



08-Sep-2015

Brett Middleton
Encana Oil and Gas (USA) Inc.
143 Diamond Avenue
Parachute, CO 81635

Re: **L27 PIT**

Work Order: **1509005**

Dear Brett,

Revision: **1**

ALS Environmental received 6 samples on 01-Sep-2015 10:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 29.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Les Arnold".

Electronically approved by: Joseph Ribar

Les Arnold
Senior Project Manager



Certificate No: MN 532786

Report of Laboratory Analysis

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Environmental ALS

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Client: Encana Oil and Gas (USA) Inc.
Project: L27 PIT
Work Order: 1509005

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1509005-01	20150831-L27 (S-Wall)	Soil		8/31/2015 11:56	9/1/2015 10:00	<input type="checkbox"/>
1509005-02	20150831-L27 (N-Wall)	Soil		8/31/2015 12:12	9/1/2015 10:00	<input type="checkbox"/>
1509005-03	20150831-L27 (N-Bot)	Soil		8/31/2015 12:26	9/1/2015 10:00	<input type="checkbox"/>
1509005-04	20150831-L27 (E-Wall)	Soil		8/31/2015 12:37	9/1/2015 10:00	<input type="checkbox"/>
1509005-05	20150831-L27 (W-TOE)	Soil		8/31/2015 12:51	9/1/2015 10:00	<input type="checkbox"/>
1509005-06	20150831-L27 (S-Bot)	Soil		8/31/2015 13:02	9/1/2015 10:00	<input type="checkbox"/>

Client: Encana Oil and Gas (USA) Inc.
Project: L27 PIT
Work Order: 1509005

Case Narrative

Samples for the above noted Work Order were received on 09/01/2015. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Sample Receiving:

No deviations or anomalies were noted.

Volatile Organics:

No deviations or anomalies were noted.

Extractable Organics:

Batch 75497, Method 8015 for DRO; Sample 1509004-10A; The MS and MSD recoveries were outside of the control limit; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for this analyte.

No other deviations or anomalies were noted.

Metals:

No deviations or anomalies were noted.

Wet Chemistry:

No deviations or anomalies were noted.

ALS Group USA, Corp

Date: 08-Sep-15

Client: Encana Oil and Gas (USA) Inc.
Project: L27 PIT
Sample ID: 20150831-L27 (S-Wall)
Collection Date: 8/31/2015 11:56 AM

Work Order: 1509005
Lab ID: 1509005-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 9/1/15		Analyst: IT
DRO (C10-C28)	19,000		150	470	mg/Kg-dry	100	9/1/2015 18:32
Surr: 4-Terphenyl-d14	90.0			39-133	%REC	100	9/1/2015 18:32
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 9/1/15		Analyst: IT
GRO (C6-C10)	130		1.4	2.9	mg/Kg-dry	1	9/1/2015 14:09
Surr: Toluene-d8	110			50-150	%REC	1	9/1/2015 14:09
VOLATILE ORGANIC COMPOUNDS							
			Method: SW8260B		Prep: SW5035 / 9/1/15		Analyst: BG
Benzene	U		0.014	0.035	mg/Kg-dry	1	9/1/2015 13:48
Ethylbenzene	U		0.013	0.035	mg/Kg-dry	1	9/1/2015 13:48
m,p-Xylene	U		0.026	0.069	mg/Kg-dry	1	9/1/2015 13:48
o-Xylene	U		0.015	0.035	mg/Kg-dry	1	9/1/2015 13:48
Toluene	U		0.013	0.035	mg/Kg-dry	1	9/1/2015 13:48
Xylenes, Total	U		0.041	0.10	mg/Kg-dry	1	9/1/2015 13:48
Surr: 1,2-Dichloroethane-d4	98.4			70-130	%REC	1	9/1/2015 13:48
Surr: 4-Bromofluorobenzene	113			70-130	%REC	1	9/1/2015 13:48
Surr: Dibromofluoromethane	99.4			70-130	%REC	1	9/1/2015 13:48
Surr: Toluene-d8	92.4			70-130	%REC	1	9/1/2015 13:48
MOISTURE							
			Method: E160.3M				Analyst: EVB
Moisture	13		0.025	0.050	% of sample	1	9/1/2015 10:55

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 08-Sep-15

Client: Encana Oil and Gas (USA) Inc.
Project: L27 PIT
Sample ID: 20150831-L27 (N-Wall)
Collection Date: 8/31/2015 12:12 PM

Work Order: 1509005
Lab ID: 1509005-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 9/1/15		Analyst: IT
DRO (C10-C28)	260		1.8	5.5	mg/Kg-dry	1	9/1/2015 16:03
Surr: 4-Terphenyl-d14	68.8			39-133	%REC	1	9/1/2015 16:03
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 9/1/15		Analyst: IT
GRO (C6-C10)	U		1.7	3.4	mg/Kg-dry	1	9/1/2015 14:33
Surr: Toluene-d8	107			50-150	%REC	1	9/1/2015 14:33
VOLATILE ORGANIC COMPOUNDS							
			Method: SW8260B		Prep: SW5035 / 9/1/15		Analyst: BG
Benzene	U		0.016	0.041	mg/Kg-dry	1	9/1/2015 14:15
Ethylbenzene	U		0.015	0.041	mg/Kg-dry	1	9/1/2015 14:15
m,p-Xylene	0.038	J	0.031	0.082	mg/Kg-dry	1	9/1/2015 14:15
o-Xylene	U		0.017	0.041	mg/Kg-dry	1	9/1/2015 14:15
Toluene	U		0.015	0.041	mg/Kg-dry	1	9/1/2015 14:15
Xylenes, Total	U		0.048	0.12	mg/Kg-dry	1	9/1/2015 14:15
Surr: 1,2-Dichloroethane-d4	99.0			70-130	%REC	1	9/1/2015 14:15
Surr: 4-Bromofluorobenzene	100			70-130	%REC	1	9/1/2015 14:15
Surr: Dibromofluoromethane	98.2			70-130	%REC	1	9/1/2015 14:15
Surr: Toluene-d8	93.4			70-130	%REC	1	9/1/2015 14:15
MOISTURE							
			Method: E160.3M				Analyst: EVB
Moisture	27		0.025	0.050	% of sample	1	9/1/2015 10:55

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 08-Sep-15

Client: Encana Oil and Gas (USA) Inc.
Project: L27 PIT
Sample ID: 20150831-L27 (N-Bot)
Collection Date: 8/31/2015 12:26 PM

Work Order: 1509005
Lab ID: 1509005-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 9/1/15		Analyst: IT
DRO (C10-C28)	2,600		17	52	mg/Kg-dry	10	9/1/2015 19:02
Surr: 4-Terphenyl-d14	51.2			39-133	%REC	10	9/1/2015 19:02
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 9/1/15		Analyst: IT
GRO (C6-C10)	U		1.6	3.2	mg/Kg-dry	1	9/1/2015 14:58
Surr: Toluene-d8	110			50-150	%REC	1	9/1/2015 14:58
VOLATILE ORGANIC COMPOUNDS							
			Method: SW8260B		Prep: SW5035 / 9/1/15		Analyst: BG
Benzene	U		0.016	0.039	mg/Kg-dry	1	9/1/2015 14:41
Ethylbenzene	U		0.014	0.039	mg/Kg-dry	1	9/1/2015 14:41
m,p-Xylene	U		0.029	0.077	mg/Kg-dry	1	9/1/2015 14:41
o-Xylene	U		0.016	0.039	mg/Kg-dry	1	9/1/2015 14:41
Toluene	U		0.015	0.039	mg/Kg-dry	1	9/1/2015 14:41
Xylenes, Total	U		0.046	0.12	mg/Kg-dry	1	9/1/2015 14:41
Surr: 1,2-Dichloroethane-d4	101			70-130	%REC	1	9/1/2015 14:41
Surr: 4-Bromofluorobenzene	103			70-130	%REC	1	9/1/2015 14:41
Surr: Dibromofluoromethane	99.0			70-130	%REC	1	9/1/2015 14:41
Surr: Toluene-d8	94.9			70-130	%REC	1	9/1/2015 14:41
MOISTURE							
			Method: E160.3M				Analyst: EVB
Moisture	22		0.025	0.050	% of sample	1	9/1/2015 10:55

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 08-Sep-15

Client: Encana Oil and Gas (USA) Inc.
Project: L27 PIT
Sample ID: 20150831-L27 (E-Wall)
Collection Date: 8/31/2015 12:37 PM

Work Order: 1509005
Lab ID: 1509005-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 9/1/15		Analyst: IT
DRO (C10-C28)	2,300		88	270	mg/Kg-dry	10	9/1/2015 17:03
<i>Surr: 4-Terphenyl-d14</i>	70.4			39-133	%REC	10	9/1/2015 17:03
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 9/1/15		Analyst: IT
GRO (C6-C10)	60		1.9	4.0	mg/Kg-dry	1	9/1/2015 15:23
<i>Surr: Toluene-d8</i>	94.4			50-150	%REC	1	9/1/2015 15:23
VOLATILE ORGANIC COMPOUNDS							
			Method: SW8260B		Prep: SW5035 / 9/1/15		Analyst: BG
Benzene	0.031	J	0.019	0.048	mg/Kg-dry	1	9/1/2015 15:08
Ethylbenzene	0.16		0.018	0.048	mg/Kg-dry	1	9/1/2015 15:08
m,p-Xylene	3.8		0.036	0.096	mg/Kg-dry	1	9/1/2015 15:08
o-Xylene	0.78		0.020	0.048	mg/Kg-dry	1	9/1/2015 15:08
Toluene	0.84		0.018	0.048	mg/Kg-dry	1	9/1/2015 15:08
Xylenes, Total	4.6		0.057	0.14	mg/Kg-dry	1	9/1/2015 15:08
<i>Surr: 1,2-Dichloroethane-d4</i>	99.5			70-130	%REC	1	9/1/2015 15:08
<i>Surr: 4-Bromofluorobenzene</i>	101			70-130	%REC	1	9/1/2015 15:08
<i>Surr: Dibromofluoromethane</i>	99.8			70-130	%REC	1	9/1/2015 15:08
<i>Surr: Toluene-d8</i>	94.2			70-130	%REC	1	9/1/2015 15:08
MOISTURE							
			Method: E160.3M				Analyst: EVB
Moisture	38		0.025	0.050	% of sample	1	9/1/2015 10:55

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 08-Sep-15

Client: Encana Oil and Gas (USA) Inc.
Project: L27 PIT
Sample ID: 20150831-L27 (W-TOE)
Collection Date: 8/31/2015 12:51 PM

Work Order: 1509005
Lab ID: 1509005-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 9/1/15		Analyst: IT
DRO (C10-C28)	3,300		18	53	mg/Kg-dry	10	9/1/2015 20:00
Surr: 4-Terphenyl-d14	63.8			39-133	%REC	10	9/1/2015 20:00
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 9/1/15		Analyst: IT
GRO (C6-C10)	120		1.6	3.2	mg/Kg-dry	1	9/1/2015 15:48
Surr: Toluene-d8	108			50-150	%REC	1	9/1/2015 15:48
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 9/1/15		Analyst: LR
Mercury	0.080		0.0014	0.016	mg/Kg-dry	1	9/1/2015 17:52
METALS ANALYSIS BY ICP							
			Method: SW846 6010C		Prep: SW3050B / 9/1/15		Analyst: JEC
Arsenic	4.9		0.11	0.43	mg/Kg-dry	1	9/2/2015 09:47
Barium	3,000		0.20	0.43	mg/Kg-dry	1	9/2/2015 09:47
Cadmium	0.15	J	0.068	0.87	mg/Kg-dry	1	9/2/2015 09:47
Chromium	35		0.014	0.43	mg/Kg-dry	1	9/2/2015 09:47
Copper	21		0.047	0.87	mg/Kg-dry	1	9/2/2015 09:47
Lead	9.5		0.052	0.43	mg/Kg-dry	1	9/2/2015 09:47
Nickel	38		0.13	0.43	mg/Kg-dry	1	9/2/2015 09:47
Selenium	1.2		0.26	0.87	mg/Kg-dry	1	9/2/2015 09:47
Silver	U		0.043	0.43	mg/Kg-dry	1	9/2/2015 09:47
Zinc	41		0.14	0.87	mg/Kg-dry	1	9/2/2015 09:47
SOLUBLE CATIONS FOR SAR							
			Method: SW846 6010C		Prep: USDA Method 20B / 9/3/15		Analyst: JEC
Calcium	42		0.22	5.0	mg/L	10	9/3/2015 12:26
Magnesium	3.1		0.22	2.0	mg/L	10	9/3/2015 12:26
Sodium	1,900		0.24	2.0	mg/L	10	9/3/2015 12:26
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 9/3/15		Analyst: JEC
Sodium Adsorption Ratio	76		0.010	0.010	none	1	9/3/2015
SEMI-VOLATILE ORGANIC COMPOUNDS							
			Method: SW846 8270D		Prep: SW3550 / 9/2/15		Analyst: RS
Acenaphthene	U		0.0032	0.0085	mg/Kg-dry	1	9/2/2015 15:38
Anthracene	U		0.0041	0.0085	mg/Kg-dry	1	9/2/2015 15:38
Benzo(a)anthracene	U		0.0051	0.0085	mg/Kg-dry	1	9/2/2015 15:38
Benzo(a)pyrene	U		0.0018	0.0085	mg/Kg-dry	1	9/2/2015 15:38
Benzo(b)fluoranthene	U		0.0029	0.0085	mg/Kg-dry	1	9/2/2015 15:38
Benzo(k)fluoranthene	U		0.0053	0.0085	mg/Kg-dry	1	9/2/2015 15:38
Chrysene	U		0.0072	0.0085	mg/Kg-dry	1	9/2/2015 15:38
Dibenzo(a,h)anthracene	U		0.0028	0.0085	mg/Kg-dry	1	9/2/2015 15:38
Fluoranthene	U		0.0052	0.0085	mg/Kg-dry	1	9/2/2015 15:38

Note: See Qualifiers page for a list of qualifiers and their definitions.

Revision: 1

ALS Group USA, Corp

Date: 08-Sep-15

Client: Encana Oil and Gas (USA) Inc.
Project: L27 PIT
Sample ID: 20150831-L27 (W-TOE)
Collection Date: 8/31/2015 12:51 PM

Work Order: 1509005
Lab ID: 1509005-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0047	0.0085	mg/Kg-dry	1	9/2/2015 15:38
Indeno(1,2,3-cd)pyrene	U		0.0053	0.0085	mg/Kg-dry	1	9/2/2015 15:38
Naphthalene	U		0.0022	0.0085	mg/Kg-dry	1	9/2/2015 15:38
Pyrene	U		0.0064	0.0085	mg/Kg-dry	1	9/2/2015 15:38
Surr: 2-Fluorobiphenyl	76.2			12-100	%REC	1	9/2/2015 15:38
Surr: 4-Terphenyl-d14	106			25-137	%REC	1	9/2/2015 15:38
Surr: Nitrobenzene-d5	56.1			37-107	%REC	1	9/2/2015 15:38
VOLATILE ORGANIC COMPOUNDS			Method: SW8260B		Prep: SW5035 / 9/1/15		Analyst: BG
Benzene	U		0.016	0.039	mg/Kg-dry	1	9/1/2015 15:35
Ethylbenzene	U		0.014	0.039	mg/Kg-dry	1	9/1/2015 15:35
m,p-Xylene	0.16		0.029	0.078	mg/Kg-dry	1	9/1/2015 15:35
o-Xylene	U		0.016	0.039	mg/Kg-dry	1	9/1/2015 15:35
Toluene	0.031	J	0.015	0.039	mg/Kg-dry	1	9/1/2015 15:35
Xylenes, Total	0.16		0.046	0.12	mg/Kg-dry	1	9/1/2015 15:35
Surr: 1,2-Dichloroethane-d4	98.6			70-130	%REC	1	9/1/2015 15:35
Surr: 4-Bromofluorobenzene	106			70-130	%REC	1	9/1/2015 15:35
Surr: Dibromofluoromethane	99.4			70-130	%REC	1	9/1/2015 15:35
Surr: Toluene-d8	95.0			70-130	%REC	1	9/1/2015 15:35
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 9/3/15		Analyst: JB
Electrical Conductivity @ Saturation	9.7		0.0055	0.050	mmhos/cm @25°	10	9/3/2015 13:00
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: JB
Chromium, Trivalent	35		0.33	0.65	mg/Kg-dry	1	9/4/2015 16:00
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 9/3/15		Analyst: MB
Chromium, Hexavalent	U		0.35	1.2	mg/Kg-dry	1	9/4/2015 13:00
MOISTURE			Method: E160.3M				Analyst: EVB
Moisture	23		0.025	0.050	% of sample	1	9/1/2015 10:55
PH			Method: SW9045D		Prep: EXTRACT / 9/8/15		Analyst: ED
pH	8.8		0		s.u.	1	9/8/2015 16:46

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 08-Sep-15

Client: Encana Oil and Gas (USA) Inc.
Project: L27 PIT
Sample ID: 20150831-L27 (S-Bot)
Collection Date: 8/31/2015 01:02 PM

Work Order: 1509005
Lab ID: 1509005-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
				Method: SW8015M		Prep: SW3550 / 9/1/15	Analyst: IT
DRO (C10-C28)	4,400		18	56	mg/Kg-dry	10	9/1/2015 18:03
<i>Surr: 4-Terphenyl-d14</i>	58.6			39-133	%REC	10	9/1/2015 18:03
GASOLINE RANGE ORGANICS BY GC-FID							
				Method: SW8015D		Prep: SW5035 / 9/1/15	Analyst: IT
GRO (C6-C10)	350		1.6	3.4	mg/Kg-dry	1	9/1/2015 16:15
<i>Surr: Toluene-d8</i>	110			50-150	%REC	1	9/1/2015 16:15
VOLATILE ORGANIC COMPOUNDS							
				Method: SW8260B		Prep: SW5035 / 9/1/15	Analyst: BG
Benzene	0.24		0.016	0.041	mg/Kg-dry	1	9/1/2015 16:02
Ethylbenzene	0.33		0.015	0.041	mg/Kg-dry	1	9/1/2015 16:02
m,p-Xylene	3.8		0.031	0.081	mg/Kg-dry	1	9/1/2015 16:02
o-Xylene	0.18		0.017	0.041	mg/Kg-dry	1	9/1/2015 16:02
Toluene	0.018	J	0.015	0.041	mg/Kg-dry	1	9/1/2015 16:02
Xylenes, Total	4.0		0.048	0.12	mg/Kg-dry	1	9/1/2015 16:02
<i>Surr: 1,2-Dichloroethane-d4</i>	96.6			70-130	%REC	1	9/1/2015 16:02
<i>Surr: 4-Bromofluorobenzene</i>	112			70-130	%REC	1	9/1/2015 16:02
<i>Surr: Dibromofluoromethane</i>	95.6			70-130	%REC	1	9/1/2015 16:02
<i>Surr: Toluene-d8</i>	97.1			70-130	%REC	1	9/1/2015 16:02
MOISTURE							
				Method: E160.3M			Analyst: EVB
Moisture	26		0.025	0.050	% of sample	1	9/1/2015 10:55

Note: See Qualifiers page for a list of qualifiers and their definitions.

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
% of sample	Percent of Sample
mg/Kg-dry	Milligrams per Kilogram Dry Weight
mg/L	Milligrams per Liter
mmhos/cm @25°C	Millimhos-Centimeter at 25 Degrees Celcius
none	
s.u.	Standard Units

Client: Encana Oil and Gas (USA) Inc.
Work Order: 1509005
Project: L27 PIT

QC BATCH REPORT

Batch ID: **75497** Instrument ID **GC8** Method: **SW8015M**

MBLK		Sample ID: DBLKS1-75497-75497				Units: mg/Kg		Analysis Date: 9/1/2015 02:33 PM			
Client ID:		Run ID: GC8_150901A		SeqNo: 3441381		Prep Date: 9/1/2015		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
DRO (C10-C28)	U	5.0									
<i>Surr: 4-Terphenyl-d14</i>	1.342	0	2	0	67.1	39-133	0				

LCS		Sample ID: DLCSS1-75497-75497				Units: mg/Kg		Analysis Date: 9/1/2015 03:03 PM			
Client ID:		Run ID: GC8_150901A		SeqNo: 3441382		Prep Date: 9/1/2015		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
DRO (C10-C28)	148.4	5.0	200	0	74.2	61-109	0				
<i>Surr: 4-Terphenyl-d14</i>	1.142	0	2	0	57.1	39-133	0				

MS		Sample ID: 1509004-10A MS				Units: mg/Kg		Analysis Date: 9/1/2015 08:30 PM			
Client ID:		Run ID: GC8_150901A		SeqNo: 3441599		Prep Date: 9/1/2015		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
DRO (C10-C28)	1957	4.2	166.4	1407	331	48-110	0			SEO	
<i>Surr: 4-Terphenyl-d14</i>	1.038	0	1.664	0	62.4	39-133	0				

MSD		Sample ID: 1509004-10A MSD				Units: mg/Kg		Analysis Date: 9/1/2015 09:00 PM			
Client ID:		Run ID: GC8_150901A		SeqNo: 3441600		Prep Date: 9/1/2015		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
DRO (C10-C28)	1482	4.1	165.2	1407	45.5	48-110	1957	27.6	30	SO	
<i>Surr: 4-Terphenyl-d14</i>	0.9918	0	1.652	0	60	39-133	1.038	4.57	30		

The following samples were analyzed in this batch:

1509005-01B	1509005-02B	1509005-03B
1509005-04B	1509005-05B	1509005-06B

Client: Encana Oil and Gas (USA) Inc.
 Work Order: 1509005
 Project: L27 PIT

QC BATCH REPORT

Batch ID: **75443** Instrument ID **GC9** Method: **SW8015D**

MBLK		Sample ID: MBLK-75443-75443				Units: µg/Kg		Analysis Date: 9/1/2015 01:19 PM		
Client ID:		Run ID: GC9_150901A		SeqNo: 3441423		Prep Date: 9/1/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	U	2,500								
<i>Surr: Toluene-d8</i>	5107	0	5000	0	102	50-150	0			

LCS		Sample ID: LCS-75443-75443				Units: µg/Kg		Analysis Date: 9/1/2015 12:54 PM		
Client ID:		Run ID: GC9_150901A		SeqNo: 3441422		Prep Date: 9/1/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	536900	2,500	500000	0	107	70-130	0			
<i>Surr: Toluene-d8</i>	4789	0	5000	0	95.8	50-150	0			

MS		Sample ID: 1509005-02A MS				Units: µg/Kg		Analysis Date: 9/1/2015 08:14 PM		
Client ID: 20150831-L27 (N-Wall)		Run ID: GC9_150901A		SeqNo: 3441677		Prep Date: 9/1/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	573300	2,500	500000	0	115	70-130	0			
<i>Surr: Toluene-d8</i>	5500	0	5000	0	110	50-150	0			

MSD		Sample ID: 1509005-02A MSD				Units: µg/Kg		Analysis Date: 9/1/2015 08:39 PM		
Client ID: 20150831-L27 (N-Wall)		Run ID: GC9_150901A		SeqNo: 3441678		Prep Date: 9/1/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	531700	2,500	500000	0	106	70-130	573300	7.53	30	
<i>Surr: Toluene-d8</i>	5310	0	5000	0	106	50-150	5500	3.52	30	

The following samples were analyzed in this batch:

1509005-01A	1509005-02A	1509005-03A
1509005-04A	1509005-05A	1509005-06A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Revision: 1

Client: Encana Oil and Gas (USA) Inc.
 Work Order: 1509005
 Project: L27 PIT

QC BATCH REPORT

Batch ID: **75504** Instrument ID **HG1** Method: **SW7471B**

MBLK	Sample ID: MBLK-75504-75504				Units: mg/Kg			Analysis Date: 9/1/2015 05:48 PM		
Client ID:	Run ID: HG1_150901A			SeqNo: 3442169		Prep Date: 9/1/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury U 0.020

LCS	Sample ID: LCS-75504-75504				Units: mg/Kg			Analysis Date: 9/1/2015 05:50 PM		
Client ID:	Run ID: HG1_150901A			SeqNo: 3442170		Prep Date: 9/1/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.183 0.020 0.1665 0 110 80-120 0

MS	Sample ID: 15081638-04BMS				Units: mg/Kg			Analysis Date: 9/1/2015 06:01 PM		
Client ID:	Run ID: HG1_150901A			SeqNo: 3442178		Prep Date: 9/1/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1171 0.013 0.1064 0.003278 107 75-125 0

MSD	Sample ID: 15081638-04BMSD				Units: mg/Kg			Analysis Date: 9/1/2015 06:03 PM		
Client ID:	Run ID: HG1_150901A			SeqNo: 3442179		Prep Date: 9/1/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1124 0.012 0.1028 0.003278 106 75-125 0.1171 4.05 35

The following samples were analyzed in this batch: 1509005-05C

Client: Encana Oil and Gas (USA) Inc.
 Work Order: 1509005
 Project: L27 PIT

QC BATCH REPORT

Batch ID: 75506 Instrument ID ICP2 Method: SW846 6010C

MBLK		Sample ID: MBLK-75506-75506				Units: mg/Kg		Analysis Date: 9/2/2015 09:30 AM		
Client ID:		Run ID: ICP2_150902A			SeqNo: 3442275		Prep Date: 9/1/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.25								
Barium	U	0.25								
Cadmium	U	0.50								
Chromium	0.01157	0.25								J
Copper	U	0.50								
Lead	U	0.25								
Nickel	U	0.25								
Selenium	U	0.50								
Silver	U	0.25								
Zinc	U	0.50								

LCS		Sample ID: LCS-75506-75506				Units: mg/Kg		Analysis Date: 9/2/2015 09:36 AM		
Client ID:		Run ID: ICP2_150902A			SeqNo: 3442276		Prep Date: 9/1/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.723	0.25	5	0	94.5	80-120	0			
Barium	4.879	0.25	5	0	97.6	80-120	0			
Cadmium	4.449	0.50	5	0	89	80-120	0			
Chromium	5.197	0.25	5	0	104	80-120	0			
Copper	4.954	0.50	5	0	99.1	80-120	0			
Lead	4.943	0.25	5	0	98.9	80-120	0			
Nickel	5.117	0.25	5	0	102	80-120	0			
Selenium	4.972	0.50	5	0	99.4	80-120	0			
Silver	4.748	0.25	5	0	95	80-120	0			
Zinc	4.41	0.50	5	0	88.2	80-120	0			

MS		Sample ID: 1509010-02AMS				Units: mg/Kg		Analysis Date: 9/2/2015 10:04 AM		
Client ID:		Run ID: ICP2_150902A			SeqNo: 3442281		Prep Date: 9/1/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	24.63	0.38	7.692	13.95	139	75-125	0			S
Barium	216.2	0.38	7.692	269.8	-696	75-125	0			SO
Cadmium	10.56	0.77	7.692	3.851	87.3	75-125	0			
Chromium	262.3	0.38	7.692	333.5	-926	75-125	0			SO
Copper	201.7	0.77	7.692	298.7	-1260	75-125	0			SO
Lead	530.4	0.38	7.692	393.9	1770	75-125	0			SO
Nickel	62.12	0.38	7.692	48.97	171	75-125	0			SO
Selenium	11.95	0.77	7.692	2.949	117	75-125	0			
Silver	7.84	0.38	7.692	0.2654	98.5	75-125	0			
Zinc	1749	0.77	7.692	1099	8440	75-125	0			SEO

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Revision: 1

Client: Encana Oil and Gas (USA) Inc.
Work Order: 1509005
Project: L27 PIT

QC BATCH REPORT

Batch ID: **75506** Instrument ID **ICP2** Method: **SW846 6010C**

MSD		Sample ID: 1509010-02AMSD				Units: mg/Kg		Analysis Date: 9/2/2015 10:10 AM		
Client ID:		Run ID: ICP2_150902A			SeqNo: 3442282		Prep Date: 9/1/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	21.47	0.39	7.704	13.95	97.7	75-125	24.63	13.7	20	
Barium	250.6	0.39	7.704	269.8	-249	75-125	216.2	14.7	20	SO
Cadmium	10.74	0.77	7.704	3.851	89.4	75-125	10.56	1.62	20	
Chromium	213.9	0.39	7.704	333.5	-1550	75-125	262.3	20.3	20	SRO
Copper	249.4	0.77	7.704	298.7	-640	75-125	201.7	21.1	20	SRO
Lead	476.5	0.39	7.704	393.9	1070	75-125	530.4	10.7	20	SO
Nickel	63.93	0.39	7.704	48.97	194	75-125	62.12	2.87	20	SO
Selenium	10.36	0.77	7.704	2.949	96.2	75-125	11.95	14.2	20	
Silver	7.631	0.39	7.704	0.2654	95.6	75-125	7.84	2.71	20	
Zinc	952	0.77	7.704	1099	-1910	75-125	1749	59	20	SREO

The following samples were analyzed in this batch: | 1509005-05C |

Client: Encana Oil and Gas (USA) Inc.
Work Order: 1509005
Project: L27 PIT

QC BATCH REPORT

Batch ID: **75533** Instrument ID **ICP2** Method: **SW846 6010C**

DUP		Sample ID: 1509031-04BDUP				Units: mg/L		Analysis Date: 9/3/2015 12:43 PM		
Client ID:		Run ID: ICP2_150903A				SeqNo: 3444366		Prep Date: 9/3/2015		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	109.2	5.0	0	0	0	0-0	108.5	0.585		
Magnesium	24.61	2.0	0	0	0	0-0	24.34	1.11		

DUP		Sample ID: 1509031-04BDUP				Units: mg/L		Analysis Date: 9/3/2015 05:39 PM		
Client ID:		Run ID: ICP2_150903B				SeqNo: 3444960		Prep Date: 9/3/2015		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	3.423	2.0	0	0	0	0-0	3.293	3.86		

DUP		Sample ID: 1509031-04BDUP				Units: none		Analysis Date: 9/3/2015		
Client ID:		Run ID: SAR_150903A				SeqNo: 3444983		Prep Date: 9/3/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium Adsorption Ratio	0.07702	0.010	0	0	0		0.07438	3.5	50	

The following samples were analyzed in this batch:

1509005-05C

Client: Encana Oil and Gas (USA) Inc.
 Work Order: 1509005
 Project: L27 PIT

QC BATCH REPORT

Batch ID: 75528 Instrument ID SVMS5 Method: SW846 8270D

MBLK		Sample ID: SBLKS1-75528-75528				Units: µg/Kg		Analysis Date: 9/2/2015 11:54 AM		
Client ID:		Run ID: SVMS5_150902A		SeqNo: 3443105		Prep Date: 9/2/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	U	6.7								
Anthracene	U	6.7								
Benzo(a)anthracene	U	6.7								
Benzo(a)pyrene	U	6.7								
Benzo(b)fluoranthene	U	6.7								
Benzo(k)fluoranthene	U	6.7								
Chrysene	U	6.7								
Dibenzo(a,h)anthracene	U	6.7								
Fluoranthene	U	6.7								
Fluorene	U	6.7								
Indeno(1,2,3-cd)pyrene	U	6.7								
Naphthalene	U	6.7								
Pyrene	U	6.7								
Surr: 2-Fluorobiphenyl	1169	0	1667	0	70.2	12-100	0			
Surr: 4-Terphenyl-d14	1387	0	1667	0	83.2	25-137	0			
Surr: Nitrobenzene-d5	1225	0	1667	0	73.5	37-107	0			

LCS		Sample ID: SLCSS1-75528-75528				Units: µg/Kg		Analysis Date: 9/2/2015 12:17 PM		
Client ID:		Run ID: SVMS5_150902A		SeqNo: 3443106		Prep Date: 9/2/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	544.7	6.7	666.7	0	81.7	45-110	0			
Anthracene	580.7	6.7	666.7	0	87.1	55-105	0			
Benzo(a)anthracene	660	6.7	666.7	0	99	50-110	0			
Benzo(a)pyrene	638.7	6.7	666.7	0	95.8	50-110	0			
Benzo(b)fluoranthene	654.3	6.7	666.7	0	98.1	45-115	0			
Benzo(k)fluoranthene	664	6.7	666.7	0	99.6	45-115	0			
Chrysene	642.7	6.7	666.7	0	96.4	55-110	0			
Dibenzo(a,h)anthracene	589	6.7	666.7	0	88.3	40-125	0			
Fluoranthene	601.7	6.7	666.7	0	90.2	55-115	0			
Fluorene	554.7	6.7	666.7	0	83.2	50-110	0			
Indeno(1,2,3-cd)pyrene	598.3	6.7	666.7	0	89.7	40-120	0			
Naphthalene	557	6.7	666.7	0	83.5	40-105	0			
Pyrene	722	6.7	666.7	0	108	45-125	0			
Surr: 2-Fluorobiphenyl	1292	0	1667	0	77.5	12-100	0			
Surr: 4-Terphenyl-d14	1523	0	1667	0	91.4	25-137	0			
Surr: Nitrobenzene-d5	1314	0	1667	0	78.8	37-107	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Revision: 1

Client: Encana Oil and Gas (USA) Inc.
 Work Order: 1509005
 Project: L27 PIT

QC BATCH REPORT

Batch ID: 75528 Instrument ID SVMS5 Method: SW846 8270D

MS		Sample ID: 1509057-01B MS				Units: µg/Kg		Analysis Date: 9/2/2015 12:40 PM		
Client ID:		Run ID: SVMS5_150902A		SeqNo: 3443107		Prep Date: 9/2/2015		DF: 10		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	470.2	66	657.6	0	71.5	45-110	0			
Anthracene	568.8	66	657.6	0	86.5	55-105	0			
Benzo(a)anthracene	578.7	66	657.6	26.64	83.9	50-110	0			
Benzo(a)pyrene	585.2	66	657.6	53.28	80.9	50-110	0			
Benzo(b)fluoranthene	634.6	66	657.6	79.92	84.3	45-115	0			
Benzo(k)fluoranthene	575.4	66	657.6	26.64	83.4	45-115	0			
Chrysene	614.8	66	657.6	49.95	85.9	55-110	0			
Dibenzo(a,h)anthracene	509.6	66	657.6	0	77.5	40-125	0			
Fluoranthene	657.6	66	657.6	86.58	86.8	55-115	0			
Fluorene	493.2	66	657.6	0	75	50-110	0			
Indeno(1,2,3-cd)pyrene	598.4	66	657.6	53.28	82.9	40-120	0			
Naphthalene	249.9	66	657.6	0	38	40-105	0			S
Pyrene	558.9	66	657.6	0	85	45-125	0			
Surr: 2-Fluorobiphenyl	1101	0	1644	0	67	12-100	0			
Surr: 4-Terphenyl-d14	1230	0	1644	0	74.8	25-137	0			
Surr: Nitrobenzene-d5	621.4	0	1644	0	37.8	37-107	0			

MSD		Sample ID: 1509057-01B MSD				Units: µg/Kg		Analysis Date: 9/2/2015 01:03 PM		
Client ID:		Run ID: SVMS5_150902A		SeqNo: 3443108		Prep Date: 9/2/2015		DF: 10		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	402.2	65	654	0	61.5	45-110	470.2	15.6	30	
Anthracene	526.5	65	654	0	80.5	55-105	568.8	7.73	30	
Benzo(a)anthracene	506.9	65	654	26.64	73.4	50-110	578.7	13.2	30	
Benzo(a)pyrene	516.7	65	654	53.28	70.8	50-110	585.2	12.4	30	
Benzo(b)fluoranthene	555.9	65	654	79.92	72.8	45-115	634.6	13.2	30	
Benzo(k)fluoranthene	500.3	65	654	26.64	72.4	45-115	575.4	14	30	
Chrysene	526.5	65	654	49.95	72.9	55-110	614.8	15.5	30	
Dibenzo(a,h)anthracene	457.8	65	654	0	70	40-125	509.6	10.7	30	
Fluoranthene	605	65	654	86.58	79.3	55-115	657.6	8.34	30	
Fluorene	425.1	65	654	0	65	50-110	493.2	14.8	30	
Indeno(1,2,3-cd)pyrene	523.2	65	654	53.28	71.8	40-120	598.4	13.4	30	
Naphthalene	258.3	65	654	0	39.5	40-105	249.9	3.33	30	S
Pyrene	523.2	65	654	0	80	45-125	558.9	6.6	30	
Surr: 2-Fluorobiphenyl	1017	0	1635	0	62.2	12-100	1101	7.97	40	
Surr: 4-Terphenyl-d14	1118	0	1635	0	68.4	25-137	1230	9.48	40	
Surr: Nitrobenzene-d5	719.4	0	1635	0	44	37-107	621.4	14.6	40	

The following samples were analyzed in this batch: 1509005-05C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Revision: 1

Client: Encana Oil and Gas (USA) Inc.
Work Order: 1509005
Project: L27 PIT

QC BATCH REPORT

Batch ID: **75443** Instrument ID **VMS6** Method: **SW8260GRO**

MBLK		Sample ID: MBLK-75443-75443				Units: µg/Kg		Analysis Date: 9/1/2015 01:28 PM		
Client ID:		Run ID: VMS6_150901B		SeqNo: 3441935		Prep Date: 9/1/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	U	5,000								
<i>Surr: Toluene-d8</i>	<i>916</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>91.6</i>	<i>70-130</i>	<i>0</i>			

LCS		Sample ID: LCS-75443-75443				Units: µg/Kg		Analysis Date: 9/1/2015 12:34 PM		
Client ID:		Run ID: VMS6_150901B		SeqNo: 3441934		Prep Date: 9/1/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	24490	5,000	25000	0	98	70-130	0			
<i>Surr: Toluene-d8</i>	<i>1054</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>105</i>	<i>70-130</i>	<i>0</i>			

The following samples were analyzed in this batch:

1509005-01A	1509005-02A	1509005-03A
1509005-04A	1509005-05A	1509005-06A

Client: Encana Oil and Gas (USA) Inc.

QC BATCH REPORT

Work Order: 1509005

Project: L27 PIT

Batch ID: 75495

Instrument ID VMS9

Method: SW8260B

MBLK		Sample ID: MBLK-75495-75495				Units: µg/Kg		Analysis Date: 9/1/2015 04:42 PM		
Client ID:		Run ID: VMS9_150901A			SeqNo: 3441867		Prep Date: 9/1/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	30								
Ethylbenzene	U	30								
m,p-Xylene	U	60								
o-Xylene	U	30								
Toluene	U	30								
Xylenes, Total	U	90								
Surr: 1,2-Dichloroethane-d4	987	0	1000	0	98.7	70-130	0			
Surr: 4-Bromofluorobenzene	950	0	1000	0	95	70-130	0			
Surr: Dibromofluoromethane	961	0	1000	0	96.1	70-130	0			
Surr: Toluene-d8	988	0	1000	0	98.8	70-130	0			

LCS		Sample ID: LCS-75495-75495				Units: µg/Kg		Analysis Date: 9/1/2015 02:59 PM		
Client ID:		Run ID: VMS9_150901A			SeqNo: 3441865		Prep Date: 9/1/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1024	30	1000	0	102	75-125	0			
Ethylbenzene	990.5	30	1000	0	99	75-125	0			
m,p-Xylene	1996	60	2000	0	99.8	80-125	0			
o-Xylene	962.5	30	1000	0	96.2	75-125	0			
Toluene	990	30	1000	0	99	70-125	0			
Xylenes, Total	2958	90	3000	0	98.6	75-125	0			
Surr: 1,2-Dichloroethane-d4	977	0	1000	0	97.7	70-130	0			
Surr: 4-Bromofluorobenzene	1046	0	1000	0	105	70-130	0			
Surr: Dibromofluoromethane	964	0	1000	0	96.4	70-130	0			
Surr: Toluene-d8	1006	0	1000	0	101	70-130	0			

MS		Sample ID: 1509031-01A MS				Units: µg/Kg		Analysis Date: 9/2/2015 06:32 PM		
Client ID:		Run ID: VMS5_150902A			SeqNo: 3443819		Prep Date: 9/1/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1171	30	1000	0	117	75-125	0			
Ethylbenzene	1112	30	1000	17.5	109	75-125	0			
m,p-Xylene	2939	60	2000	566	119	80-125	0			
o-Xylene	1158	30	1000	70.5	109	75-125	0			
Toluene	1254	30	1000	122	113	70-125	0			
Xylenes, Total	4096	90	3000	640	115	75-125	0			
Surr: 1,2-Dichloroethane-d4	976.5	0	1000	0	97.6	70-130	0			
Surr: 4-Bromofluorobenzene	1042	0	1000	0	104	70-130	0			
Surr: Dibromofluoromethane	1004	0	1000	0	100	70-130	0			
Surr: Toluene-d8	939	0	1000	0	93.9	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Revision: 1

Client: Encana Oil and Gas (USA) Inc.
Work Order: 1509005
Project: L27 PIT

QC BATCH REPORT

Batch ID: **75495** Instrument ID **VMS9** Method: **SW8260B**

MSD		Sample ID: 1509031-01A MSD				Units: µg/Kg		Analysis Date: 9/2/2015 06:58 PM		
Client ID:		Run ID: VMS5_150902A			SeqNo: 3443820		Prep Date: 9/1/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1151	30	1000	0	115	75-125	1171	1.72	30	
Ethylbenzene	1099	30	1000	17.5	108	75-125	1112	1.13	30	
m,p-Xylene	2924	60	2000	566	118	80-125	2939	0.529	30	
o-Xylene	1160	30	1000	70.5	109	75-125	1158	0.216	30	
Toluene	1228	30	1000	122	111	70-125	1254	2.1	30	
Xylenes, Total	4084	90	3000	640	115	75-125	4096	0.318	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	953	0	1000	0	95.3	70-130	976.5	2.44	30	
<i>Surr: 4-Bromofluorobenzene</i>	1041	0	1000	0	104	70-130	1042	0.048	30	
<i>Surr: Dibromofluoromethane</i>	1017	0	1000	0	102	70-130	1004	1.24	30	
<i>Surr: Toluene-d8</i>	940	0	1000	0	94	70-130	939	0.106	30	

The following samples were analyzed in this batch:

1509005-01A	1509005-02A	1509005-03A
1509005-04A	1509005-05A	1509005-06A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Revision: 1

Client: Encana Oil and Gas (USA) Inc.
Work Order: 1509005
Project: L27 PIT

QC BATCH REPORT

Batch ID: **75533** Instrument ID **WETCHEM** Method: **USDA H60 Metho**

DUP	Sample ID: 1509031-04B DUP		Units: mmhos/cm @25°		Analysis Date: 9/3/2015 01:00 PM					
Client ID:	Run ID: WETCHEM_150903B		SeqNo: 3444281		Prep Date: 9/3/2015		DF: 10			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	0.771	0.050	0	0	0		0.775	0.517	50	

The following samples were analyzed in this batch:

Client: Encana Oil and Gas (USA) Inc.
 Work Order: 1509005
 Project: L27 PIT

QC BATCH REPORT

Batch ID: **75684** Instrument ID **WETCHEM** Method: **SW7196A**

MBLK	Sample ID: MBLK-75684-75684		Units: mg/Kg		Analysis Date: 9/4/2015 01:00 PM					
Client ID:	Run ID: WETCHEM_150904I		SeqNo: 3446393		Prep Date: 9/3/2015		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent U 1.0

LCS	Sample ID: LCS-75684-75684		Units: mg/Kg		Analysis Date: 9/4/2015 01:00 PM					
Client ID:	Run ID: WETCHEM_150904I		SeqNo: 3446392		Prep Date: 9/3/2015		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.94 1.0 5 0 98.8 80-120 0

MS	Sample ID: 1509052-01A MS		Units: mg/Kg		Analysis Date: 9/4/2015 01:00 PM					
Client ID:	Run ID: WETCHEM_150904I		SeqNo: 3446382		Prep Date: 9/3/2015		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 1.602 0.93 4.63 0.7925 17.5 75-125 0 S

MS	Sample ID: 1509052-01A MSI		Units: mg/Kg		Analysis Date: 9/4/2015 01:00 PM					
Client ID:	Run ID: WETCHEM_150904I		SeqNo: 3446384		Prep Date: 9/3/2015		DF: 100			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 1839 95 1808 0.7925 102 75-125 0

MSD	Sample ID: 1509052-01A MSD		Units: mg/Kg		Analysis Date: 9/4/2015 01:00 PM					
Client ID:	Run ID: WETCHEM_150904I		SeqNo: 3446383		Prep Date: 9/3/2015		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 1.519 0.94 4.717 0.7925 15.4 75-125 1.602 5.32 20 S

The following samples were analyzed in this batch:

Client: Encana Oil and Gas (USA) Inc.
Work Order: 1509005
Project: L27 PIT

QC BATCH REPORT

Batch ID: **75782** Instrument ID **WETCHEM** Method: **SW9045D**

LCS		Sample ID: LCS-75782-75782				Units: s.u.		Analysis Date: 9/8/2015 04:46 PM			
Client ID:		Run ID: WETCHEM_150908K		SeqNo: 3448826		Prep Date: 9/8/2015		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
pH	3.93	0	4	0	98.2	90-110	0				

DUP		Sample ID: 1509005-05C DUP				Units: s.u.		Analysis Date: 9/8/2015 04:46 PM			
Client ID: 20150831-L27 (W-TOE)		Run ID: WETCHEM_150908K		SeqNo: 3448828		Prep Date: 9/8/2015		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
pH	8.79	0	0	0	0	0-0	8.76	0.342	20		

The following samples were analyzed in this batch:

Client: Encana Oil and Gas (USA) Inc.
Work Order: 1509005
Project: L27 PIT

QC BATCH REPORT

Batch ID: **R170791** Instrument ID **MOIST** Method: **E160.3M**

MBLK		Sample ID: WBLKS-R170791				Units: % of sample			Analysis Date: 9/1/2015 10:55 AM		
Client ID:		Run ID: MOIST_150901A				SeqNo: 3441263		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Moisture	0.03	0.050								J	

LCS		Sample ID: LCS-R170791				Units: % of sample			Analysis Date: 9/1/2015 10:55 AM		
Client ID:		Run ID: MOIST_150901A				SeqNo: 3441262		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Moisture	100	0.050	100		0	100	99.5-100.5	0			

DUP		Sample ID: 1509005-01B DUP				Units: % of sample			Analysis Date: 9/1/2015 10:55 AM		
Client ID: 20150831-L27 (S-Wall)		Run ID: MOIST_150901A				SeqNo: 3441255		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Moisture	13.98	0.050	0		0	0		13.34	4.69	20	

The following samples were analyzed in this batch:

1509005-01B	1509005-02B	1509005-03B
1509005-04B	1509005-05B	1509005-06B



ALS Laboratory Group

CHAIN OF CUSTODY

Failure to complete all section of this form may delay analysis.

COC number (for client tracking)

1509005

Page 1 of 1

CLIENT CONTACT AND REPORTING INFORMATION		INVOICE ADDRESS (if other than reporting address)		ANALYSIS REQUIRED (suite codes must be listed to attract suite prices)																	
Company Name: Encana Oil & Gas (USA)		Company Name: SAME		BTEX	TPH GRO/DRO	Table 910-1 PAHs 8270 SIM	EC	PH	SAR	Table 910-1 Metals: AS, Ba, Cd, CR, III, Cr VI, Cu, Pb, Hg, Ni, Se, Ag, Zn	Total Arsenic 6020										
Project Manager: Brett Middleton		Contact Name: SAME																			
Address: 143 Diamond Avenue		Address: SAME																			
Parachute Co, 81635																					
Phone: 970.285.2853		PROJECT INFORMATION																			
Email 1: ENCANACO-LTENV		Project ID: L27 PH																			
Email 2:		Site: L27 PH																			
SERVICE REQUEST (Express services subject to availability)		PO No: Middleton																			
<input checked="" type="checkbox"/> Regular (default)		ALS Quote No: NA																			

Express (Please specify date required SAME DAY) (express fee will apply) ON TPH/BTEX ONLY

ALS ID #	SAMPLE IDENTIFICATION (this description will appear on report)	MATRIX (a)	SAMPLING AND CONTAINER INFO			REMARKS	CROSS THE REQUESTED ANALYSIS														
			Date	Time	Tot Bottle																
1	20150831-L27 (S-WALL)	S	8-31-15	1156	2	Grab	X	X													
2	20150831-L27 (N-WALL)	S	8-31-15	1212	2	Grab	X	X													
3	20150831-L27 (N-BOT)	S	8-31-15	1226	2	Grab	X	X													
4	20150831-L27 (E-WALL)	S	8-31-15	1237	2	Grab	X	X													
5	20150831-L27 (W-TOE)	S	8-31-15	1251	3	Grab	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
6	20150831-L27 (S-BOT)	S	8-31-15	1302	2	Grab	X	X													

CLIENT SIGNATURES		For lab use only			
Client's Signature:	Cooler Security Seal	Sample Temp	No of Cooler Received	Received By (lab)	Date and Time
	<input type="checkbox"/> sealed	<input type="checkbox"/> chilled deg °C	carton / cooler box		9-1-15 10:00
Client's Date and Time of Completion: 8-31-15 1450	<input type="checkbox"/> broken	<input type="checkbox"/> ambient	Courier Name: AU=1450	Committed by	Date and Time
	<input type="checkbox"/> not available				

Note: (a) DW (Drinking water), SW (Surface water), GW (Ground water), WW (Waste water), S (Soil), SL (Sludge), SE (Sediment), OS (Other solid material)

4.6

1120

ORIGIN ID:RILA (816) 298-1033
NICK MARTINEZ
ALS ENVIRONMENTAL PARACHUTE
PARACHUTE SERVICE CENTER
127 EAST 1ST ST
PARACHUTE, CO 81635
UNITED STATES US

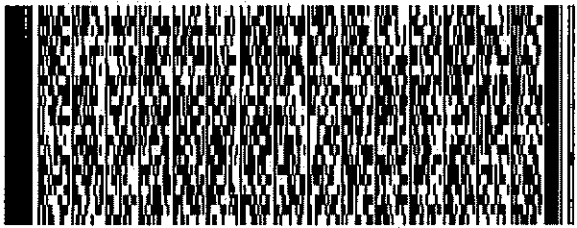
SHIP DATE: 31AUG15
ACTWGT: 35.00 LB
CAD: 2264840/NET3870
DIMS: 18x18x14 IN
BILL SENDER

TO **SAMPLE RECEIVING**
ALS ENVIRONMENTAL HOLLAND LAB
3352 128TH AVE

539.02/08669/3100

HOLLAND MI 49424

(816) 399-8070 REF: 083115-1
INV DEPT:
PO PARACHUTE



FedEx
Express



402918628124

REL#
3785346

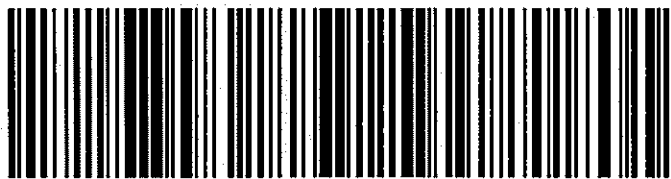
TUE - 01 SEP 10:30A
PRIORITY OVERNIGHT

2 of 2
MPS# 7744 0807 2539
0283
Mstr# 7744 0807 2528

0201

XX HLMA

MI-US **49424**
GRR



After printing this label:

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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Sample Receipt Checklist

Client Name: **ENCANA2**

Date/Time Received: **01-Sep-15 10:00**

Work Order: **1509005**

Received by: **KRW**

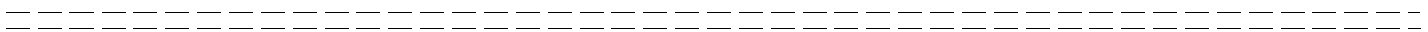
Checklist completed by Keith Wierenga 01-Sep-15
eSignature Date

Reviewed by: Lee Arnold 01-Sep-15
eSignature Date

Matrices: **Soil**
 Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<input type="text" value="4.6/4.6 C"/>		<input type="text" value="SR2"/>
Cooler(s)/Kit(s):	<input type="text"/>		
Date/Time sample(s) sent to storage:	<input type="text" value="9/1/2015 9:51:23 AM"/>		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted by:	<input type="text"/>		

Login Notes:



Client Contacted: _____ Date Contacted: _____ Person Contacted: _____

Contacted By: _____ Regarding: _____

Comments:

CorrectiveAction: