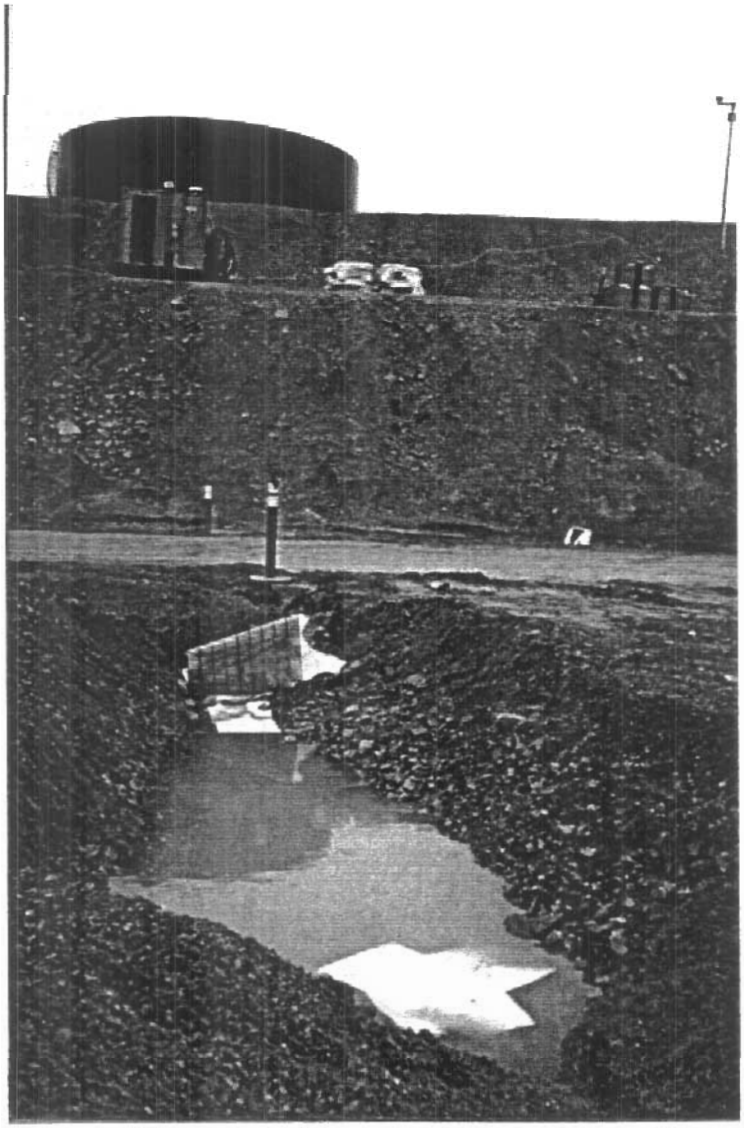
# Appendix C

*Photographs*

## PHOTOGRAPHS -

PHOTOGRAPH 1



July 8, 2002. Culvert below tank farm.

## - PHOTOGRAPHS -

**PHOTOGRAPH 2**

July 8, 2002. Looking north along East Interceptor Ditch towards Foldaway Buildings with heavy equipment parked in front and Concentrate Storage Shed. Tank Farm and initial area of excavation at right.

**PHOTOGRAPH 3**

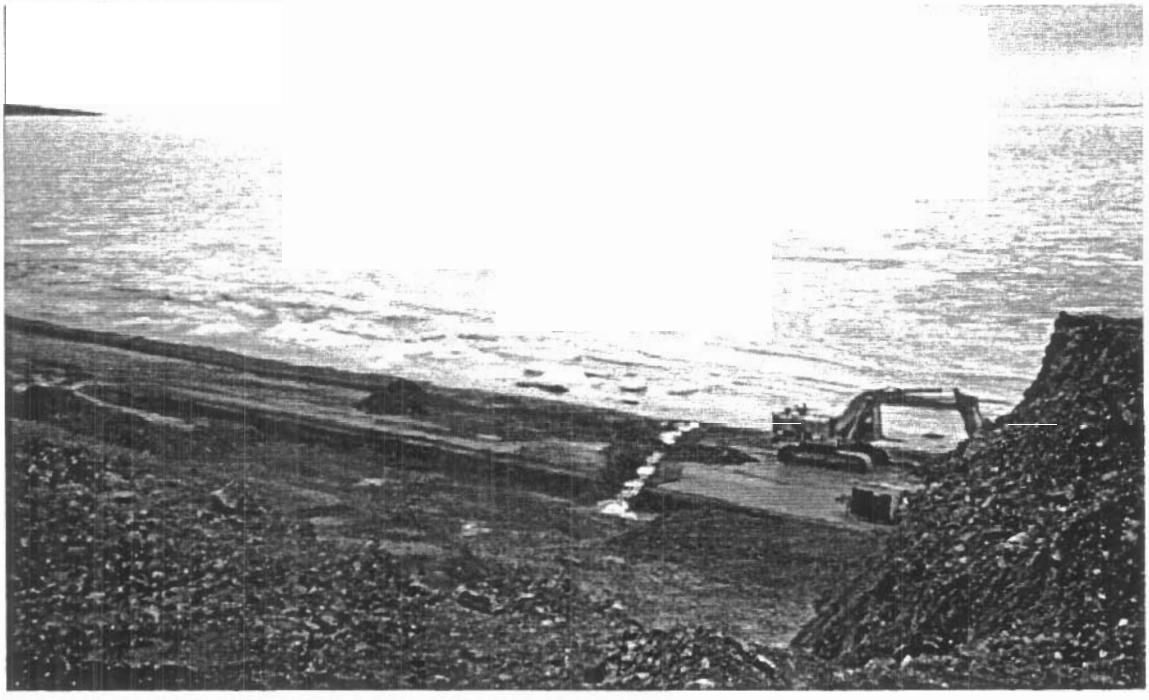
Looking south from culvert. Excavated beach area in foreground.

## - PHOTOGRAPHS -

**PHOTOGRAPH 4**

Looking north from pit TP02-10 at excavated beach area. Culvert discharge on north side of red box.

**PHOTOGRAPH 5**



July 8, 2002. Looking west at Initial Excavation area from discharge line outfall.

## - PHOTOGRAPHS -

**PHOTOGRAPH 6**

July 8, 2002. Hydrocarbon trap established in constructed channel of West Interceptor Ditch to control outflow to ocean.

**PHOTOGRAPH 7**

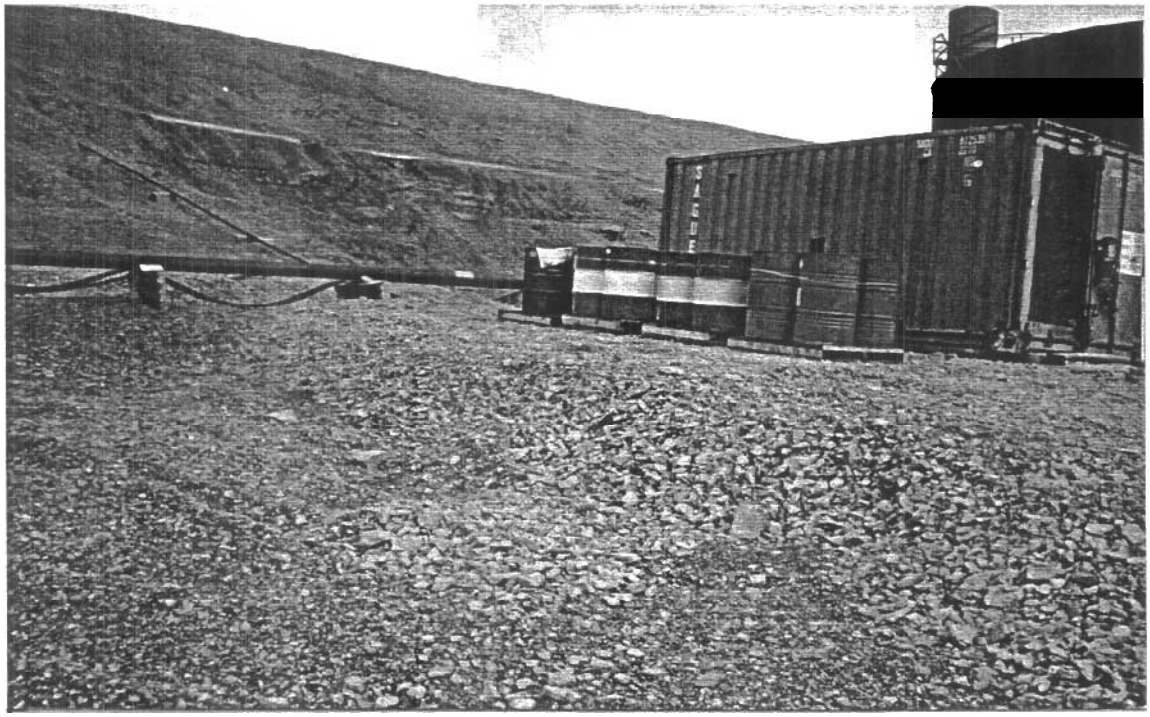
Absorbent pads in constructed channel between West Interceptor Ditch and the shoreline at pit TP02-03.

## - PHOTOGRAPHS -

**PHOTOGRAPH 8**

July 11, 2002. Looking north at the south end of West Interceptor Ditch. Trench excavated through what appears to be sea ice.

**PHOTOGRAPH 9**



July 12, 2002. Drum storage at north side of tank farm containment area where the liquid pumped from within the containment berm is stored.

# - PHOTOGRAPHS -

## PHOTOGRAPH 10

Area of Initial Excavation marked with red X's to indicate where further soil is to be removed.

## PHOTOGRAPH 11

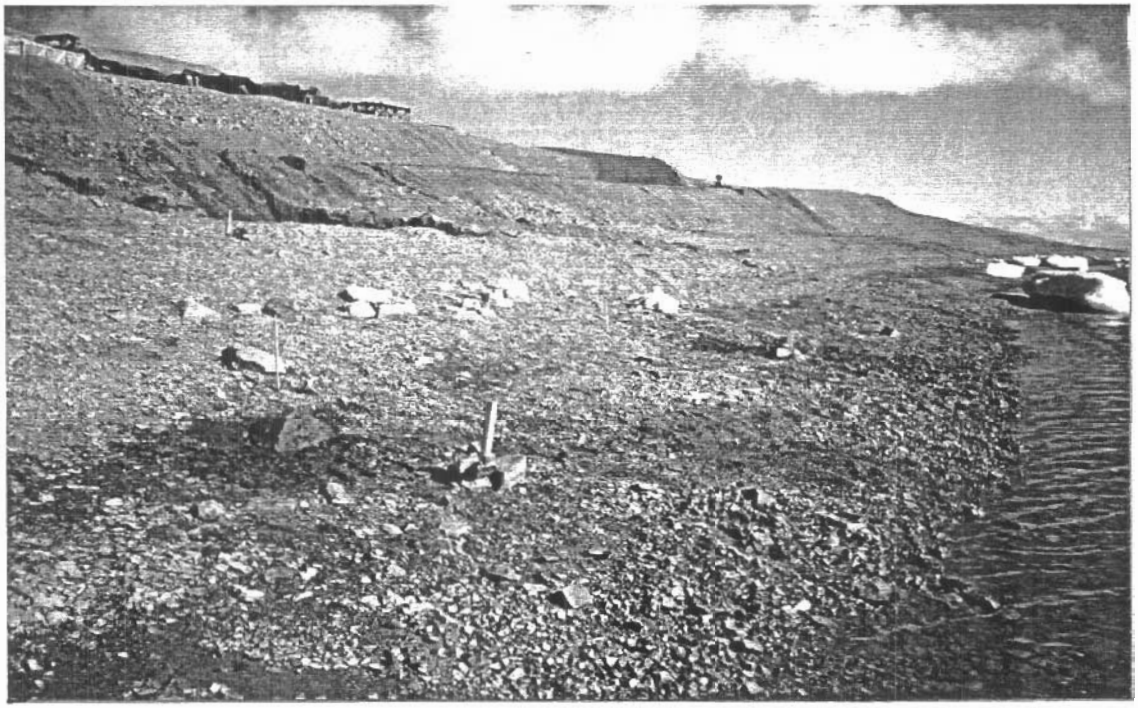
Initial Excavation below the tank farm. Resistive bedrock knob visible at center of photograph.

# - PHOTOGRAPHS -

## PHOTOGRAPH 12

Looking north from testpit TP02-04. High tide and low tide contours are marked with flagging tape tied onto survey markers.

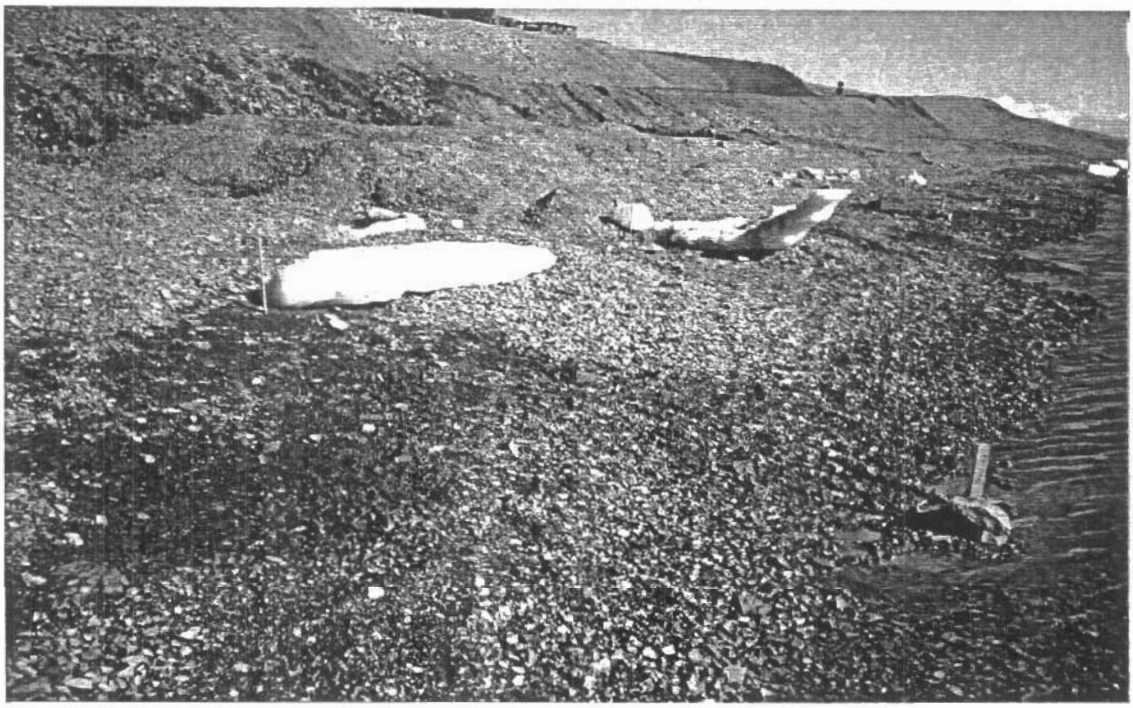
## PHOTOGRAPH 13



Looking south at "40 m Zone". Pit TP02-02 is in the foreground with a surface stain on its right. Pit TP02-01 is right of center in the photo and a larger surface stain surrounds it.

# - PHOTOGRAPHS -

## PHOTOGRAPH 14



Looking south at "40 m Zone". Pit TP02-03 in foreground with surface stain to its left. The constructed channel is at the center left of the photo between the large chunks of ice.

## PHOTOGRAPH 15

Pit TP02-12 excavated in unstained soil in "175 m Zone" of spotty areas of staining.

## - PHOTOGRAPHS -

**PHOTOGRAPH 16**

July 11, 2002. Retreating from beach area following installation of wells during low tide conditions.

**PHOTOGRAPH 17**

July 12, 2002. Installation of well WELL02-10 below low tide contour. Sea ice was frozen to ocean floor at this location.

## - PHOTOGRAPHS -

**PHOTOGRAPH 18**

July 12, 2002. Inspection of wells WELL02-11 and WELL02-12 in "175 m Zone" north of excavated beach area.

**PHOTOGRAPH 19**

July 12, 2002. Installation of well WELL02-09 above midway elevation between the low tide and high tide contours. Well WELL02-10 is installed below the low tide elevation.

PHOTOGRAPH 20

Looking east towards culvert discharge pathway and well WELL02-09.

# - PHOTOGRAPHS -

PHOTOGRAPH 21

July 12, 2002. Development of well WELL02-09, located at the culvert discharge area.

PHOTOGRAPH 22

July 11, 2002. Accumulation of brown scum at south end of West Interceptor Ditch, possible hydrocarbons.

# Appendix D

*Laboratory Reports*

ALS CANADA LTD.
1988 Triumph Street, Vancouver, BC Canada V5L 1K5
Phone: 604-253-4188 Toll Free: 1-800-665-0243 Fax: 604-253-6700 Website: www.alsenviro.com

**ALS Environmental**

**FAX**

ATTENTION Alex Bath
FAX NO 604-299-1455
COMPANY Gartner Lee - Burnaby
DATE September 11/02
CC
NO OF PAGES 9 INCL COVER
FROM Leane Harris
SUBJECT Product Analysis ALS file P7184

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Hello Alex,

Here is the final report with HOR's for your reference. Please note that the time scales are different on the two HOR's due to a change in our GC run times. The reference chromatogram pattern is what is important & the product has a distribution similar to diesel.

I have emailed you both an Excel & signed PDF version to expedite your report.

Leane Harris

ALS Environmental

# CHEMICAL ANALYSIS REPORT

| | |
|---|---|
| **Date:** | September 11, 2002 |
| **ALS File No.** | P7184 |
| **Report On:** | 20935 Product Analysis |
| **Report To:** | **Gartner Lee Ltd.**<br>Sperling Plaza<br>Suite 490, 6400 Roberts Street<br>Burnaby, BC<br>V5G 4C9 |
| **Attention:** | **Mr. Alex Bath** |
| **Received:** | July 22, 2002 |



**ALS ENVIRONMENTAL**
per:

Leanne Harris, B.Sc. - Project Chemist
Brent C. Mack, B.Sc. - Project Chemist

ALS CANADA LTD.
1988 Triumph Street, Vancouver, BC Canada V5L 1K5
Phone: 604-253-4188 Fax: 604-253-6700 Website: www.alsenviro.com

## REMARKS

Please note that the detection limits for all analytes were increased due to interferences encountered during analysis, directly related to the nature of the sample.

A liquid sample, identified as "Drum 1", was submitted for characterization by gas chromatography with flame ionization detection (GC/FID). The Hydrocarbon Distribution Report for this sample and reference standards have been appended to this report to assist you in your investigation. The scale at the top of the chromatographic traces represents the hydrocarbon range of common petroleum products. The scale at the bottom represents retention time in minutes.

This sample has a hydrocarbon distribution similar to diesel.

File No. P7184

## RESULTS OF ANALYSIS - Product

| | |
|---|---|
| Sample ID | Drum 1 |
| Sample Date | 02 07 12 |
| *ALS ID* | *1* |

**Halogenated Volatiles**

| | |
|---|---|
| Bromodichloromethane | <10 |
| Bromoform | <10 |
| Carbon Tetrachloride | <10 |
| Chlorobenzene | <10 |
| Chloroethane | <10 |
| Chloroform | <10 |
| Chloromethane | <10 |
| Dibromochloromethane | <10 |
| 1,2-Dichlorobenzene | <10 |
| 1,3-Dichlorobenzene | <10 |
| 1,4-Dichlorobenzene | <10 |
| 1,1-Dichloroethane | <10 |
| 1,2-Dichloroethane | <10 |
| cis-1,2-Dichloroethylene | <10 |
| trans-1,2-Dichloroethylene | <10 |
| 1,1-Dichloroethylene | <10 |
| Dichloromethane | <50 |
| 1,2-Dichloropropane | <10 |
| cis-1,3-Dichloropropylene | <10 |
| trans-1,3-Dichloropropylene | <10 |
| 1,1,1,2-Tetrachloroethane | <10 |
| 1,1,2,2-Tetrachloroethane | <10 |
| Tetrachloroethylene | <10 |
| 1,1,1-Trichloroethane | <10 |
| 1,1,2-Trichloroethane | <10 |
| Trichloroethylene | <10 |
| Trichlorofluoromethane | <10 |
| Vinyl Chloride | <10 |

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
CWS = CCME - Canada Wide Standards.
EPH = Extractable Petroleum Hydrocarbons.
EPH10-19 is equivalent to EHw10-19.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.
VPH = Volatile Petroleum Hydrocarbons.

File No. P7184

## RESULTS OF ANALYSIS - Product

| | |
|---|---|
| Sample ID | Drum 1 |
| Sample Date | 02 07 12 |
| *ALS ID* | *1* |
| **Non-Halogenated Volatiles** | |
| Benzene | <10 |
| CWS Fraction 1 (C6-10) | 9910 |
| CWS Fraction 1-BTEX | 9450 |
| Ethylbenzene | 53 |
| Methyl t-butyl ether (MTBE) | <10 |
| Styrene | <10 |
| Toluene | 14 |
| meta- & para-Xylene | 258 |
| ortho-Xylene | 138 |
| Total Xylenes | 396 |
| Volatile Hydrocarbons (VH6-10) | 12700 |
| VPH | 12200 |
| **Polycyclic Aromatic Hydrocarbons** | |
| Acenaphthene | <90 |
| Acenaphthylene | <30 |
| Acridine | <90 |
| Anthracene | <20 |
| Benz(a)anthracene | <0.6 |
| Benzo(a)pyrene | 0.6 |
| Benzo(b)fluoranthene | <0.6 |
| Benzo(g,h,i)perylene | 0.7 |
| Benzo(k)fluoranthene | <0.9 |
| Chrysene | <2 |
| Dibenz(a,h)anthracene | 0.9 |
| Fluoranthene | <2 |
| Fluorene | 169 |
| Indeno(1,2,3-c,d)pyrene | 0.9 |
| Naphthalene | 2190 |
| Phenanthrene | 200 |
| Pyrene | 9.2 |
| Quinoline | <200 |

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per dry kilogram except where noted.
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EPH = Extractable Petroleum Hydrocarbons.
EPH10-19 is equivalent to EHw10-19.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.
VPH = Volatile Petroleum Hydrocarbons.

File No. P7184

## RESULTS OF ANALYSIS - Product

| | |
|---|---|
| Sample ID | Drum 1 |
| Sample Date | 02 07 12 |
| *ALS ID* | *1* |

| Extractable Hydrocarbons | |
|---|---|
| CWS Fraction 2 (C10-16) | 697000 |
| CWS Fraction 3 (C16-34) | 232000 |
| CWS Fraction 4 (C34-50) | 332 |
| EPH10-19 | 882000 |
| EPH19-32 | 72600 |
| LEPH | 879000 |
| HEPH | 72600 |

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
CWS = CCME - Canada Wide Standards.
EPH = Extractable Petroleum Hydrocarbons.
EPH10-19 is equivalent to EHw10-19.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.
VPH = Volatile Petroleum Hydrocarbons.

## Appendix 1 - METHODOLOGY

Outlines of the methodologies utilized for the analysis of the samples submitted are as follows

### Miscellaneous Parameters and Matrices

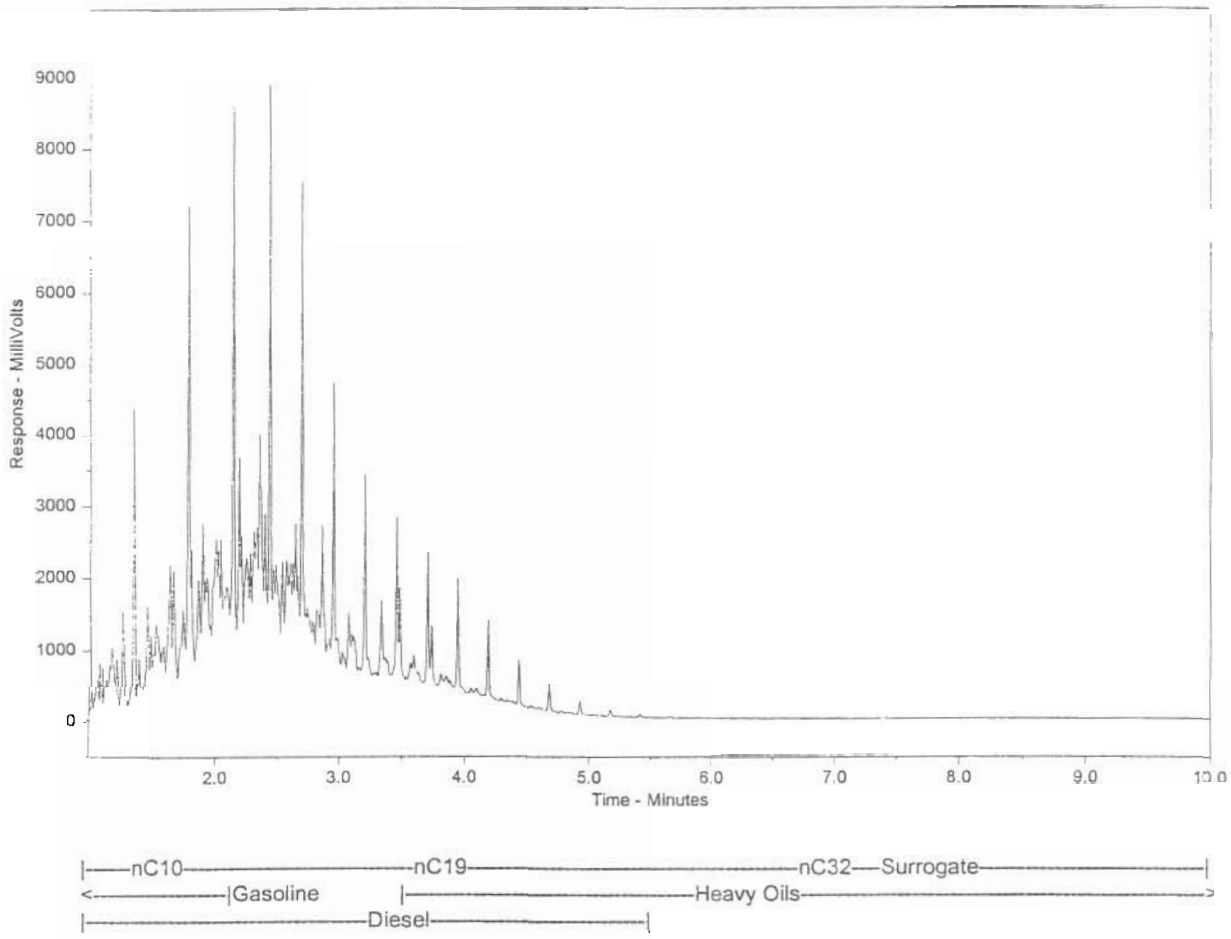
The sample(s) submitted, or the parameters requested were identified as non-routine. Please refer to the remarks section of this report for information regarding this analysis.



End of Report

## ALS Environmental - Hydrocarbon Distribution Report

**Client Sample ID:**
**ALS Sample ID:** **P7184-T--1#GC SCAN**
File Name: m:\Chrom\gc21\data\gc21_13augB.0009.RAW
Run Information: Acquired on GC21, 8/13/2002 7:20:40 PM




Sample Amount = 0.5 (g or mL) Dilution Factor = 50.0

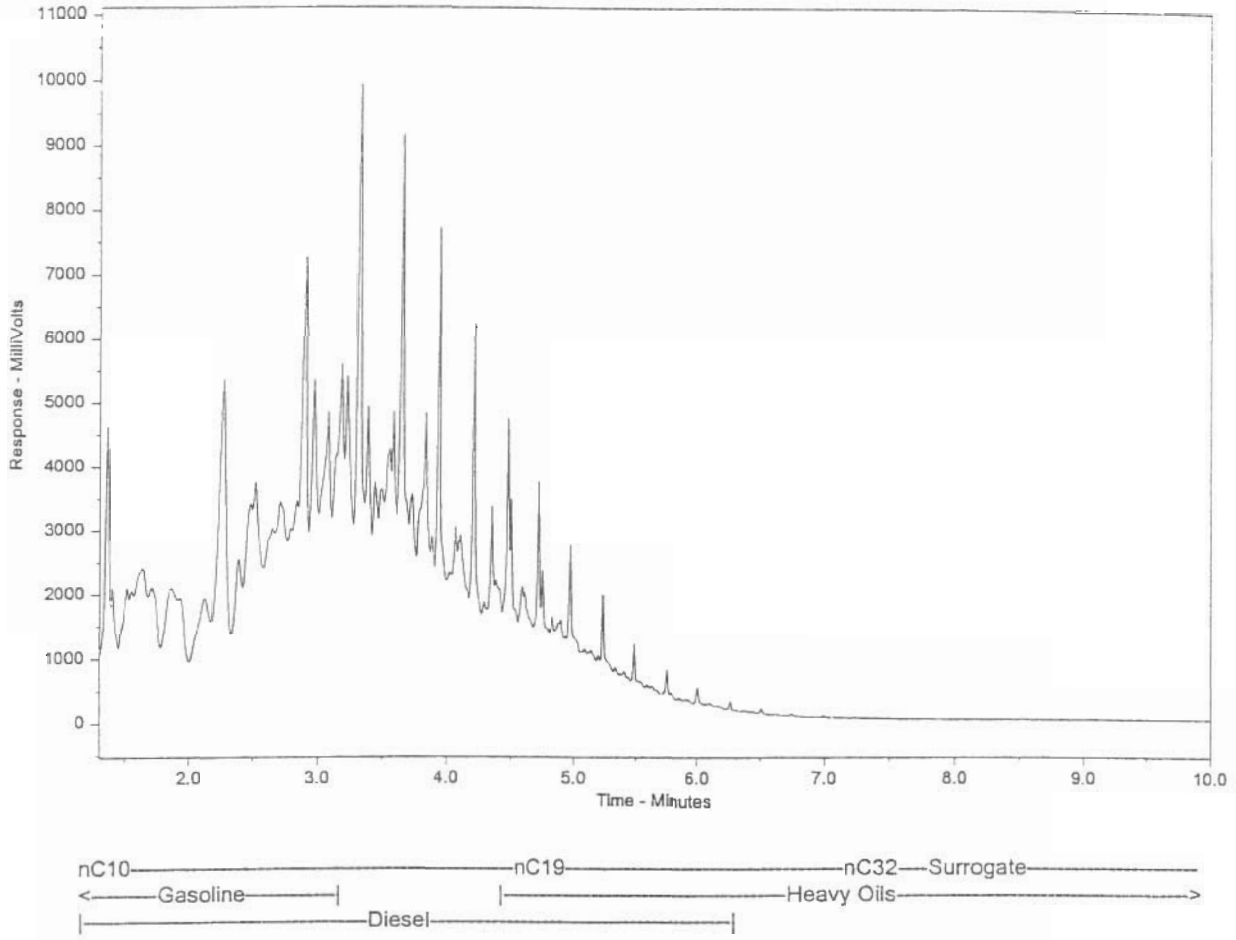
The Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and of three n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample. A current library of reference products is available upon request.

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

A C35 surrogate compound is added to all samples by the laboratory as a component of quality control. Depending on the amount of heavy hydrocarbons present in the sample, this peak may or may not be visible near the end of the chromomatogram where indicated.

## ALS Environmental - Hydrocarbon Distribution Report

**Client Sample ID:**
**ALS Sample ID:** **HDR10 - Diesel**
File Name: I:\Chrom\gc21\data\may2002\gc21_01mayA.0035.RAW
Run Information: Acquired on GC21, 5/3/2002 4:48:08 AM




Sample Amount = 0.0 (g or mL) Dilution Factor = 0.0

The Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and of three n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample. A current library of reference products is available upon request.

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

A C35 surrogate compound is added to all samples by the laboratory as a component of quality control. Depending on the amount of heavy hydrocarbons present in the sample, this peak may or may not be visible near the end of the chromomatogram where indicated.

CLIENT: Gartner Lee / Polaris

ADDRESS:

CITY: PROV.: POSTAL CODE:

CONTACT: SAMPLER:

TEL:

PROJECT NAME/NO.:

P.O. NO.: QUOTE NO.:

DATE SUBMITTED: ALS CONTACT:

ALS Environmental

# SAMPLES RECEIVED WITH NO COC

Canada V5L 1K5
TEL: 604-253-4188
TOLL FREE: 1-800-665-0243
FAX: 604-253-6700
www.alsenviro.com

FOR LAB USE ONLY

LAB USE ONLY P7184

| | SAMPLE IDENTIFICATION | DATE / TIME COLLECTED Y | M | D | | MATRIX | NOTES |
|---|---|---|---|---|---|---|---|
| 1 | Drum 1 | 02 | 07 | 12 | : AM/PM | | |
| 2 | Drum 2 | 02 | 07 | 12 | : AM/PM | | |
| | | | | | : AM/PM | | |
| | | | | | : AM/PM | | |
| | | | | | : AM/PM | | |
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TURN AROUND REQUIRED:

☐ ROUTINE (7 - 10 WORKING DAYS) ☐ RUSH (SPECIFY DATE):

SPECIAL INSTRUCTIONS (BILLING DETAILS, QC REPORTING, ETC.):

| RELIQUISHED BY: | DATE | RECEIVED BY: | DATE |
|---|---|---|---|
| | TIME | | TIME |
| RELIQUISHED BY: | DATE | RECEIVED BY: | DATE 02/07/17 |
| | TIME | | TIME |

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COOLER SEAL INTACT UPON RECEIPT?
☐ YES ☐ NO ☐ N/A

SAMPLE TEMPERATURE UPON RECEIPT: ____°C
FROZEN? ☐ YES ☐ NO

ALS COPY