination of total purgeables and TEH tests reflecting all chained and aromatic hydrocarbon compounds.
- Flashpoint Pensky Martin closed cup, temperature at which hydrocarbon contaminants in soil will ignite - usually stated as > or < 61°C.

APPENDIX B
BOREHOLE LOGS

<i>GENERAL INFORMATION TABLE</i>	
SEACOR JOB NO.	H0031-093
JOB LOCATION	Former Barons Turbo Bulk Station #2520 235 Main Street, Barons, Alberta
DATE SAMPLED	October 25, 1996, Groundwater Monitored November 7, 1996
DRILL RIG USED	Truck mounted rotary auger, drill rig owned and operated by Chilako Drilling of Coaldale, Alberta
LOGGED BY	Gene Chee, of SEACOR
WEATHER	Approximately +5 °C and sunny
VAPOUR TESTING	Gastechtor Explosimeter 1238 with methane elimination

Note: The following soil borehole logs provide a description of the ground conditions encountered, samples taken and subsequent laboratory analysis. The soil descriptions were made from on site visual observations and have not been confirmed by laboratory classification testing. These logs should not be used for geotechnical design.

SEACOR ENVIRONMENTAL ENGINEERING INC.

SEACOR JOB NO H0031-093

CLIENT Canadian Turbo (1993) Inc.

PROJECT BARONS TURBO
235 MAIN STREET
Barons, Alberta

BOREHOLE LOG

BOREHOLE NO BH96-1

ELEVATION 98 58

SEAC		OB NO H0031-093		Borehole, FILL															
DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA				WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)								
				HYDROCARBON VAPOUR LEVEL (ppmv)															
				10	100	1000	10000												
			SAND AND GRAVEL (FILL)							Flush Roadbox									
			SILT (NATIVE) -some clay, brown, stiff, low plastic, moist -no hydrocarbon odour or staining							Bentonite Seal									
1.0											1.0								
			CLAY (NATIVE) -silty, brown, stiff, high plastic, moist -some coal at 2.4 m -no hydrocarbon odour or staining																
2.0											2.0								
			CLAY TILL (NATIVE) -silty, some pebbles, brown, stiff, low plastic, moist -no hydrocarbon odour or staining							Monitored Nov. 7, 1996									
3.0											3.0								
			SANDSTONE (BEDROCK) -weathered, fine, grey, dense, damp -no hydrocarbon odour or staining																
4.0											4.0								
										"Sil 9" Sand									
5.0											5.0								
										Sluffing									
6.0											6.0								
End of borehole at 6.1 m. Soil sampled at 2.9 m, analyzed for BTEX Groundwater sampled Nov 7, 1996, analyzed for BTEX																			

DRILLING METHOD Rotary Auger Drill

DATE DRILLED 10/25/96

Notes

-  NO RECOVERY.
-  AUGER SAMPLE
-  SPLIT SPOON SAMPLE
-  CONTINUOUS SAMPLE

PLATE NO. 1

Sheet 1 of 1

SEACOR ENVIRONMENTAL ENGINEERING INC.

SEA JOB NO H0031-093

CLIENT Canadian Turbo (1993) Inc.
PROJECT BARONS TURBO
235 MAIN STREET
Barons, Alberta

BOREHOLE LOG

BOREHOLE NO: BH96-2
ELEVATION: 99.15

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA				WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
				HYDROCARBON VAPOUR LEVEL (ppmv)							
				10	100	1000	10000				
			SAND AND GRAVEL (FILL)							Cement Seal	
			SILT (NATIVE) -some clay, brown, stiff, low plastic, moist -no hydrocarbon odour or staining								
1.0											1.0
			CLAY (NATIVE) -silty, brown, stiff, high plastic, moist -no hydrocarbon odour or staining								
2.0											2.0
			CLAY TILL (NATIVE) -silty, some sand and pebbles, brown, stiff, low plastic, moist -no hydrocarbon odour or staining								
3.0											3.0
			SANDSTONE (BEDROCK) -weathered, fine, grey, dense, damp -no hydrocarbon odour or staining							Backfill Drill Cuttings	
4.0											4.0
5.0											5.0
			End of borehole at 5.5 m.								

DRILLING METHOD Rotary Auger Drill

DATE DRILLED 10/25/96

Notes



NO RECOVERY



AUGER SAMPLE



SPLIT SPOON SAMPLE



CONTINUOUS SAMPLE

PLATE NO. 1

Sheet 1 of 1

SEACOR ENVIRONMENTAL ENGINEERING INC.

CLIENT Canadian Turbo (1993) Inc.
PROJECT BARONS TURBO
235 MAIN STREET
Barons, Alberta

BOREHOLE LOG

BOREHOLE NO. BH96-3
ELEVATION 99 01

SEACOR JOB NO H0031-093

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA				WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
				HYDROCARBON VAPOUR LEVEL (ppmv)							
				10	100	1000	10000				
			SAND AND GRAVEL (FILL) -hydrocarbon odour from 0.1 to 0.6 m. -no hydrocarbon staining	20						Cement Seal	
1.0			SILT (NATIVE) -some clay, brown, stiff, low plastic, moist -no hydrocarbon odour or staining	40							1.0
				45							
2.0			CLAY (NATIVE) -silty, brown, stiff, high plastic, moist -hydrocarbon odour form 2.7 to 3.1 m -no hydrocarbon staining	40							2.0
3.0						300					3.0
			CLAY TILL (NATIVE) -silty, some sand and pebbles, brown, stiff, low plastic, moist -hydrocarbon odour from 3.1 to 3.4 m -hydrocarbon staining from 3.1 to 3.4 m			280					
4.0										Backfill Drill Cuttings	4.0
							900				
5.0			SANDSTONE (BEDROCK) -weathered, fine, grey, dense, damp -no hydrocarbon odour or staining			300					5.0
							400				
6.0											6.0
			End of borehole at 6.1 m Soil sampled at 2.9 m, analyzed for BTEX and TPH								

DRILLING METHOD Rotary Auger Drill

DATE DRILLED 10/25/96

Notes.



NO RECOVERY
AUGER SAMPLE
SPLIT SPOON SAMPLE
CONTINUOUS SAMPLE

PLATE NO. 1

Sheet 1 of 1

SEACOR ENVIRONMENTAL ENGINEERING INC.

CLIENT Canadian Turbo (1993) Inc.
PROJECT BARONS TURBO
235 MAIN STREET
Barons, Alberta

BOREHOLE LOG

BOREHOLE NO: BH96-4
ELEVATION 98 76

SEACOR JOB NO H0031-093

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA				WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
				HYDROCARBON VAPOUR LEVEL (ppmv)							
				10	100	1000	10000				
		X X									

DRILLING METHOD Rotary Auger Drill

DATE DRILLED 10/25/96

Notes.



NO RECOVERY
AUGER SAMPLE
SPLIT SPOON SAMPLE
CONTINUOUS SAMPLE

PLATE NO. 1

Sheet 1 of 1

SEACOR ENVIRONMENTAL ENGINEERING INC.

SEACOR JOB NO H0031-093

CLIENT Canadian Turbo (1993) Inc.
PROJECT BARONS TURBO
235 MAIN STREET
Barons, Alberta

BOREHOLE LOG

BOREHOLE NO BH96-5
ELEVATION 98 97

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA				WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
				HYDROCARBON VAPOUR LEVEL (ppmv)							
				10	100	1000	10000				
			SAND AND GRAVEL (FILL)							Cement Seal	
			SILT (NATIVE)								
			-some clay, brown, stiff, low plastic, moist								
			-no hydrocarbon odour or staining								
1.0				15							1.0
				15							
			CLAY (NATIVE)								
			-silty, brown, stiff, high plastic, moist								
			-hydrocarbon odour from 1.5 to 3.1 m								
			-hydrocarbon staining from 1.5 to 3.1 m								
2.0											2.0
						400					
						250					
3.0										Backfill Drill Cuttings	3.0
			CLAY TILL (NATIVE)								
			-silty, some sand and pebbles, brown, stiff, low plastic, moist								
			-hydrocarbon odour from 3.1 to 3.4 m								
			-no hydrocarbon staining								
4.0											4.0
			SANDSTONE (BEDROCK)								
			-weathered, fine, grey, dense, damp								
			-no hydrocarbon odour or staining								
				40							
				45							
			End of borehole at 4.6 m								
			Soil sampled at 2.3 m, analyzed for BTEX and TPH								

DRILLING METHOD Rotary Auger Drill

DATE DRILLED 10/25/96

Notes:

NO RECOVERY

AUGER SAMPLE

SPLIT SPOON SAMPLE

CONTINUOUS SAMPLE

PLATE NO. 1

Sheet 1 of 1

DRILLING METHOD Rotary Auger Drill

DATE DRILLED 10/25/96

Notes:

-  NO RECOVERY
-  AUGER SAMPLE
-  SPLIT SPOON SAMPLE
-  CONTINUOUS SAMPLE

PLATE NO. 1

Sheet 1 of 1

SEACOR ENVIRONMENTAL ENGINEERING INC.

CLIENT Canadian Turbo (1993) Inc.
PROJECT BARONS TURBO
235 MAIN STREET
Barons, Alberta

BOREHOLE LOG

BOREHOLE NO BH96-6
ELEVATION 98 97

SEACOR JOB NO H0031-093

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA				WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
				HYDROCARBON VAPOUR LEVEL (ppmv)							
				10	100	1000	10000				
			GRASS AND TOPSOIL (FILL)							Cement Seal	
			SILT (NATIVE) -some clay, brown, stiff, low plastic, moist -no hydrocarbon odour or staining								
1.0				15							1.0
				15							
			CLAY (NATIVE) -silty, brown, stiff, high plastic, moist -hydrocarbon odour from 2.4 to 3.1 m -hydrocarbon staining from 2.4 to 3.1 m								
2.0											2.0
				80							
				85							
3.0										Backfill Drill Cuttings	3.0
			CLAY TILL (NATIVE) -silty, some sand and pebbles, brown, stiff, low plastic, moist -no hydrocarbon odour or staining								
			SANDSTONE (BEDROCK) -weathered, fine, grey, dense, damp -no hydrocarbon odour or staining								
4.0				70							4.0
				30							
			End of borehole at 4.6 m Soil sampled at 2.9 m, analyzed for BTEX and TPH								

DRILLING METHOD Rotary Auger Drill

DATE DRILLED 10/25/96

Notes:

NO RECOVERY

AUGER SAMPLE

SPLIT SPOON SAMPLE

CONTINUOUS SAMPLE

PLATE NO. 1

Sheet 1 of 1

DRILLING METHOD Rotary Auger Drill

DATE DRILLED 10/25/96

Notes:



NO RECOVERY
AUGER SAMPLE
SPLIT SPOON SAMPLE
CONTINUOUS SAMPLE

PLATE NO. 1

Sheet 1 of 1

SEACOR ENVIRONMENTAL ENGINEERING INC.

SEACOR JOB NO H0031-093

CLIENT Canadian Turbo (1993) Inc.
PROJECT BARONS TURBO
235 MAIN STREET
Barons, Alberta

BOREHOLE LOG

BOREHOLE NO. BH96-7
ELEVATION 99 01

JOB NO. H0031-055											
DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA				WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
				HYDROCARBON VAPOUR LEVEL (ppmv)							
				10	100	1000	10000				
			SAND AND GRAVEL (FILL)							Cement Seal	
1.0			SILT (NATIVE) -some clay, brown, stiff, low plastic, moist -no hydrocarbon odour or staining	30							1.0
2.0			CLAY (NATIVE) -silty, brown, stiff, high plastic, moist -hydrocarbon odour from 2.1 to 3.1 m -hydrocarbon staining from 2.1 to 3.1 m	30							2.0
3.0			CLAY TILL (NATIVE) -silty, some sand and pebbles, brown, stiff, low plastic, moist -no hydrocarbon odour or staining			250				Backfill Drill Cuttings	3.0
4.0			SANDSTONE (BEDROCK) -weathered, fine, grey, dense, damp -no hydrocarbon odour or staining	30							4.0
			End of borehole at 4.6 m. Soil sampled at 2.3 m, analyzed for BTEX and TPH	40							

Notes:

NO RECOVERY

AUGER SAMPLE

SPLIT SPOON SAMPLE

CONTINUOUS SAMPLE

PLATE NO. 1

Sheet 1 of 1

DRILLING METHOD Rotary Auger Drill

DATE DRILLED. 10/25/96

DRILLING METHOD Rotary Auger Drill

DATE DRILLED. 10/25/96

Notes:



NO RECOVERY
AUGER SAMPLE
SPLIT SPOON SAMPLE
CONTINUOUS SAMPLE

PLATE NO. 1

Sheet 1 of 1

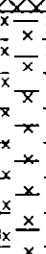
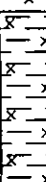
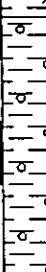
SEACOR ENVIRONMENTAL ENGINEERING INC.

SEACOR JOB NO H0031-093

CLIENT Canadian Turbo (1993) Inc.
PROJECT BARONS TURBO
235 MAIN STREET
Barons, Alberta

BOREHOLE LOG

BOREHOLE NO BH96-8
ELEVATION 98 89

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA				WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
				HYDROCARBON VAPOUR LEVEL (ppmv)							
				10	100	1000	10000				
			SAND AND GRAVEL (FILL)							Flush Roadbox	
1.0			SILT (NATIVE) -some clay, brown, stiff, low plastic, moist -no hydrocarbon odour or staining	40						Bentonite Seal	1.0
2.0			CLAY (NATIVE) -silty, brown, stiff, high plastic, moist -no hydrocarbon odour or staining	40							
3.0			CLAY TILL (NATIVE) -silty, some sand and pebbles, brown, stiff, low plastic, moist -no hydrocarbon odour or staining	35						Monitored Nov 7, 1996	2.0
4.0			SANDSTONE (BEDROCK) -weathered, fine, grey, dense, damp -no hydrocarbon odour or staining	40						"Sil 9" Sand	3.0
			End of borehole at 4.6 m. Soil sampled at 2.3 m, analyzed for BTEX and TPH Groundwater sampled Nov 7, 1996, analyzed for BTEX	45							4.0

DRILLING METHOD Rotary Auger Drill

DATE DRILLED 10/25/96

Notes:



NO RECOVERY



AUGER SAMPLE



SPLIT SPOON SAMPLE



CONTINUOUS SAMPLE

PLATE NO. 1

Sheet 1 of 1

SEACOR ENVIRONMENTAL ENGINEERING INC.

CLIENT Canadian Turbo (1993) Inc.
PROJECT BARONS TURBO
235 MAIN STREET
Barons, Alberta

BOREHOLE LOG

BOREHOLE NO: BH96-9
ELEVATION: 98 88

SEACOR JOB NO H0031-093

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA				WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
				HYDROCARBON VAPOUR LEVEL (ppmv)							
				10	100	1000	10000				
			SAND AND GRAVEL (FILL)							Cement Seal	
			SILT (NATIVE) -some clay, brown, stiff, low plastic, moist -no hydrocarbon odour or staining								
1.0											1.0
			CLAY (NATIVE) -silty, brown, stiff, high plastic, moist -no hydrocarbon odour or staining								
2.0											2.0
			CLAY TILL (NATIVE) -silty, some sand and pebbles, brown, stiff, low plastic, moist -no hydrocarbon odour or staining								
3.0											3.0
			SANDSTONE (BEDROCK) -weathered, fine, grey, dense, damp -no hydrocarbon odour or staining							Backfill Drill Cuttings	
4.0											4.0
5.0											5.0
6.0											6.0
			End of borehole at 6.1 m								

DRILLING METHOD Rotary Auger Drill	Notes. NO RECOVERY AUGER SAMPLE SPLIT SPOON SAMPLE CONTINUOUS SAMPLE	PLATE NO. 1
DATE DRILLED 10/25/96		Sheet 1 of 1

Notes.



NO RECOVERY
AUGER SAMPLE
SPLIT SPOON SAMPLE
CONTINUOUS SAMPLE

PLATE NO. 1

Sheet 1 of 1

DRILLING METHOD Rotary Auger Drill

DATE DRILLED 10/25/96

SEACOR ENVIRONMENTAL ENGINEERING INC.

SEACOR JOB NO H0031-093

CLIENT Canadian Turbo (1993) Inc.
PROJECT BARONS TURBO
235 MAIN STREET
Barons, Alberta

BOREHOLE LOG

BOREHOLE NO. BH96-11
ELEVATION 98 95

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA				WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
				HYDROCARBON VAPOUR LEVEL (ppmv)							
				10	100	1000	10000				
			SAND AND GRAVEL (FILL)							Cement Seal	
1.0			SILT (NATIVE) -some clay, brown, stiff, low plastic, moist -no hydrocarbon odour or staining	35							1.0
2.0			CLAY (NATIVE) -silty, brown, stiff, high plastic, moist -hydrocarbon odour from 1.8 to 2.7 m -no hydrocarbon staining	40							2.0
3.0			CLAY TILL (NATIVE) -silty, some sand and pebbles, brown, stiff, low plastic, moist -no hydrocarbon odour or staining	55							3.0
4.0			SANDSTONE (BEDROCK) -weathered, fine, grey, dense, damp -no hydrocarbon odour or staining	50						Backfill Drill Cuttings	4.0
				60							
				75							
			End of borehole at 4.6 m Soil sampled at 2.3 m, analyzed for BTEX and TPH								

DRILLING METHOD Rotary Auger Drill

DATE DRILLED 10/25/96

Notes.



NO RECOVERY



AUGER SAMPLE



SPLIT SPOON SAMPLE



CONTINUOUS SAMPLE

PLATE NO. 1

Sheet 1 of 1

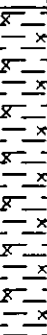
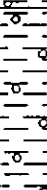
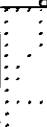
SEACOR ENVIRONMENTAL ENGINEERING INC.

CLIENT Canadian Turbo (1993) Inc.
PROJECT BARONS TURBO
235 MAIN STREET
Barons, Alberta

BOREHOLE LOG

BOREHOLE NO: BH96-12
ELEVATION: 99 08

SEACOR JOB NO H0031-093

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA				WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
				HYDROCARBON VAPOUR LEVEL (ppmv)							
				10	100	1000	10000				
			SAND AND GRAVEL (FILL)							Cement Seal	
			SILT (NATIVE) -some clay, brown, stiff, low plastic, moist -no hydrocarbon odour or staining								
1.0											1.0
			CLAY (NATIVE) -silty, brown, stiff, high plastic, moist -no hydrocarbon odour or staining								
2.0											2.0
			CLAY TILL (NATIVE) -silty, some sand and pebbles, brown, stiff, medium plastic, moist -no hydrocarbon odour or staining							Backfill Drill Cuttings	3.0
3.0											
			SANDSTONE (BEDROCK) -weathered, fine, grey, dense, damp -no hydrocarbon odour or staining								4.0
4.0											
			End of borehole at 4.6 m. Soil sampled at 4.4 m, analyzed for BTEX								

DRILLING METHOD Rotary Auger Drill

DATE DRILLED 10/25/96

Notes

☐ NO RECOVERY
☒ AUGER SAMPLE
☐ SPLIT SPOON SAMPLE
☐ CONTINUOUS SAMPLE

PLATE NO. 1

Sheet 1 of 1

SEACOR ENVIRONMENTAL ENGINEERING INC.

CLIENT Canadian Turbo (1993) Inc.
PROJECT BARONS TURBO
235 MAIN STREET
Barons, Alberta

BOREHOLE LOG

BOREHOLE NO BH96-13
ELEVATION 98 62

SEACOR JOB NO H0031-093

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA				WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
				HYDROCARBON VAPOUR LEVEL (ppmv)							
				10	100	1000	10000				
			SAND AND GRAVEL (FILL)							Cement Seal	
1.0			SILT (NATIVE) -some clay, brown, stiff, low plastic, moist -no hydrocarbon odour or staining	30							1.0
2.0			CLAY (NATIVE) -silty, brown, stiff, high plastic, moist -hydrocarbon odour from 2.4 to 3.1 m -no hydrocarbon staining	45							2.0
3.0			CLAY TILL (NATIVE) -silty, some sand and pebbles, brown, stiff, medium plastic, moist -no hydrocarbon odour or staining	35						Backfill Drill Cuttings	3.0
4.0			SANDSTONE (BEDROCK) -weathered, fine, grey, dense, damp -no hydrocarbon odour or staining	90							4.0
			End of borehole at 4.6 m Soil sampled at 2.9 m, analyzed for BTEX, TPH and Flashpoint								

DRILLING METHOD Rotary Auger Drill

DATE DRILLED 10/25/96

Notes:

NO RECOVERY
 AUGER SAMPLE
 SPLIT SPOON SAMPLE
 CONTINUOUS SAMPLE

PLATE NO. 1

Sheet 1 of 1

DRILLING METHOD Rotary Auger Drill

DATE DRILLED 10/25/96

Notes:



NO RECOVERY
AUGER SAMPLE
SPLIT SPOON SAMPLE
CONTINUOUS SAMPLE

PLATE NO. 1

Sheet 1 of 1

SEACOR ENVIRONMENTAL ENGINEERING INC.

SEACOR JOB NO H0031-093

CLIENT Canadian Turbo (1993) Inc.
PROJECT BARONS TURBO
235 MAIN STREET
Barons, Alberta

BOREHOLE LOG

BOREHOLE NO BH96-14
ELEVATION 98.23

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA				WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
				HYDROCARBON VAPOUR LEVEL (ppmv)							
				10	100	1000	10000				
			SAND AND GRAVEL (FILL)							Flush Roadbox	
			SILT (NATIVE) -some clay, brown, stiff, low plastic, moist -no hydrocarbon odour or staining								
1.0										Bentonite Seal	1.0
			CLAY (NATIVE) -silty, brown, stiff, high plastic, moist -no hydrocarbon odour or staining								
2.0											2.0
3.0											
			CLAY TILL (NATIVE) -silty, some sand and pebbles, brown, stiff, medium plastic, moist -no hydrocarbon odour or staining							Monitored Nov. 7, 1996	3.0
			SANDSTONE (BEDROCK) -weathered, fine, grey, dense, damp -no hydrocarbon odour or staining							"Sil 9" Sand	4.0
4.0											
			End of borehole at 4.6 m Soil sampled at 3.8 m, analyzed for BTEX Groundwater sampled Nov 7, 1996.								

DRILLING METHOD Rotary Auger Drill

DATE DRILLED 10/25/96

Notes



NO RECOVERY
AUGER SAMPLE
SPLIT SPOON SAMPLE
CONTINUOUS SAMPLE

PLATE NO. 1

Sheet 1 of 1

SEACOR ENVIRONMENTAL ENGINEERING INC.

CLIENT Canadian Turbo (1993) Inc.
PROJECT BARONS TURBO
235 MAIN STREET
Barons, Alberta

BOREHOLE LOG

BOREHOLE NO BH96-15
ELEVATION 98.20

SEACOR JOB NO H0031-093

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA				WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
				HYDROCARBON VAPOUR LEVEL (ppmv)							
				10	100	1000	10000				
			SAND AND GRAVEL (FILL)							Cement Seal	
1.0			SILT (NATIVE) -some clay, brown, stiff, low plastic, moist -no hydrocarbon odour or staining	35							1.0
				45							
2.0			CLAY (NATIVE) -silty, brown, stiff, high plastic, moist -no hydrocarbon odour or staining	45							2.0
				40							
3.0			CLAY TILL (NATIVE) -silty, some sand and pebbles, brown, stiff, medium plastic, moist -no hydrocarbon odour or staining							Backfill Drill Cuttings	3.0
				55							
4.0			SANDSTONE (BEDROCK) -weathered, fine, grey, dense, damp -no hydrocarbon odour or staining	45							4.0
											
			End of borehole at 4.6 m Soil sampled at 3.8 m, analyzed for BTEX								

DRILLING METHOD Rotary Auger Drill

DATE DRILLED 10/25/96

Notes

 NO RECOVERY
 AUGER SAMPLE
 SPLIT SPOON SAMPLE
 CONTINUOUS SAMPLE

PLATE NO. 1

Sheet 1 of 1

APPENDIX C

ANALYTICAL CHEMISTRY REPORTS

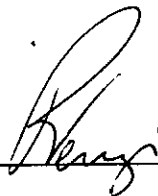
CHEMEX Labs Alberta Inc.

Calgary 2021 - 41st Avenue N.E., T2E 6P2, Telephone (403) 291-3077, FAX (403) 291-9468
Edmonton 9331 - 48th Street, T6B 2R4, Telephone (403) 465-9877, FAX (403) 466-3332

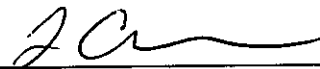
SEA-COR ENVIRONMENTAL ENGINEERING INC.
GENE CHEE

DATE : November 4, 1996
CHEMEX PROJECT NO.: TURB722-0501-96-04250
CLIENT REFERENCE : BARONS TURBO 2520
CLIENT JOB NO. : PROJ.#H0031-093

Analytical Data Reviewed By :



QA/QC Reviewed By



The above signatures indicate that the individuals identified have reviewed the enclosed documents

NOTE Soil samples and water samples (for stable parameters) will be retained for a period of 60 days after completion of analysis
Retention beyond this period can be arranged for a fee

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Edmonton 9331 - 48th Street, T6B 2R4, Telephone (403) 465-9877, FAX (403) 466-3332

Sample Description : BH96-1 2.9M
Sample Date & Time : 25-10-96
Sampled By : CHEE
Sample Type : COMPOSITE
Sample Received Date : October 28, 1996
Sample Station Code :

SEA-COR ENVIRONMENTAL ENGINEERING INC.
ATTENTION : GENE CHEE

BARONS TURBO 2520
PROJ.#H0031-093

Chemex Worksheet Number : 96-04250-1
Chemex Project Number : TURB722-0501
Sample Access :
Sample Matrix : SOIL
Report Date : November 4 1996
Analysis Date : October 31 1996

PARAMETER	VOLATILE ORGANICS ANALYSIS - BTEX EPA METHOD 8260 MODIFIED			
	CONC	BLANK CONC	UNITS	MDL
Benzene	< 0.0042	< 0.005	mg/Kg	0.0042
Ethylbenzene	< 0.0042	< 0.005	mg/Kg	0.0042
Toluene	< 0.0042	< 0.005	mg/Kg	0.0042
m & p-Xylene	< 0.0042	< 0.005	mg/Kg	0.0042
o-Xylene	< 0.0042	< 0.005	mg/Kg	0.0042

NOTES :

Results are reported in accordance with CCME guidelines, "Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites, Volume I" All results are corrected for blank levels

MDL - Method detection level - Calculated on the basis of the instrument detection level, the dilution used, and the weight of the sample.

() - Bracketed results are values below the reliable detection level, and are subject to reduced levels of confidence
The reliable detection level is twice the method detection level.

QA/QC SUMMARY

All samples were spiked with a component whose recovery was monitored to maintain analysis accuracy
Guidelines from SW846 for suggested surrogate recoveries for each matrix are shown below
Results are uncorrected for moisture unless otherwise noted.

Instrument : GC/MS

Surrogate Recovery : 96% SOIL surrogate limits 80% - 117%

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Sample Description BH96-3 2 9M
Sample Date & Time 25-10-96
Sampled By CHEE
Sample Type COMPOSITE
Sample Received Date October 28, 1996
Sample Station Code

SEA-COR ENVIRONMENTAL ENGINEERING INC.
ATTENTION : GENE CHEE

BARONS TURBO 2520
PROJ.#H0031-093

Chemex Worksheet Number 96-04250-2
Chemex Project Number TURB722-0501
Sample Access
Sample Matrix SOIL
Report Date November 4 1996
Analysis Date October 29 1996

TOTAL EXTRACTABLE HYDROCARBONS METHOD MODIFIED ASTM D2887

COMPONENT	mg/Kg	BOILING RANGE
-----------	-------	---------------

C 08	< 1.	98.5 TO 125.7
C 09	< 1.	125.8 TO 150.8
C 10	< 1.	150.9 TO 174.2
C 11	< 1.	174.3 TO 196.0
C 12	< 1.	196.1 TO 216.0
C 13	< 1.	216.1 TO 236.0
C 14	< 1.	236.1 TO 253.0
C 15	< 1.	253.1 TO 271.0
C 16	< 1.	271.1 TO 287.0
C 17	< 1.	287.1 TO 302.0
C 18	< 1.	302.1 TO 317.0
C 19	< 1.	317.1 TO 331.0
C 20	< 1.	331.1 TO 344.0
C 21	< 1.	344.1 TO 357.0
C 22	< 1.	357.1 TO 366.0
C 23	< 1.	366.1 TO 380.0
C 24	< 1.	380.1 TO 391.0
C 25	< 1.	391.1 TO 402.0
C 26	< 1.	402.1 TO 412.0
C 27	< 1.	412.1 TO 422.0
C 28	< 1.	422.1 TO 432.0
C 29	< 1.	432.1 TO 441.0
C 30	< 1.	441.1 TO 449.0

TOTAL HYDROCARBONS C8-C10 N.D.

TOTAL HYDROCARBONS C11-C30 N.D.

Average molecular weight : N.D. AMU

MDL per component : 1. mg/Kg

Results are reported in accordance with CCME guidelines, "Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites, Volume I". All results are corrected for blank levels

MDL - Method detection level. - Calculated on the basis of the instrument detection level, the dilution used, and the weight of the sample.

() - Bracketed results are values below the reliable detection level, and are subject to reduced levels of confidence. The reliable detection level is twice the method detection level.

Results are uncorrected for moisture unless otherwise noted.

Surrogate Recovery : 115%

SOIL surrogate limits : 66% - 140%.

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SEA-COR ENVIRONMENTAL ENGINEERING INC.
ATTENTION : GENE CHEE

BARONS TURBO 2520
PROJ.#H0031-093

Sample Description : BH96-3 2 9M
Sample Date & Time : 25-10-96
Sampled By : CHEE
Sample Type : COMPOSITE
Sample Received Date: October 28, 1996
Sample Station Code :

Chemex Worksheet Number 96-04250-2
Chemex Project Number TURB722-0501
Sample Access
Sample Matrix SOIL
Report Date November 4 1996
Analysis Date October 31 1996

VOLATILE ORGANICS ANALYSIS - BTEX EPA METHOD 8260 MODIFIED

PARAMETER	CONC	BLANK CONC	UNITS	MDL
Benzene	< 0.0069	< 0.005	mg/Kg	0.0069
Ethylbenzene	0.032	< 0.005	mg/Kg	0.0069
Toluene	< 0.0069	< 0.005	mg/Kg	0.0069
m & p-Xylene	0.44	< 0.005	mg/Kg	0.0069
o-Xylene	0.21	< 0.005	mg/Kg	0.0069
Total Purgeables (C3 to C10)	4.4	0.24	mg/Kg	0.03
Total Purgeables (C11 to C12)	2.2	0.19	mg/Kg	0.03

NOTES :

Results are reported in accordance with CCME guidelines, "Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites, Volume I". All results are corrected for blank levels

MDL - Method detection level. - Calculated on the basis of the instrument detection level, the dilution used, and the weight of the sample

() - Bracketed results are values below the reliable detection level, and are subject to reduced levels of confidence
The reliable detection level is twice the method detection level

QA/QC SUMMARY

All samples were spiked with a component whose recovery was monitored to maintain analysis accuracy
Guidelines from SW846 for suggested surrogate recoveries for each matrix are shown below
Results are uncorrected for moisture unless otherwise noted

Instrument : GC/MS

Surrogate Recovery : 98% SOIL surrogate limits : 80% - 117%

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Sample Description · BH96-4 3 8M
Sample Date & Time 25-10-96
Sampled By CHEE
Sample Type COMPOSITE
Sample Received Date October 28, 1996
Sample Station Code .

SEA-COR ENVIRONMENTAL ENGINEERING INC.
ATTENTION GENE CHEE

BARONS TURBO 2520
PROJ.#H0031-093

Chemex Worksheet Number 96-04250-3
Chemex Project Number TURB722-0501
Sample Access
Sample Matrix SOIL
Report Date November 4 1996
Analysis Date October 31, 1996

PARAMETER	VOLATILE ORGANICS ANALYSIS - BTEX EPA METHOD 8260 MODIFIED			
	CONC	BLANK CONC	UNITS	MDL
Benzene	< 0.0042	< 0.005	mg/Kg	0.0042
Ethylbenzene	< 0.0042	< 0.005	mg/Kg	0.0042
Toluene	< 0.0042	< 0.005	mg/Kg	0.0042
m & p-Xylene	< 0.0042	< 0.005	mg/Kg	0.0042
o-Xylene	< 0.0042	< 0.005	mg/Kg	0.0042

NOTES :

Results are reported in accordance with CCME guidelines, "Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites, Volume I". All results are corrected for blank levels.

MDL - Method detection level. - Calculated on the basis of the instrument detection level, the dilution used, and the weight of the sample.

() - Bracketed results are values below the reliable detection level, and are subject to reduced levels of confidence
The reliable detection level is twice the method detection level

QA/QC SUMMARY

All samples were spiked with a component whose recovery was monitored to maintain analysis accuracy
Guidelines from SW846 for suggested surrogate recoveries for each matrix are shown below.
Results are uncorrected for moisture unless otherwise noted

Instrument : GC/MS

Surrogate Recovery 96% SOIL surrogate limits 80% - 117%

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SEA-COR ENVIRONMENTAL ENGINEERING INC.
ATTENTION : GENE CHEE

BARONS TURBO 2520
PROJ.#H0031-093

Sample Description BH96-5 2 3M
Sample Date & Time 25-10-96
Sampled By CHEE
Sample Type COMPOSITE
Sample Received Date, October 28, 1996
Sample Station Code

Chemex Worksheet Number 96-04250-4
Chemex Project Number TUR8722-0501
Sample Access
Sample Matrix SOIL
Report Date November 4 1996
Analysis Date October 29, 1996

TOTAL EXTRACTABLE HYDROCARBONS METHOD MODIFIED ASTM D2887

COMPONENT	mg/Kg	BOILING RANGE
-----------	-------	---------------

C 08	4.	98.5 TO 125.7
C 09	24.	125.8 TO 150.8
C 10	100.	150.9 TO 174.2
C 11	140.	174.3 TO 196.0
C 12	250.	196.1 TO 216.0
C 13	540.	216.1 TO 236.0
C 14	260.	236.1 TO 253.0
C 15	430.	253.1 TO 271.0
C 16	140.	271.1 TO 287.0
C 17	190.	287.1 TO 302.0
C 18	180.	302.1 TO 317.0
C 19	120.	317.1 TO 331.0
C 20	100.	331.1 TO 344.0
C 21	21.	344.1 TO 357.0
C 22	30.	357.1 TO 366.0
C 23	24.	366.1 TO 380.0
C 24	13.	380.1 TO 391.0
C 25	7.	391.1 TO 402.0
C 26	< 1.	402.1 TO 412.0
C 27	< 1.	412.1 TO 422.0
C 28	< 1.	422.1 TO 432.0
C 29	< 1.	432.1 TO 441.0
C 30	< 1.	441.1 TO 449.0

TOTAL HYDROCARBONS C8-C10 130. mg/Kg
TOTAL HYDROCARBONS C11-C30 2400. mg/Kg

Average molecular weight : 194 AMU

MDL per component : 1. mg/Kg

Results are reported in accordance with CCME guidelines, "Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites, Volume I" All results are corrected for blank levels

MDL - Method detection level. - Calculated on the basis of the instrument detection level, the dilution used, and the weight of the sample

() - Bracketed results are values below the reliable detection level, and are subject to reduced levels of confidence

The reliable detection level is twice the method detection level

Results are uncorrected for moisture unless otherwise noted

Surrogate Recovery : 113%

SOIL surrogate limits

66% - 140%

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Sample Description BH96-5 2.3M
Sample Date & Time 25-10-96
Sampled By CHEE
Sample Type COMPOSITE
Sample Received Date October 28, 1996
Sample Station Code

SEA-COR ENVIRONMENTAL ENGINEERING INC.
ATTENTION : GENE CHEE

BARONS TURBO 2520
PROJ.#H0031-093

Chemex Worksheet Number 96-04250-4
Chemex Project Number TURB722-0501
Sample Access
Sample Matrix SOIL
Report Date November 4 1996
Analysis Date November 1 1996

PARAMETER	VOLATILE ORGANICS ANALYSIS - BTEX EPA METHOD 8260 MODIFIED			
	CONC	BLANK CONC	UNITS	MDL
Benzene	(0.053)	< 0.005	mg/Kg	0.044
Ethylbenzene	2.7	< 0.005	mg/Kg	0.044
Toluene	< 0.044	< 0.005	mg/Kg	0.044
m & p-Xylene	1.6	< 0.005	mg/Kg	0.044
o-Xylene	< 0.044	< 0.005	mg/Kg	0.044
Total Purgeables (C3 to C10)	190	0.43	mg/Kg	0.38
Total Purgeables (C11 to C12)	160	0.21	mg/Kg	0.19

NOTES

Results are reported in accordance with CCME guidelines, "Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites, Volume I" All results are corrected for blank levels

MDL - Method detection level - Calculated on the basis of the instrument detection level, the dilution used, and the weight of the sample.

() - Bracketed results are values below the reliable detection level, and are subject to reduced levels of confidence
The reliable detection level is twice the method detection level.

QA/QC SUMMARY

All samples were spiked with a component whose recovery was monitored to maintain analysis accuracy.

Guidelines from SW846 for suggested surrogate recoveries for each matrix are shown below

Results are uncorrected for moisture unless otherwise noted.

Instrument : GC/MS

Surrogate Recovery : 100% SOIL surrogate limits : 80% - 117%

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SEA-COR ENVIRONMENTAL ENGINEERING INC.
ATTENTION : GENE CHEE

BARONS TURBO 2520
PROJ.#H0031-093

Sample Description : BH96-6 2 9M
Sample Date & Time : 25-10-96
Sampled By : CHEE
Sample Type : COMPOSITE
Sample Received Date : October 28, 1996
Sample Station Code :

Chemex Worksheet Number : 96-04250 5
Chemex Project Number : TURB722-0501
Sample Access :
Sample Matrix : SOIL
Report Date : November 4 1996
Analysis Date : October 29 1996

TOTAL EXTRACTABLE HYDROCARBONS METHOD MODIFIED ASTM D2887

COMPONENT

mg/Kg

BOILING RANGE

C 08	< 1.	98.5 TO 125.7
C 09	10.	125.8 TO 150.8
C 10	5.	150.9 TO 174.2
C 11	18.	174.3 TO 196.0
C 12	37.	196.1 TO 216.0
C 13	110.	216.1 TO 236.0
C 14	60.	236.1 TO 253.0
C 15	110.	253.1 TO 271.0
C 16	37.	271.1 TO 287.0
C 17	57.	287.1 TO 302.0
C 18	54.	302.1 TO 317.0
C 19	52.	317.1 TO 331.0
C 20	49.	331.1 TO 344.0
C 21	11.	344.1 TO 357.0
C 22	20.	357.1 TO 366.0
C 23	14.	366.1 TO 380.0
C 24	8.	380.1 TO 391.0
C 25	5.	391.1 TO 402.0
C 26	< 1.	402.1 TO 412.0
C 27	< 1.	412.1 TO 422.0
C 28	< 1.	422.1 TO 432.0
C 29	< 1.	432.1 TO 441.0
C 30	< 1.	441.1 TO 449.0

TOTAL HYDROCARBONS C8-C10 15. mg/Kg

TOTAL HYDROCARBONS C11-C30 640. mg/Kg

Average molecular weight : 210 AMU

MDL per component : 1. mg/Kg

Results are reported in accordance with CCME guidelines, "Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites, Volume I" All results are corrected for blank levels

MDL - Method detection level. - Calculated on the basis of the instrument detection level, the dilution used, and the weight of the sample.

() - Bracketed results are values below the reliable detection level, and are subject to reduced levels of confidence
The reliable detection level is twice the method detection level

Results are uncorrected for moisture unless otherwise noted

Surrogate Recovery : 113%

SOIL surrogate limits

66% - 140%

CHEMEX Labs Alberta Inc.

SEA-COR ENVIRONMENTAL ENGINEERING INC.
ATTENTION GENE CHEE

BARONS TURBO 2520
PROJ.#H0031-093

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Sample Description : BH96-6 2 9M
Sample Date & Time 25-10-96
Sampled By CHEE
Sample Type COMPOSITE
Sample Received Date October 28, 1996
Sample Station Code

Chemex Worksheet Number 96-04250-5
Chemex Project Number TURB722-0501
Sample Access
Sample Matrix SOIL
Report Date November 4 1996
Analysis Date October 31, 1996

PARAMETER	VOLATILE ORGANICS ANALYSIS - BTX EPA METHOD 8260 MODIFIED			
	CONC	BLANK CONC	UNITS	MDL
Benzene	< 0.0079	< 0.005	mg/Kg	0.0079
Ethylbenzene	< 0.0079	< 0.005	mg/Kg	0.0079
Toluene	< 0.0079	< 0.005	mg/Kg	0.0079
m & p-Xylene	0.019	< 0.005	mg/Kg	0.0079
o-Xylene	< 0.0079	< 0.005	mg/Kg	0.0079
Total Purgeables (C3 to C10)	0.87	0.61	mg/Kg	0.10
Total Purgeables (C11 to C12)	2.8	0.32	mg/Kg	0.05

NOTES :

Results are reported in accordance with CCME guidelines, "Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites, Volume I" All results are corrected for blank levels

MDL - Method detection level. - Calculated on the basis of the instrument detection level, the dilution used, and the weight of the sample.

() - Bracketed results are values below the reliable detection level, and are subject to reduced levels of confidence
The reliable detection level is twice the method detection level

QA/QC SUMMARY

All samples were spiked with a component whose recovery was monitored to maintain analysis accuracy
Guidelines from SW846 for suggested surrogate recoveries for each matrix are shown below
Results are uncorrected for moisture unless otherwise noted

Instrument : GC/MS

Surrogate Recovery : 88% SOIL surrogate limits : 80% - 117%

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Sample Description . BH96-7 2.3M
Sample Date & Time 25-10-96
Sampled By . CHEE
Sample Type COMPOSITE
Sample Received Date October 28, 1996
Sample Station Code :

SEA-COR ENVIRONMENTAL ENGINEERING INC.
ATTENTION : GENE CHEE

BARONS TURBO 2520
PROJ.#H0031-093

Chemex Worksheet Number 96-04250-6
Chemex Project Number TURB722-0501
Sample Access
Sample Matrix SOIL
Report Date November 4, 1996
Analysis Date October 29 1996

TOTAL EXTRACTABLE HYDROCARBONS METHOD MODIFIED ASTM D2887

COMPONENT mg/Kg BOILING RANGE

C 08	2.	98.5 TO 125.7
C 09	17.	125.8 TO 150.8
C 10	83.	150.9 TO 174.2
C 11	150.	174.3 TO 196.0
C 12	260.	196.1 TO 216.0
C 13	660.	216.1 TO 236.0
C 14	330.	236.1 TO 253.0
C 15	530.	253.1 TO 271.0
C 16	210.	271.1 TO 287.0
C 17	260.	287.1 TO 302.0
C 18	260.	302.1 TO 317.0
C 19	180.	317.1 TO 331.0
C 20	180.	331.1 TO 344.0
C 21	40.	344.1 TO 357.0
C 22	72.	357.1 TO 366.0
C 23	49.	366.1 TO 380.0
C 24	29.	380.1 TO 391.0
C 25	18.	391.1 TO 402.0
C 26	(1.)	402.1 TO 412.0
C 27	(2.)	412.1 TO 422.0
C 28	< 1.	422.1 TO 432.0
C 29	< 1.	432.1 TO 441.0
C 30	< 1.	441.1 TO 449.0

TOTAL HYDROCARBONS C8-C10 100. mg/Kg

TOTAL HYDROCARBONS C11-C30 3200. mg/Kg

Average molecular weight : 201 AMU.

MDL per component : 1 mg/Kg

Results are reported in accordance with CCME guidelines, "Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites, Volume I". All results are corrected for blank levels

MDL - Method detection level - Calculated on the basis of the instrument detection level, the dilution used, and the weight of the sample

() - Bracketed results are values below the reliable detection level, and are subject to reduced levels of confidence
The reliable detection level is twice the method detection level.

Results are uncorrected for moisture unless otherwise noted

Surrogate Recovery : 112%

SOIL surrogate limits

66% - 140%

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Sample Description BH96-7 2 3M
Sample Date & Time : 25-10-96
Sampled By : CHEE
Sample Type : COMPOSITE
Sample Received Date October 28, 1996
Sample Station Code

SEA-COR ENVIRONMENTAL ENGINEERING INC.
ATTENTION : GENE CHEE

BARONS TURBO 2520
PROJ #H0031-093

Chemex Worksheet Number 96-04250-6
Chemex Project Number TUR8722-0501
Sample Access
Sample Matrix SOIL
Report Date November 4, 1996
Analysis Date November 1 1996

PARAMETER	VOLATILE ORGANICS ANALYSIS - BTEX EPA METHOD 8260 MODIFIED			
	CONC	BLANK CONC	UNITS	MDL
Benzene	< 0.028	< 0.005	mg/Kg	0.028
Ethylbenzene	0.26	< 0.005	mg/Kg	0.028
Toluene	< 0.028	< 0.005	mg/Kg	0.028
m & p-Xylene	1.5	< 0.005	mg/Kg	0.028
o-Xylene	< 0.028	< 0.005	mg/Kg	0.028
Total Purgeables (C3 to C10)	100	0.39	mg/Kg	0.22
Total Purgeables (C11 to C12)	140	0.46	mg/Kg	0.26

NOTES :

Results are reported in accordance with CCME guidelines, "Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites, Volume I" All results are corrected for blank levels

MDL - Method detection level. - Calculated on the basis of the instrument detection level, the dilution used, and the weight of the sample

() - Bracketed results are values below the reliable detection level, and are subject to reduced levels of confidence
The reliable detection level is twice the method detection level.

QA/QC SUMMARY

All samples were spiked with a component whose recovery was monitored to maintain analysis accuracy

Guidelines from SW846 for suggested surrogate recoveries for each matrix are shown below

Results are uncorrected for moisture unless otherwise noted

Instrument : GC/MS

Surrogate Recovery : 102% SOIL surrogate limits : 80% - 117%

CHEMEX Labs Alberta Inc.

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Sample Description · BH96-10 3 8M
Sample Date & Time 25-10-96
Sampled By · CHEE
Sample Type COMPOSITE
Sample Received Date October 28, 1996
Sample Station Code

SEA-COR ENVIRONMENTAL ENGINEERING INC.
ATTENTION : GENE CHEE

BARONS TURBO 2520
PROJ #H0031-093

Chemex Worksheet Number 96-04250-7
Chemex Project Number TURB722-0501
Sample Access
Sample Matrix SOIL
Report Date November 4 1996
Analysis Date October 29 1996

TOTAL EXTRACTABLE HYDROCARBONS METHOD MODIFIED ASTM D2887

COMPONENT	mg/Kg	BOILING RANGE
-----------	-------	---------------

C 08	< 1.	98.5 TO 125.7
C 09	< 1.	125.8 TO 150.8
C 10	< 1.	150.9 TO 174.2
C 11	< 1.	174.3 TO 196.0
C 12	< 1.	196.1 TO 216.0
C 13	< 1.	216.1 TO 236.0
C 14	< 1.	236.1 TO 253.0
C 15	< 1.	253.1 TO 271.0
C 16	< 1.	271.1 TO 287.0
C 17	< 1.	287.1 TO 302.0
C 18	< 1.	302.1 TO 317.0
C 19	< 1.	317.1 TO 331.0
C 20	< 1.	331.1 TO 344.0
C 21	< 1.	344.1 TO 357.0
C 22	< 1.	357.1 TO 366.0
C 23	< 1.	366.1 TO 380.0
C 24	< 1.	380.1 TO 391.0
C 25	< 1.	391.1 TO 402.0
C 26	< 1.	402.1 TO 412.0
C 27	< 1.	412.1 TO 422.0
C 28	< 1.	422.1 TO 432.0
C 29	< 1.	432.1 TO 441.0
C 30	< 1.	441.1 TO 449.0

TOTAL HYDROCARBONS C8-C10 N.D.
TOTAL HYDROCARBONS C11-C30 N.D.

Average molecular weight : N.D. AMU

MDL per component : 1. mg/Kg

Results are reported in accordance with CCME guidelines, "Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites, Volume I". All results are corrected for blank levels

MDL - Method detection level - Calculated on the basis of the instrument detection level, the dilution used, and the weight of the sample.

() - Bracketed results are values below the reliable detection level, and are subject to reduced levels of confidence
The reliable detection level is twice the method detection level

Results are uncorrected for moisture unless otherwise noted.

Surrogate Recovery 109% SOIL surrogate limits 66% - 140%

CHEMEX Labs Alberta Inc.

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Edmonton 9331 - 48th Street, T6B 2R4, Telephone (403) 465-9877, FAX (403) 466-3332

SEA-COR ENVIRONMENTAL ENGINEERING INC.
ATTENTION : GENE CHEE

BARONS TURBO 2520
PROJ.#H0031-093

Sample Description BH96-10 3.8M
Sample Date & Time 25-10-96
Sampled By CHEE
Sample Type COMPOSITE
Sample Received Date October 28, 1996
Sample Station Code

Chemex Worksheet Number 96-04250-7
Chemex Project Number TURB722-0501
Sample Access
Sample Matrix SOIL
Report Date November 4 1996
Analysis Date October 31 1996

PARAMETER	VOLATILE ORGANICS ANALYSIS - BTEX EPA METHOD 8260 MODIFIED			
	CONC	BLANK CONC	UNITS	MDL
Benzene	< 0.0044	< 0.005	mg/Kg	0.0044
Ethylbenzene	< 0.0044	< 0.005	mg/Kg	0.0044
Toluene	< 0.0044	< 0.005	mg/Kg	0.0044
m & p-Xylene	< 0.0044	< 0.005	mg/Kg	0.0044
o-Xylene	< 0.0044	< 0.005	mg/Kg	0.0044
Total Purgeables (C3 to C10)	< 0.08	0.9	mg/Kg	0.08
Total Purgeables (C11 to C12)	< 0.02	0.3	mg/Kg	0.02

NOTES :

Results are reported in accordance with CCME guidelines, "Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites, Volume I" All results are corrected for blank levels

MDL - Method detection level. - Calculated on the basis of the instrument detection level, the dilution used, and the weight of the sample.

() - Bracketed results are values below the reliable detection level, and are subject to reduced levels of confidence
The reliable detection level is twice the method detection level

QA/QC SUMMARY

All samples were spiked with a component whose recovery was monitored to maintain analysis accuracy

Guidelines from SW846 for suggested surrogate recoveries for each matrix are shown below

Results are uncorrected for moisture unless otherwise noted.

Instrument : GC/MS

Surrogate Recovery : 93% SOIL surrogate limits : 80% - 117%

CHEMEX Labs Alberta Inc.

SEA-COR ENVIRONMENTAL ENGINEERING INC.
ATTENTION : GENE CHEE

BARONS TURBO 2520
PROJ. #H0031-093

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Sample Description BH96-11 2.3M
Sample Date & Time 25-10-96
Sampled By CHEE
Sample Type : COMPOSITE
Sample Received Date October 28, 1996
Sample Station Code

Chemex Worksheet Number 96-04250-8
Chemex Project Number TURB722-0501
Sample Access
Sample Matrix SOIL
Report Date November 4 1996
Analysis Date October 29 1996

TOTAL EXTRACTABLE HYDROCARBONS METHOD MODIFIED ASTM D2887

COMPONENT	mg/Kg	BOILING RANGE
-----------	-------	---------------

C 08	3.	98.5 TO 125.7
C 09	10.	125.8 TO 150.8
C 10	4.	150.9 TO 174.2
C 11	6.	174.3 TO 196.0
C 12	11.	196.1 TO 216.0
C 13	47.	216.1 TO 236.0
C 14	33.	236.1 TO 253.0
C 15	66.	253.1 TO 271.0
C 16	23.	271.1 TO 287.0
C 17	34.	287.1 TO 302.0
C 18	30.	302.1 TO 317.0
C 19	26.	317.1 TO 331.0
C 20	22.	331.1 TO 344.0
C 21	5.	344.1 TO 357.0
C 22	9.	357.1 TO 366.0
C 23	6.	366.1 TO 380.0
C 24	4.	380.1 TO 391.0
C 25	2.	391.1 TO 402.0
C 26	< 1.	402.1 TO 412.0
C 27	< 1.	412.1 TO 422.0
C 28	< 1.	422.1 TO 432.0
C 29	< 1.	432.1 TO 441.0
C 30	< 1.	441.1 TO 449.0

TOTAL HYDROCARBONS C8-C10 17. mg/Kg
TOTAL HYDROCARBONS C11-C30 320. mg/Kg

Average molecular weight : 208 AMU

MDL per component : 1. mg/Kg

Results are reported in accordance with CCME guidelines, "Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites, Volume I" All results are corrected for blank levels

MDL - Method detection level - Calculated on the basis of the instrument detection level, the dilution used, and the weight of the sample.

() - Bracketed results are values below the reliable detection level, and are subject to reduced levels of confidence
The reliable detection level is twice the method detection level

Results are uncorrected for moisture unless otherwise noted

Surrogate Recovery : 111%

SOIL surrogate limits

66% - 140%

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Sample Description BH96-11 2 3M
Sample Date & Time 25-10-96
Sampled By CHEE
Sample Type COMPOSITE
Sample Received Date October 28, 1996
Sample Station Code

SEA-COR ENVIRONMENTAL ENGINEERING INC.
ATTENTION : GENE CHEE

BARONS TURBO 2520
PROJ.#H0031-093

Chemex Worksheet Number 96-04250-8
Chemex Project Number TURB722-0501
Sample Access
Sample Matrix SOIL
Report Date November 4 1996
Analysis Date October 31 1996

VOLATILE ORGANICS ANALYSIS - BTEX EPA METHOD 8260 MODIFIED

PARAMETER	CONC	BLANK CONC	UNITS	MDL
Benzene	< 0.0074	< 0.005	mg/Kg	0.0074
Ethylbenzene	< 0.0074	< 0.005	mg/Kg	0.0074
Toluene	< 0.0074	< 0.005	mg/Kg	0.0074
m & p-Xylene	< 0.0074	< 0.005	mg/Kg	0.0074
o-Xylene	< 0.0074	< 0.005	mg/Kg	0.0074
Total Purgeables (C3 to C10)	0.26	0.24	mg/Kg	0.03
Total Purgeables (C11 to C12)	3.7	0.19	mg/Kg	0.03

NOTES :

Results are reported in accordance with CCME guidelines, "Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites, Volume I" All results are corrected for blank levels

MDL - Method detection level. - Calculated on the basis of the instrument detection level, the dilution used, and the weight of the sample.

() - Bracketed results are values below the reliable detection level, and are subject to reduced levels of confidence
The reliable detection level is twice the method detection level

QA/QC SUMMARY

All samples were spiked with a component whose recovery was monitored to maintain analysis accuracy.

Guidelines from SW846 for suggested surrogate recoveries for each matrix are shown below

Results are uncorrected for moisture unless otherwise noted.

Instrument : GC/MS

Surrogate Recovery : 102% SOIL surrogate limits : 80% - 117%

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Sample Description . BH96-12 4 4M
Sample Date & Time . 25-10-96
Sampled By CHEE
Sample Type COMPOSITE
Sample Received Date October 28, 1996
Sample Station Code

SEA-COR ENVIRONMENTAL ENGINEERING INC.
ATTENTION : GENE CHEE

BARONS TURBO 2520
PROJ.#H0031-093

Chemex Worksheet Number 96-04250-9
Chemex Project Number TUR8722-0501
Sample Access
Sample Matrix SOIL
Report Date November 4 1996
Analysis Date October 31 1996

PARAMETER	VOLATILE ORGANICS ANALYSIS - BTEX EPA METHOD 8260 MODIFIED			
	CONC	BLANK CONC	UNITS	MDL
Benzene	< 0.0036	< 0.005	mg/Kg	0.0036
Ethylbenzene	< 0.0036	< 0.005	mg/Kg	0.0036
Toluene	< 0.0036	< 0.005	mg/Kg	0.0036
m & p-Xylene	< 0.0036	< 0.005	mg/Kg	0.0036
o-Xylene	< 0.0036	< 0.005	mg/Kg	0.0036

NOTES :

Results are reported in accordance with CCME guidelines, "Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites, Volume I" All results are corrected for blank levels

MDL - Method detection level. - Calculated on the basis of the instrument detection level, the dilution used, and the weight of the sample

() - Bracketed results are values below the reliable detection level, and are subject to reduced levels of confidence
The reliable detection level is twice the method detection level

QA/QC SUMMARY

All samples were spiked with a component whose recovery was monitored to maintain analysis accuracy

Guidelines from SW846 for suggested surrogate recoveries for each matrix are shown below

Results are uncorrected for moisture unless otherwise noted

Instrument : GC/MS

Surrogate Recovery . 87% SOIL surrogate limits : 80% - 117%

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Sample Description BH96-13 2 9M
Sample Date & Time 25-10-96
Sampled By CHEE
Sample Type : COMPOSITE
Sample Received Date October 28, 1996
Sample Station Code .

SEA-COR ENVIRONMENTAL ENGINEERING INC.
ATTENTION : GENE CHEE

BARONS TURBO 2520
PROJ #H0031-093

Chemex Worksheet Number 96-04250-10
Chemex Project Number TURB722-0501
Sample Access
Sample Matrix SOIL
Report Date November 4 1996
Analysis Date October 31 1996

PARAMETER DESCRIPTION	NAQUADAT CODE	UNITS	R E S U L T S	DETECTION LIMIT
Flash Point		Celcius	> 100	1.

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Sample Description · BH96-13 2 9M
Sample Date & Time 25-10-96
Sampled By CHEE
Sample Type COMPOSITE
Sample Received Date October 28, 1996
Sample Station Code ·

SEA-COR ENVIRONMENTAL ENGINEERING INC.
ATTENTION · GENE CHEE

BARONS TURBO 2520
PROJ #H0031-093

Chemex Worksheet Number 96-04250-10
Chemex Project Number TURB722-0501
Sample Access
Sample Matrix SOIL
Report Date November 4 1996
Analysis Date October 29 1996

TOTAL EXTRACTABLE HYDROCARBONS METHOD MODIFIED ASTM D2887

COMPONENT	mg/Kg	BOILING RANGE
-----------	-------	---------------

C 08	11.	98.5 TO 125.7
C 09	22.	125.8 TO 150.8
C 10	16.	150.9 TO 174.2
C 11	8.	174.3 TO 196.0
C 12	5.	196.1 TO 216.0
C 13	3.	216.1 TO 236.0
C 14	(2.)	236.1 TO 253.0
C 15	4.	253.1 TO 271.0
C 16	2.	271.1 TO 287.0
C 17	(2.)	287.1 TO 302.0
C 18	(1.)	302.1 TO 317.0
C 19	< 1.	317.1 TO 331.0
C 20	< 1.	331.1 TO 344.0
C 21	< 1.	344.1 TO 357.0
C 22	< 1.	357.1 TO 366.0
C 23	< 1.	366.1 TO 380.0
C 24	< 1.	380.1 TO 391.0
C 25	< 1.	391.1 TO 402.0
C 26	< 1.	402.1 TO 412.0
C 27	< 1.	412.1 TO 422.0
C 28	< 1.	422.1 TO 432.0
C 29	< 1.	432.1 TO 441.0
C 30	< 1.	441.1 TO 449.0

TOTAL HYDROCARBONS C8-C10 49. mg/Kg
TOTAL HYDROCARBONS C11-C30 27. mg/Kg

Average molecular weight : 140 AMU

MDL per component : 1. mg/Kg

Results are reported in accordance with CCME guidelines, "Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites, Volume I" All results are corrected for blank levels

MDL - Method detection level. - Calculated on the basis of the instrument detection level, the dilution used, and the weight of the sample

() - Bracketed results are values below the reliable detection level, and are subject to reduced levels of confidence
The reliable detection level is twice the method detection level

Results are uncorrected for moisture unless otherwise noted

Surrogate Recovery : 114%

SOIL surrogate limits

66% - 140%

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Sample Description BH96-13 2 9M
Sample Date & Time 25-10-96
Sampled By CHEE
Sample Type COMPOSITE
Sample Received Date October 28, 1996
Sample Station Code .

SEA-COR ENVIRONMENTAL ENGINEERING INC.
ATTENTION GENE CHEE

BARONS TURBO 2520
PROJ.#H0031-093

Chemex Worksheet Number 96-04250-10
Chemex Project Number TUR8722-0501
Sample Access
Sample Matrix SOIL
Report Date November 4 1996
Analysis Date November 1 1996

PARAMETER	VOLATILE ORGANICS ANALYSIS - CONC	BTEX CONC	EPA METHOD 8260 MODIFIED BLANK CONC	UNITS	MDL
Benzene	2.1	< 0.005		mg/Kg	0.22
Ethylbenzene	4.4	< 0.005		mg/Kg	0.22
Toluene	18.	< 0.005		mg/Kg	0.22
m & p-Xylene	21.	< 0.005		mg/Kg	0.22
o-Xylene	7.1	< 0.005		mg/Kg	0.22
Total Purgeables (C3 to C10)	250	0.45		mg/Kg	1.9
Total Purgeables (C11 to C12)	58.	0.61		mg/Kg	2.6

NOTES :

Results are reported in accordance with CCME guidelines, "Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites, Volume I". All results are corrected for blank levels

MDL - Method detection level. - Calculated on the basis of the instrument detection level, the dilution used, and the weight of the sample.

() - Bracketed results are values below the reliable detection level, and are subject to reduced levels of confidence
The reliable detection level is twice the method detection level

QA/QC SUMMARY

All samples were spiked with a component whose recovery was monitored to maintain analysis accuracy

Guidelines from SW846 for suggested surrogate recoveries for each matrix are shown below

Results are uncorrected for moisture unless otherwise noted

Instrument : GC/MS

Surrogate Recovery : 101% SOIL surrogate limits : 80% - 117%

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SEA-COR ENVIRONMENTAL ENGINEERING INC.
ATTENTION . GENE CHEE

BARONS TURBO 2520
PROJ.#H0031-093

Sample Description 8H96-14 3 8M
Sample Date & Time 25-10-96
Sampled By CHEE
Sample Type COMPOSITE
Sample Received Date October 28, 1996
Sample Station Code .

Chemex Worksheet Number 96-04250-11
Chemex Project Number TURB722-0501
Sample Access
Sample Matrix SOIL
Report Date November 4, 1996
Analysis Date October 31 1996

PARAMETER	VOLATILE ORGANICS ANALYSIS - BTEX EPA METHOD 8260 MODIFIED			
	CONC	BLANK CONC	UNITS	MDL
Benzene	< 0.0041	< 0.005	mg/Kg	0.0041
Ethylbenzene	< 0.0041	< 0.005	mg/Kg	0.0041
Toluene	< 0.0041	< 0.005	mg/Kg	0.0041
m & p-Xylene	< 0.0041	< 0.005	mg/Kg	0.0041
o-Xylene	< 0.0041	< 0.005	mg/Kg	0.0041

NOTES :

Results are reported in accordance with CCME guidelines, "Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites, Volume I". All results are corrected for blank levels

MDL - Method detection level. - Calculated on the basis of the instrument detection level, the dilution used, and the weight of the sample

() - Bracketed results are values below the reliable detection level, and are subject to reduced levels of confidence
The reliable detection level is twice the method detection level

QA/QC SUMMARY

All samples were spiked with a component whose recovery was monitored to maintain analysis accuracy

Guidelines from SW846 for suggested surrogate recoveries for each matrix are shown below.

Results are uncorrected for moisture unless otherwise noted.

Instrument : GC/MS

Surrogate Recovery : 96% SOIL surrogate limits : 80% - 117%

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Sample Description · BH96-15 3 8M
Sample Date & Time · 25-10-96
Sampled By CHEE
Sample Type · COMPOSITE
Sample Received Date October 28, 1996
Sample Station Code :

SEA-COR ENVIRONMENTAL ENGINEERING INC.
ATTENTION . GENE CHEE

BARONS TURBO 2520
PROJ.#H0031-093

Chemex Worksheet Number 96-04250-12
Chemex Project Number TURB722-0501
Sample Access
Sample Matrix SOIL
Report Date November 4 1996
Analysis Date October 31 1996

PARAMETER	VOLATILE ORGANICS ANALYSIS - BTEX EPA METHOD 8260 MODIFIED			
	CONC	BLANK CONC	UNITS	MDL
Benzene	< 0.0043	< 0.005	mg/Kg	0.0043
Ethylbenzene	< 0.0043	< 0.005	mg/Kg	0.0043
Toluene	< 0.0043	< 0.005	mg/Kg	0.0043
m & p-Xylene	< 0.0043	< 0.005	mg/Kg	0.0043
o-Xylene	< 0.0043	< 0.005	mg/Kg	0.0043

NOTES :

Results are reported in accordance with CCME guidelines, "Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites, Volume I" All results are corrected for blank levels

MDL - Method detection level - Calculated on the basis of the instrument detection level, the dilution used, and the weight of the sample.

() - Bracketed results are values below the reliable detection level, and are subject to reduced levels of confidence
The reliable detection level is twice the method detection level.

QA/QC SUMMARY

All samples were spiked with a component whose recovery was monitored to maintain analysis accuracy.

Guidelines from SW846 for suggested surrogate recoveries for each matrix are shown below

Results are uncorrected for moisture unless otherwise noted

Instrument : GC/MS

Surrogate Recovery 109% SOIL surrogate limits 80% - 117%

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DATE : November 14, 1996
CHEMEX PROJECT NO.: TURB722-0501-96-04521
CLIENT REFERENCE : BARONS
CLIENT JOB NO. : PROJ.#H0031-093

QA/QC Reviewed By

NOTE . Soil samples and water samples (for stable parameters) will be retained for a period of 60 days after completion of analysis
Retention beyond this period can be arranged for a fee

CHEMEX Labs Alberta Inc is accredited by both the Canadian Association for Environmental Analytical Laboratories and the Standards Council of Canada for specific parameters registered with the Association and the Council

CHEMEX Labs Alberta Inc.

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Sample Description : BH96-1
Sample Date & Time : 07-11-96
Sampled By : F & T
Sample Type : GRAB
Sample Received Date: November 08, 1996
Sample Station Code :

SEA-COR ENVIRONMENTAL ENGINEERING INC.
ATTENTION : GENE CHEE

BARONS
PROJ.#H0031-093

Chemex Worksheet Number 96-04521-1
Chemex Project Number TURB722-0501
Sample Access
Sample Matrix WATER
Report Date November 14 1996
Analysis Date November 11 1996

PARAMETER	VOLATILE ORGANICS ANALYSIS - BTEX EPA METHOD 8260 MODIFIED			
	CONC	BLANK CONC	UNITS	MDL
Benzene	< 0.0004	< 0.0004	mg/L	0.0004
Ethylbenzene	(0.0005)	< 0.0004	mg/L	0.0004
Toluene	< 0.0004	< 0.0004	mg/L	0.0004
m & p-Xylene	< 0.0004	< 0.0004	mg/L	0.0004
o-Xylene	0.0044	< 0.0004	mg/L	0.0004

NOTES :

Results are reported in accordance with CCME guidelines, "Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites, Volume I" All results are corrected for blank levels

MDL - Method detection level. - Calculated on the basis of the instrument detection level, the dilution used, and the weight of the sample.

() - Bracketed results are values below the reliable detection level, and are subject to reduced levels of confidence
The reliable detection level is twice the method detection level

QA/QC SUMMARY

All samples were spiked with a component whose recovery was monitored to maintain analysis accuracy
Guidelines from SW846 for suggested surrogate recoveries for each matrix are shown below.

Instrument : GC/MS

Surrogate Recovery : 107% WATER surrogate limits : 88% - 110%

CHEMEX Labs Alberta Inc.

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SEA-COR ENVIRONMENTAL ENGINEERING INC.
ATTENTION : GENE CHEE

BARONS
PROJ. #H0031-093

Sample Description : BH96-4
Sample Date & Time : 07-11-96
Sampled By : F & T
Sample Type : GRAB
Sample Received Date: November 08. 1996
Sample Station Code :

Chemex Worksheet Number : 96-04521-2
Chemex Project Number : TURB722-0501
Sample Access :
Sample Matrix : WATER
Report Date : November 14 1996
Analysis Date : November 11 1996

VOLATILE ORGANICS ANALYSIS - BTEX EPA METHOD 8260 MODIFIED

PARAMETER	CONC	BLANK CONC	UNITS	MDL
Benzene	< 0.0004	< 0.0004	mg/L	0.0004
Ethylbenzene	< 0.0004	< 0.0004	mg/L	0.0004
Toluene	< 0.0004	< 0.0004	mg/L	0.0004
m & p-Xylene	< 0.0004	< 0.0004	mg/L	0.0004
o-Xylene	< 0.0004	< 0.0004	mg/L	0.0004

NOTES :

Results are reported in accordance with CCME guidelines, "Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites, Volume I" All results are corrected for blank levels

MDL - Method detection level. - Calculated on the basis of the instrument detection level, the dilution used, and the weight of the sample.

() - Bracketed results are values below the reliable detection level, and are subject to reduced levels of confidence
The reliable detection level is twice the method detection level.

QA/QC SUMMARY

All samples were spiked with a component whose recovery was monitored to maintain analysis accuracy
Guidelines from SW846 for suggested surrogate recoveries for each matrix are shown below

Instrument : GC/MS

Surrogate Recovery : 106% WATER surrogate limits : 88% - 110%

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Sample Description : BH96-8
Sample Date & Time : 07-11-96
Sampled By : F & T
Sample Type : GRAB
Sample Received Date: November 08, 1996
Sample Station Code :

SEA-COR ENVIRONMENTAL ENGINEERING INC.
ATTENTION : GENE CHEE

BARONS
PROJ.#H0031-093

Chemex Worksheet Number 96-04521-3
Chemex Project Number TURB722-0501
Sample Access
Sample Matrix WATER
Report Date November 14 1996
Analysis Date November 11, 1996

PARAMETER	VOLATILE ORGANICS ANALYSIS - BTEX EPA METHOD 8260 MODIFIED			
	CONC	BLANK CONC	UNITS	MDL
Benzene	< 0.0004	< 0.0004	mg/L	0.0004
Ethylbenzene	< 0.0004	< 0.0004	mg/L	0.0004
Toluene	< 0.0004	< 0.0004	mg/L	0.0004
m & p-Xylene	< 0.0004	< 0.0004	mg/L	0.0004
o-Xylene	0.0008	< 0.0004	mg/L	0.0004

NOTES :

Results are reported in accordance with CCME guidelines, "Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites, Volume I". All results are corrected for blank levels

MDL - Method detection level. - Calculated on the basis of the instrument detection level, the dilution used, and the weight of the sample.

() - Bracketed results are values below the reliable detection level, and are subject to reduced levels of confidence. The reliable detection level is twice the method detection level.

QA/QC SUMMARY

All samples were spiked with a component whose recovery was monitored to maintain analysis accuracy
Guidelines from SW846 for suggested surrogate recoveries for each matrix are shown below

Instrument : GC/MS

Surrogate Recovery : 107% WATER surrogate limits : 88% - 110%

CHEMEX Labs Alberta Inc.

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SEA-COR ENVIRONMENTAL ENGINEERING INC.
ATTENTION : GENE CHEE

BARONS
PROJ. #H0031-093

Sample Description : BH96-14
Sample Date & Time : 07-11-96
Sampled By : F & T
Sample Type : GRAB
Sample Received Date: November 08, 1996
Sample Station Code :

Chemex Worksheet Number 96-04521-4
Chemex Project Number TURB722-0501
Sample Access
Sample Matrix WATER
Report Date November 14 1996
Analysis Date November 11 1996

PARAMETER	VOLATILE ORGANICS ANALYSIS - BTEX EPA METHOD 8260 MODIFIED			
	CONC	BLANK CONC	UNITS	MDL
Benzene	< 0.0004	< 0.0004	mg/L	0.0004
Ethylbenzene	< 0.0004	< 0.0004	mg/L	0.0004
Toluene	< 0.0004	< 0.0004	mg/L	0.0004
m & p-Xylene	< 0.0004	< 0.0004	mg/L	0.0004
o-Xylene	< 0.0004	< 0.0004	mg/L	0.0004

NOTES :

Results are reported in accordance with CCME guidelines, "Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites, Volume I" All results are corrected for blank levels

MDL - Method detection level. - Calculated on the basis of the instrument detection level the dilution used, and the weight of the sample.

() - Bracketed results are values below the reliable detection level, and are subject to reduced levels of confidence
The reliable detection level is twice the method detection level

QA/QC SUMMARY

All samples were spiked with a component whose recovery was monitored to maintain analysis accuracy
Guidelines from SW846 for suggested surrogate recoveries for each matrix are shown below

Instrument : GC/MS

Surrogate Recovery : 108% WATER surrogate limits : 88% - 110%

APPENDIX D

RELEVANT ENVIRONMENTAL STANDARDS

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PROVINCIAL CRITERIA

The document entitled "Subsurface Remediation Guidelines for Underground Storage Tanks", - Draft, February, 1991, produced by the Alberta Departments of Environment & Labour, Management of Underground Storage Tanks (MUST) Project, has been standard by which the Department of Environment and industry in Alberta has evaluated contaminated sites since its inception in 1991.

Since July 1994, a new guideline has been proposed: "Remediation Guidelines for Petroleum Storage Tanks Sites", July 1994. Produced by Alberta Environmental Protection, it provides a risk management process specific to impacted soil and groundwater originating from existing or former petroleum storage facilities. The document is in draft form only, pending completion of a public review and consultation period. Alberta Environmental Protection has agreed to allow the use of these guidelines provided that should the guidelines change as a result of public review or consultation, the party responsible must upgrade the remediation to meet the criteria contained in the final guideline.

There are three levels of contamination *I, II* and *III* for which allowable concentrations are given in each guideline. The *Levels (I, II, III)* apply to high, moderate and low site sensitivities in relation to potential health risks and environmental effects. The new 1994 RMC guidelines also differentiate between coarse and fine grained soils and for the groundwater found in either of the soils. The new guidelines have allowable concentrations for each of the soils and the groundwater found within it.

1994 RMC STANDARDS - INHALATION PATHWAYS

SOIL						
HYDROCARBON COMPONENT	COARSE GRAINED			FINE GRAINED		
	I	II	III	I	II	III
Benzene	0.04	0.3	1.6	0.2	1.5	5.5
Toluene	10	60	320	40	340	340
Ethylbenzene	70	400	400	300	400	400
Xylene	25	130	130	110	130	130
TPH	1000	2000	5000	2000	4000	5000
Phenol	ns	ns	ns	ns	ns	ns
Lead	50	200	600	50	200	600
WATER						
HYDROCARBON COMPONENT	COARSE GRAINED			FINE GRAINED		
	I	II	III	I	II	III
Benzene	0.3	1.6	7.5	0.4	4.2	7.5
Toluene	15	90	430	25	240	430
Ethylbenzene	30	30	30	50	50	50
Xylene	50	50	50	80	80	80
TPH	ns	ns	ns	ns	ns	ns
Phenol	ns	ns	ns	ns	ns	ns
Lead	ns	ns	ns	ns	ns	ns

- Notes:
- ns - not specified
 - all concentrations in parts per million

1994 RMC STANDARDS - INGESTION PATHWAYS

HYDROCARBON COMPONENT	SOIL		WATER
	Coarse Grained	Fine Grained	
Benzene	0.02	0.07	0.005
Toluene	0.36	1.22	0.024
Ethylbenzene	0.10	0.41	0.0024
Xylene	3.5	11.9	0.3
TPH	1000*	2000*	ns
Phenol	ns	ns	ns
Lead	50	50	0.01

- Notes:
- ns - not specified
 - * - recommended only
 - all concentrations in parts per million