



PARKS CANADA AGENCY
ATTN: ALEX LOTHIAN
Box 1166
Yellowknife NT X1A 2N8


Date Received: 29-JUN-20
Report Date: 07-JUL-20 14:46 (MT)
Version: FINAL REV. 2

Client Phone: 867-445-1680

Certificate of Analysis

Lab Work Order #: L2467883
Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:

Comments: ADDITIONAL 07-JUL-20 09:18



Oliver Gregg
Account Manager

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ADDRESS: 314 Old Airport Road, Unit 116, Yellowknife, NT X1A 3T3 Canada | Phone: +1 867 873 5593 |
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ANALYTICAL REPORT

L2467883 CONT'D....

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SOIL - Federal CCME Canadian Environmental Quality Guidelines (JUN, 2018)

ALS ID Sampled Date Sampled Time Sample ID			L2467883-1 27-JUN-20 14:15 OLD OIL TANK #1	L2467883-2 27-JUN-20 14:15 OLD OIL TANK #2	L2467883-3 27-JUN-20 14:15 OLD OIL TANK #3	L2467883-4 27-JUN-20 14:15 OLD OIL TANK #4	L2467883-5 27-JUN-20 14:15 OLD OIL TANK #5	L2467883-6 27-JUN-20 14:15 OLD OIL TANK #6	L2467883-7 27-JUN-20 14:15 OLD OIL TANK #7	L2467883-8 27-JUN-20 14:15 OLD OIL TANK #8	L2467883-9 27-JUN-20 14:15 OLD OIL TANK GRAIN SIZE
Grouping	Analyte	Unit									
Physical Tests	% Moisture	%	20.8	11.5	18.3	26.2	18.3	20.2	24.0	15.4	
Particle Size	% Sand	%									27.0
	% Silt	%									57.0
	% Clay	%									16.0
	Texture										Silt loam
Hydrocarbons	F2 (C10-C16)	mg/kg	<20	<20	<20	<20	<20	<20	<20	<20	
	F3 (C16-C34)	mg/kg	88	83	188	98	38	59	32	76	
	F4 (C34-C50)	mg/kg	41	<20	51	58	<20	42	<20	21	
	Chrom. to baseline at nC50		YES	YES	YES	YES	YES	YES	YES	YES	
	Surrogate: 2-Bromobenzotrifluoride	%	91.6	91.9	93.1	92.4	93.3	91.5	93.8	92.9	

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
 Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.



L2467883 CONT'D....

ANALYTICAL REPORT

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Summary of Guideline Exceedances: Federal CCME Canadian Environmental Quality Guidelines (JUN, 2018)

Guideline	ALS ID	Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
CCME - Soil(fine)-IACR 1 in 1000000-RPL- Groundwater Protected (No parameter exceedances)							
CCME - Soil(fine)-IACR 1 in 1000000-RPL-Groundwater Unprotected (No parameter exceedances)							
CCME - Soil(coarse)-IACR 1 in 1000000-Residential/Parkland (No parameter exceedances)							

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
ETL-TVH,TEH-CCME-ED	Soil	CCME Total Hydrocarbons	CCME CWS-PHC, Pub #1310, Dec 2001
Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.			
Hydrocarbon results are expressed on a dry weight basis.			
In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.			
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.			
In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.			
Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:			
1. All extraction and analysis holding times were met.			
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.			
3. Linearity of gasoline response within 15% throughout the calibration range.			
Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:			
1. All extraction and analysis holding times were met.			
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.			
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.			
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.			
F2-4-TMB-ED	Soil	CCME Total Extractable Hydrocarbons	CCME CWS-PHC, Pub #1310, Dec 2001
This analysis is carried out in accordance with the "Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil - Tier 1 Method, Canadian Council of Ministers of the Environment" For C10 to C50 hydrocarbons (F2, F3, F4) and gravimetric heavy hydrocarbons (F4G-sg), a subsample of the sediment/soil is extracted with 1:1 hexane:acetone using a rotary extractor. The extract undergoes a silica-gel clean-up to remove polar compounds. F2, F3 & F4 are analyzed by on-column GC/FID, and F4G-sg is analyzed gravimetrically.			
Notes:			
1. F2 (C10-C16): Sum of all hydrocarbons that elute between nC10 and nC16.			
2. F3 (C16-C34): Sum of all hydrocarbons that elute between nC16 and nC34.			
3. F4 (C34-C50): Sum of all hydrocarbons that elute between nC34 and nC50.			
4. F4G: Gravimetric Heavy Hydrocarbons			
5. F4G-sg: Gravimetric Heavy Hydrocarbons (F4G) after silica gel treatment.			
6. Where F4 (C34-C50) and F4G-sg results are reported for a sample, the larger of the reported values is used for comparison against the relevant CCME standard for F4.			
7. The gravimetric heavy hydrocarbon results (F4G-sg), cannot be added to the C6 to C50 hydrocarbon results.			
8. This method is validated for use.			
9. Data from analysis of quality control samples is available upon request.			
10. Reported results are expressed as milligrams per dry kilogram.			
PREP-MOISTURE-ED	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)
The weighed portion of soil is placed in a 105°C oven to dry to a constant weight; the drying time will vary based on the moisture content of the soil. The dried soil weight is then used to calculate % moisture.			
PSA-1-ED	Soil	Particle Size	CSSS 55.3-Hydrometer
Soil samples are oven dried, ground to pass a 2 mm sieve , and soaked in Calgon solution for a minimum of 16 hours. Soil suspensions are measured for particle size by distribution using a hydrometer after specified settling times.			

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

Reference Information

Chain of Custody Numbers:

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

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg ww - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

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.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.



Quality Control Report

Workorder: L2467883

Report Date: 07-JUL-20

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Client: PARKS CANADA AGENCY
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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-4-TMB-ED		Soil						
Batch	R5143139							
WG3354903-4	DUP	L2467883-8						
F2 (C10-C16)		<20	<20	RPD-NA	mg/kg	N/A	40	03-JUL-20
F3 (C16-C34)		76	94		mg/kg	22	40	03-JUL-20
F4 (C34-C50)		21	24		mg/kg	13	40	03-JUL-20
WG3354903-3	IRM	ALS PHC RM3						
F2 (C10-C16)			106.8		%		70-130	03-JUL-20
F3 (C16-C34)			101.8		%		70-130	03-JUL-20
F4 (C34-C50)			86.8		%		70-130	03-JUL-20
WG3354903-2	LCS							
F2 (C10-C16)			105.7		%		70-130	03-JUL-20
F3 (C16-C34)			107.5		%		70-130	03-JUL-20
F4 (C34-C50)			103.3		%		70-130	03-JUL-20
WG3354903-1	MB							
F2 (C10-C16)			<20		mg/kg		20	03-JUL-20
F3 (C16-C34)			<20		mg/kg		20	03-JUL-20
F4 (C34-C50)			<20		mg/kg		20	03-JUL-20
Surrogate: 2-Bromobenzotrifluoride			91.0		%		70-130	03-JUL-20
PREP-MOISTURE-ED		Soil						
Batch	R5141644							
WG3354785-3	DUP	L2467883-4						
% Moisture		26.2	27.2		%	3.6	20	03-JUL-20
WG3354785-2	LCS							
% Moisture			101.0		%		90-110	03-JUL-20
WG3354785-1	MB							
% Moisture			<0.25		%		0.25	03-JUL-20
PSA-1-ED		Soil						
Batch	R5143098							
WG3355807-3	DUP	L2467742-2						
% Sand		4.0	3.0	J	%	1.0	5	06-JUL-20
% Silt		40.0	40.0	J	%	0.0	5	06-JUL-20
% Clay		56.0	57.0	J	%	1.0	5	06-JUL-20
WG3355807-2	IRM	ALS SAL 2019						
% Sand			42.0		%		36.3-46.3	06-JUL-20
% Silt			34.0		%		30.2-40.2	06-JUL-20
% Clay			24.0		%		18.5-28.5	06-JUL-20
WG3355807-1	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PSA-1-ED	Soil							
Batch	R5143098							
WG3355807-1	MB							
% Sand			<1.0		%		1	06-JUL-20
% Silt			<1.0		%		1	06-JUL-20
% Clay			<1.0		%		1	06-JUL-20

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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

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

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.



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Chain of Custody (COC) / Analytical
Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here
(lab use only)

COC Number: 17 -

Page of

Report To Contact and company name below will appear on the final report		Report Format / Distribution		Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)																																																																																																																									
Company:	Parks Canada Agency	Select Report Format:	<input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)	Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																																																																																																																									
Contact:	Alex Lothian	Quality Control (QC) Report with Report	<input type="checkbox"/> YES <input type="checkbox"/> NO	PRIORITY (Business Days) 4 day [P4-20%] <input type="checkbox"/> 3 day [P3-25%] <input type="checkbox"/> 2 day [P2-50%] <input type="checkbox"/> EMERGENCY 1 Business day [E - 100%] <input type="checkbox"/> Same Day, Weekend or Statutory holiday [E2 -200%] <input type="checkbox"/> (Laboratory opening fees may apply)																																																																																																																									
Phone:	867 445-1680	<input checked="" type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked																																																																																																																											
Company address below will appear on the final report		Select Distribution:	<input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX																																																																																																																										
Street:	Box 1166,	Email 1 or Fax	Alex.Lothian@canada.ca	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm																																																																																																																									
City/Province:	Yellowknife, NT	Email 2	trevor.shiomi@canada.ca	For tests that can not be performed according to the service level selected, you will be contacted.																																																																																																																									
Postal Code:	X1A 2N8	Email 3	nadine.gauvin@canada.ca	Analysis Request																																																																																																																									
Invoice To	Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	Invoice Distribution		<table border="1"> <tr> <td colspan="12">Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below</td> </tr> <tr> <td colspan="12"></td> </tr> <tr> <td colspan="12"></td> </tr> <tr> <td colspan="12"></td> </tr> <tr> <td colspan="12"></td> </tr> <tr> <td colspan="12"></td> </tr> <tr> <td colspan="12"></td> </tr> <tr> <td colspan="12"></td> </tr> <tr> <td colspan="12"></td> </tr> <tr> <td colspan="12"></td> </tr> </table>		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																																																																																																																							
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Company:		Email 1 or Fax	Alex.Lothian@canada.ca																																																																																																																										
Contact:		Email 2																																																																																																																											
Project Information		Oil and Gas Required Fields (client use)																																																																																																																											
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ALS Lab Work Order # (lab use only): L 2467583		ALS Contact:	Oliver Gregg	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																																																																																																																									
1	Old Oil Tank # 1	27-06-20	14:15	Soil	1 R																																																																																																																								
2	Old Oil Tank # 2	27-06-20	14:15	Soil	1 R																																																																																																																								
3	Old Oil Tank # 3	27-06-20	14:15	Soil	1 R																																																																																																																								
4	Old Oil Tank # 4	27-06-20	14:20	Soil	1 R																																																																																																																								
5	Old Oil Tank # 5	27-06-20	14:20	Soil	1 R																																																																																																																								
6	Old Oil Tank # 6	27-06-20	14:25	Soil	1 R																																																																																																																								
7	Old Oil Tank # 7	27-06-20	14:25	Soil	1 R																																																																																																																								
8	Old Oil Tank # 8	27-06-20	14:20	Soil	1 R																																																																																																																								
9	Old Oil Tank Grain Size	27-06-20	14:30	Soil	1 R																																																																																																																								
Drinking Water (DW) Samples¹ (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		SAMPLE CONDITION AS RECEIVED (lab use only)																																																																																																																									
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO		NWT Guideline for Contaminated Site Remediation (NOV, 2003)		Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																																																																																																																									
Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO		Federal CCME Canadian Environmental Quality Guidelines (JUL, 2012)		Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																																																																																																																									
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Released by: Johanna Robson	Date: June 29, 2020	Time:	Received by: MA	Date: June 29/20	Time:																																																																																																																								

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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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.