Bijaya Adhikari

From: Kelly McHugh <Kelly_McHugh@gov.nt.ca>
Sent: June 27, 2018 2:15 PM
To: Lloyd Gruben
Cc: Bijaya Adhikari; Mardy Semmler; Dean Ahmet; ITH
Subject: FW: Pit PW10 results June 13, 2018
Attachments: L2112908_XLR.xls; L2112908_COA.PDF

Good afternoon,

Attached are results from Pit PW10 collected on June 13, 2018. Total suspended solids for 1835-78-C and 1835-78-A are 16,000 and 2360 mg/L, respectively. Runoff leaving the pit had low flow levels on this day. Darcie and I will be heading to PW10 again this Friday.

Mársı | Kinanāskomitin | Thank you | Merci | Hąį' | Quana | Qujannamiik | Quyanainni | Máhsı | Máhsı | Mahsì

Kelly Kamo McHugh
Environmental Project Technician
Major Projects
Department of Infrastructure
Government of the Northwest Territories

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68 Mackenzie Road
Inuvik, NT X0E 0T0

Phone: 867-777-2719
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www.gov.nt.ca

-----Original Message-----
From: Rick.Zolkiewski@alsglobal.com [mailto:Rick.Zolkiewski@alsglobal.com]
Sent: Thursday, June 21, 2018 2:41 PM
To: Kelly McHugh
Subject: L2112908 COA [Job #]

Hello,

Please find enclosed your certificate of analysis. For any questions regarding the report, please contact your account manager.

Notes / Abbreviations:
COC = Chain of Custody
SRC = Sample Receipt Confirmation
COA = Certificate of Analysis

If you need Adobe Acrobat Reader, just click the following link:
http://www.adobe.com/products/acrobat/readstep2.html

How was your customer experience ? Please send us your feedback by visiting:
https://www.surveymonkey.com/s/Customer_Feedback

This value-added service provides the user with an electronically generated file that can be used for statistical analysis and/or report formatting.

GOVERNMENT OF NWT
ATTN: ALEXIS CAMPBELL
P.O. BOX 1320
YELLOWKNIFE NT X1A 2L9

Date Received: 15-JUN-18
Report Date: 21-JUN-18 14:15 (MT)
Version: FINAL

Client Phone: 867-767-9083

Certificate of Analysis

Lab Work Order #: L2112908

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:

Rick Zolkiewski
General Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2112908-1	L2112908-2	L2112908-3		
	Description	WATER	WATER	WATER		
	Sampled Date	13-JUN-18	13-JUN-18	13-JUN-18		
	Sampled Time	10:30	10:45	11:10		
	Client ID	1835-78-D	1835-78-C	1835-78-A		
Grouping	**Analyte**					
WATER						
Physical Tests	pH (pH)	7.57	8.07	8.19		
	Total Suspended Solids (mg/L)	<3.0	16000	2360		
Volatile Organic Compounds	Benzene (mg/L)	<0.00050	<0.00050	<0.00050		
	EthylBenzene (mg/L)	<0.00050	<0.00050	<0.00050		
	Toluene (mg/L)	<0.00050	<0.00050	<0.00050		
	o-Xylene (mg/L)	<0.00050	<0.00050	<0.00050		
	m+p-Xylene (mg/L)	<0.00050	<0.00050	<0.00050		
	Xylenes (mg/L)	<0.00071	<0.00071	<0.00071		
	F1(C6-C10) (mg/L)	<0.10	<0.10	<0.10		
	F1-BTEX (mg/L)	<0.10	<0.10	<0.10		
	Surrogate: 4-Bromofluorobenzene (SS) (%)	89.5	88.3	89.6		
	Surrogate: 3,4-Dichlorotoluene (SS) (%)	121.7	125.2	124.6		
	Surrogate: 1,4-Difluorobenzene (SS) (%)	100.3	100.2	99.9		
Hydrocarbons	F2 (>C10-C16) (mg/L)	<0.10	<0.10	<0.10		
	F3 (C16-C34) (mg/L)	<0.25	<0.25	<0.25		
	F4 (C34-C50) (mg/L)	<0.25	<0.25	<0.25		
	Surrogate: 2-Bromobenzotrifluoride (%)	103.8	101.5	104.9		

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BTXS,F1-ED	Water	BTEX, Styrene and F1 (C6-C10)	EPA 5021/8015&8260 GC-MS & FID
EC-SCREEN-VA	Water	Conductivity Screen (Internal Use Only)	APHA 2510
Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.			
F2,F3,F4-ED	Water	F2, F3, F4	EPA 3510/CCME PHC CWS-GC-FID
Water samples are spiked with 2-BBTF surrogate, and extracted by reciprocal action shaker for 30 minutes using a single micro-extraction with 2 mL hexane. After extraction, hexane extracts are dispensed into GC vials for GC-FID analysis.			
PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value
This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode It is recommended that this analysis be conducted in the field.			
TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2112908 Report Date: 21-JUN-18

Client: GOVERNMENT OF NWT
P.O. BOX 1320
YELLOWKNIFE NT X1A 2L9
Contact: ALEXIS CAMPBELL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTXS,F1-ED	**Water**							
Batch R4088569								
WG2799410-2 LCS								
Benzene			114.1		%		70-130	19-JUN-18
Toluene			107.1		%		70-130	19-JUN-18
EthylBenzene			102.5		%		70-130	19-JUN-18
m+p-Xylene			109.4		%		70-130	19-JUN-18
o-Xylene			100.8		%		70-130	19-JUN-18
F1(C6-C10)			N/A		ug/L			19-JUN-18
F1(C6-C10)			N/A		mg/L			19-JUN-18
WG2799410-3 LCS								
Benzene			N/A		ug/L			19-JUN-18
Benzene			N/A		mg/L			19-JUN-18
Toluene			N/A		ug/L			19-JUN-18
Toluene			N/A		mg/L			19-JUN-18
EthylBenzene			N/A		ug/L			19-JUN-18
EthylBenzene			N/A		mg/L			19-JUN-18
m+p-Xylene			N/A		ug/L			19-JUN-18
m+p-Xylene			N/A		mg/L			19-JUN-18
o-Xylene			N/A		ug/L			19-JUN-18
o-Xylene			N/A		mg/L			19-JUN-18
F1(C6-C10)			108.0		%		70-130	19-JUN-18
WG2799410-1 MB								
Benzene			<0.00050		mg/L		0.0005	19-JUN-18
Toluene			<0.00050		mg/L		0.0005	19-JUN-18
EthylBenzene			<0.00050		mg/L		0.0005	19-JUN-18
m+p-Xylene			<0.00050		mg/L		0.0005	19-JUN-18
o-Xylene			<0.00050		mg/L		0.0005	19-JUN-18
F1(C6-C10)			<0.10		mg/L		0.1	19-JUN-18
Surrogate: 1,4-Difluorobenzene (SS)			101.5		%		70-130	19-JUN-18
Surrogate: 4-Bromofluorobenzene (SS)			90.7		%		70-130	19-JUN-18
Surrogate: 3,4-Dichlorotoluene (SS)			123.8		%		70-130	19-JUN-18
WG2799410-5 MS		**L2112908-3**						
Benzene			117.4		%		50-140	19-JUN-18
Toluene			102.8		%		50-140	19-JUN-18
EthylBenzene			91.7		%		50-140	19-JUN-18
m+p-Xylene			101.6		%		50-140	19-JUN-18
o-Xylene			95.6		%		50-140	19-JUN-18

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTXS,F1-ED	**Water**							
Batch R4088569								
WG2799410-5 MS		**L2112908-3**						
F1(C6-C10)			N/A		ug/L			19-JUN-18
F1(C6-C10)			N/A		mg/L			19-JUN-18
F2,F3,F4-ED	**Water**							
Batch R4089740								
WG2799939-2 LCS								
F2 (>C10-C16)			105.8		%		70-130	18-JUN-18
F3 (C16-C34)			99.0		%		70-130	18-JUN-18
F4 (C34-C50)			94.6		%		70-130	18-JUN-18
WG2799939-1 MB								
F2 (>C10-C16)			<0.10		mg/L		0.1	18-JUN-18
F3 (C16-C34)			<0.25		mg/L		0.25	18-JUN-18
F4 (C34-C50)			<0.25		mg/L		0.25	18-JUN-18
Surrogate: 2-Bromobenzotrifluoride			95.7		%		60-140	18-JUN-18
PH-PCT-VA	**Water**							
Batch R4089827								
WG2800125-2 CRM		**VA-PH7-BUF**						
pH			6.99		pH		6.9-7.1	19-JUN-18
TSS-VA	**Water**							
Batch R4094070								
WG2801683-8 LCS								
Total Suspended Solids			98.8		%		85-115	20-JUN-18
WG2801683-7 MB								
Total Suspended Solids			<3.0		mg/L		3	20-JUN-18

Quality Control Report

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH by Meter (Automated)							
	1	13-JUN-18 10:30	19-JUN-18 08:30	0.25	142	hours	EHTR-FM
	2	13-JUN-18 10:45	19-JUN-18 08:30	0.25	142	hours	EHTR-FM
	3	13-JUN-18 11:10	19-JUN-18 08:30	0.25	141	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2112908 were received on 15-JUN-18 09:30.

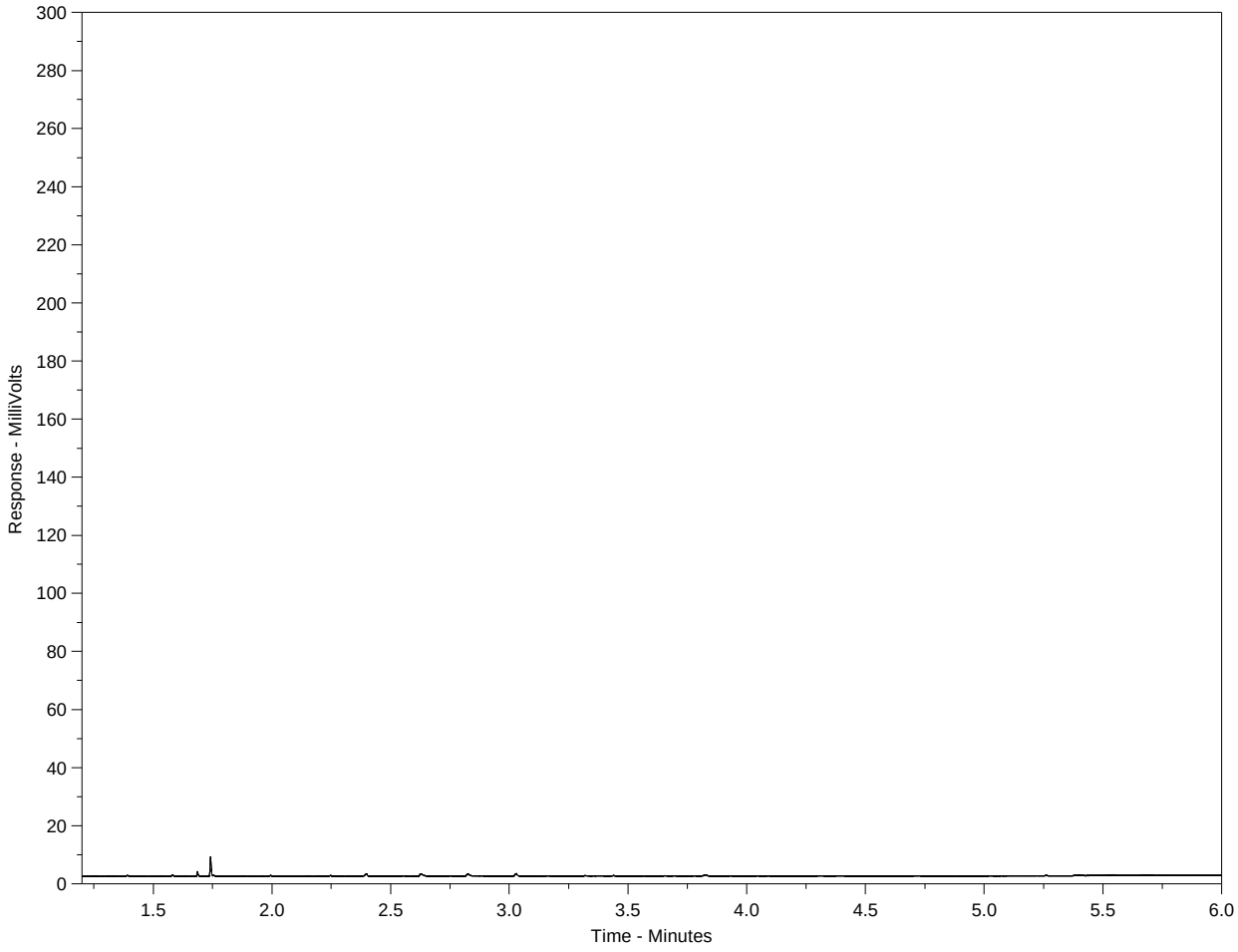
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

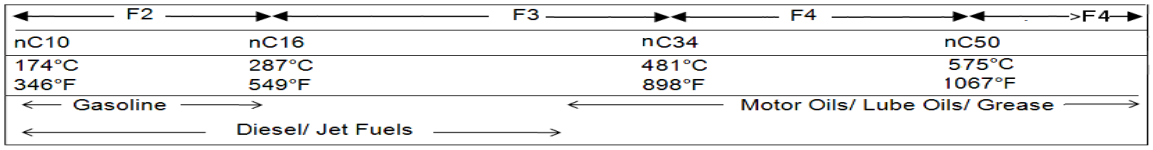
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Hydrocarbon Distribution Report

ALS Sample ID: L2112908-1
Client ID: 1835-78-D





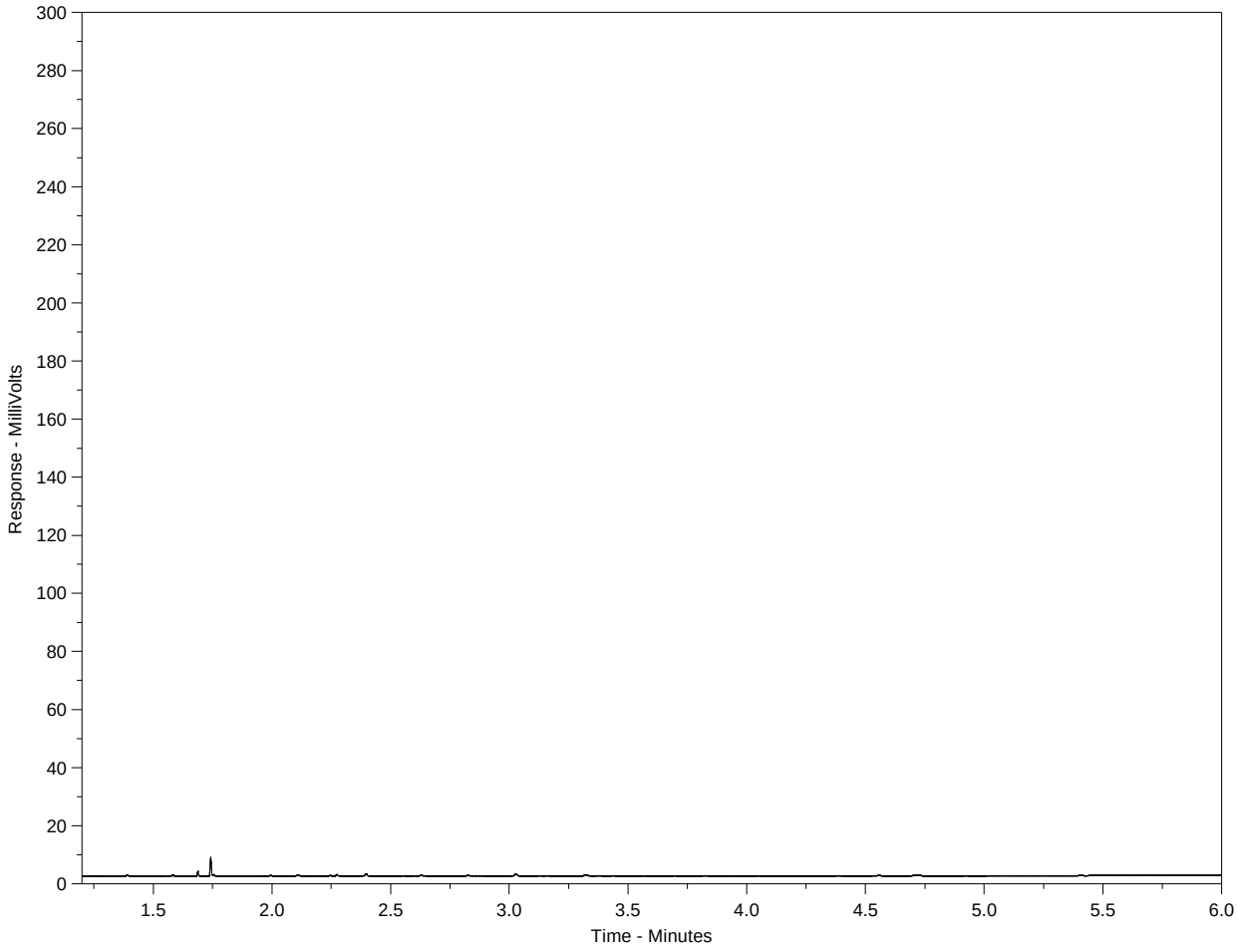
The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

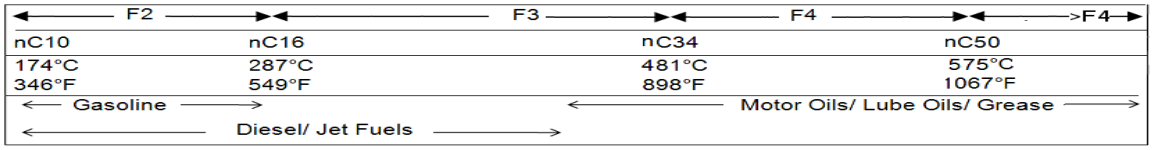
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note:
This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method. Note that retention times and distribution profiles from reports produced using different GC programs will differ.

Hydrocarbon Distribution Report

ALS Sample ID: L2112908-2
Client ID: 1835-78-C





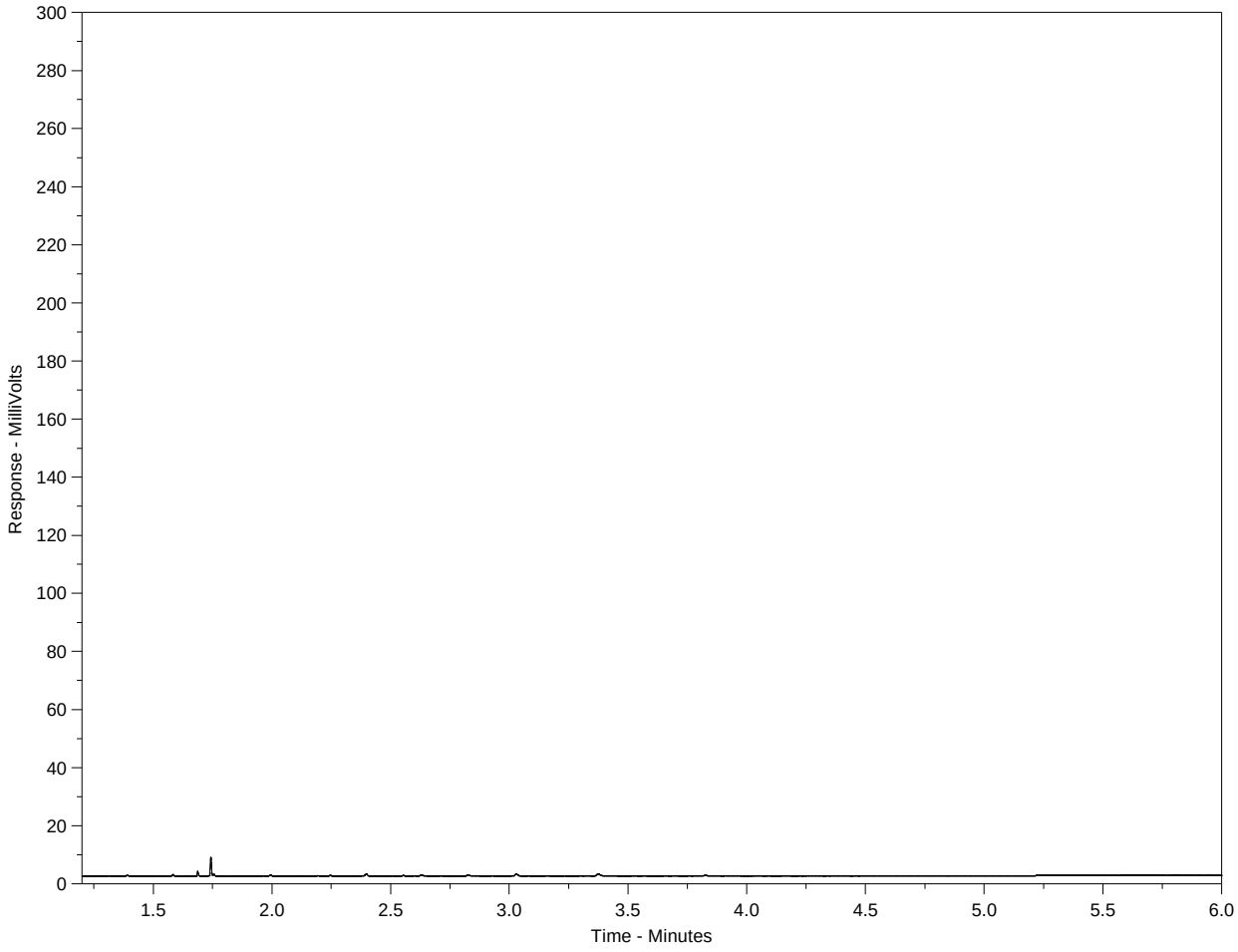
The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

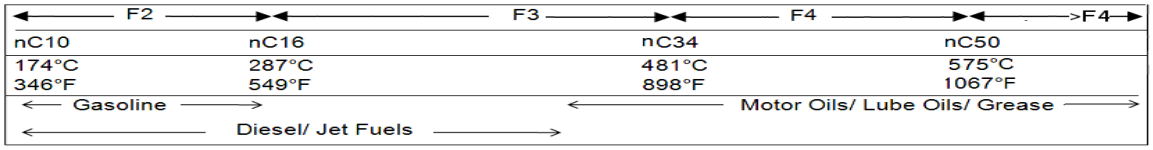
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note:
This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method. Note that retention times and distribution profiles from reports produced using different GC programs will differ.

Hydrocarbon Distribution Report

ALS Sample ID: L2112908-3
Client ID: 1835-78-A





The Canada Wide Standard 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 as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

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.

Note:
This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method. Note that retention times and distribution profiles from reports produced using different GC programs will differ.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here
(lab use only)

COC Number: 14 -

Page 1 of 1

Report To		Report Format / Distribution	Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	GNWT-Department of Infrastructure	Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	R ☐ Regular (Standard TAT if received by 3 pm - business days)
Contact:	Alexis Campbell	Quality Control (QC) Report with Report ☑ Yes ☐ No	P ☑ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	PO Box 1320 Yellowknife, NT X1A 2L9	☐ Criteria on Report - provide details below if box checked Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	867-767-9083 ex. 31055	Email 1 or Fax Kelly_McHugh@gov.nt.ca	Specify Date Required for E2,E or P:
		Email 2	

Invoice To	Same as Report To ☐ Yes ☑ No	Invoice Distribution	Analysis Request
	Copy of Invoice with Report ☐ Yes ☑ No	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
Company:	GNWT-Department of Infrastructure	Email 1 or Fax Dean_Ahmet@gov.nt.ca	
Contact:	Dean Ahmet	Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:	Q68439	Approver ID:	Cost Center:
Job #:		GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)	L2112908	ALS Contact:	Sampler:

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	pH	TSS	BTEX & F1-F4	Number of Containers
	1835-78-D	13-Oct-18	10:30	Water	✓	✓	✓	6
	1835-78-C	"	10:45	"	✓	✓	✓	6
	1835-78-A	"	11:10	"	✓	✓	✓	6

L2112908-COFC

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☑ No	
Are samples for human drinking water use? ☐ Yes ☑ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐			SIF Observations	Yes ☐	No ☐	
Ice packs	Yes ☐	No ☐		Custody seal intact	Yes ☐	No ☐	
Cooling Initiated	☐						

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
6.3					

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
K Kamo McHugh	June 14'18	10am		June 15/18	930			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FM-0328e v09 Front/04 January 2014

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.