



12065 Lebanon Rd.
Mt. Juliet, TN 37122
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Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

Chris Hines
EnCana Oil & Gas - Parachute, CO
143 Diamond Avenue
Parachute, CO 81635

Report Summary

Tuesday May 20, 2014

Report Number: L698119

Samples Received: 05/09/14

Client Project:

Description: FED 36-3 Pit

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:


Jared Willis, ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,
FL - E87487, GA - 923, IN - C-IN-01, KY - 90010, KYUST - 0016,
NC - ENV375/DW21704/BIO041, ND - R-140, NJ - TN002, NJ NELAP - TN002,
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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REPORT OF ANALYSIS

Chris Hines
EnCana Oil & Gas - Parachute, CO
143 Diamond Avenue
Parachute, CO 81635

May 20, 2014

Date Received : May 09, 2014
Description : FED 36-3 Pit
Sample ID : 20140514-FED36-3 NW PIT 7FT
Collected By : Matt Kasten
Collection Date : 05/08/14 14:20

ESC Sample # : L698119-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	05/14/14	1
Chromium, Trivalent	11.	2.0	mg/kg	Calc.	05/15/14	1
ORP	80.		mV	2580 B-2011	05/14/14	1
pH	8.9		su	9045D	05/12/14	1
Sodium Adsorption Ratio	48.			Calc.	05/15/14	1
Specific Conductance	4600		umhos/cm	9050AMod	05/15/14	1
Mercury	0.034	0.020	mg/kg	7471	05/14/14	1
Arsenic	3.6	2.0	mg/kg	6010B	05/14/14	1
Barium	310	0.50	mg/kg	6010B	05/14/14	1
Cadmium	BDL	0.50	mg/kg	6010B	05/14/14	1
Chromium	11.	1.0	mg/kg	6010B	05/14/14	1
Copper	15.	2.0	mg/kg	6010B	05/14/14	1
Lead	19.	0.50	mg/kg	6010B	05/14/14	1
Nickel	8.8	2.0	mg/kg	6010B	05/14/14	1
Selenium	BDL	2.0	mg/kg	6010B	05/14/14	1
Silver	BDL	1.0	mg/kg	6010B	05/14/14	1
Zinc	46.	3.0	mg/kg	6010B	05/14/14	1
Benzene	BDL	0.0025	mg/kg	8021	05/14/14	5
Toluene	BDL	0.025	mg/kg	8021	05/14/14	5
Ethylbenzene	BDL	0.0025	mg/kg	8021	05/14/14	5
Total Xylene	0.012	0.0075	mg/kg	8021	05/14/14	5
TPH (GC/FID) Low Fraction	2.2	0.50	mg/kg	8015	05/14/14	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	96.7		% Rec.	8021/8015	05/14/14	5
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021/8015	05/14/14	5
TPH (GC/FID) High Fraction	1200	80.	mg/kg	8015D/DRO	05/16/14	20
Surrogate recovery(%)						
o-Terphenyl	29.0		% Rec.	8015D/DRO	05/16/14	20
Polynuclear Aromatic Hydrocarbons						
Anthracene	0.020	0.0060	mg/kg	8270C-SIM	05/14/14	1
Acenaphthene	0.058	0.0060	mg/kg	8270C-SIM	05/14/14	1
Acenaphthylene	0.029	0.0060	mg/kg	8270C-SIM	05/14/14	1
Benzo(a)anthracene	0.017	0.0060	mg/kg	8270C-SIM	05/14/14	1
Benzo(a)pyrene	0.011	0.0060	mg/kg	8270C-SIM	05/14/14	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L698119-01 (PH) - 8.9@21.5c



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Collected By : Matt Kasten
Collection Date : 05/08/14 14:20

ESC Sample # : L698119-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(b)fluoranthene	0.011	0.0060	mg/kg	8270C-SIM	05/14/14	1
Benzo(g,h,i)perylene	0.010	0.0060	mg/kg	8270C-SIM	05/14/14	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	05/14/14	1
Chrysene	0.046	0.0060	mg/kg	8270C-SIM	05/14/14	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	05/14/14	1
Fluoranthene	0.0073	0.0060	mg/kg	8270C-SIM	05/14/14	1
Fluorene	0.062	0.0060	mg/kg	8270C-SIM	05/14/14	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	05/14/14	1
Naphthalene	1.8	0.020	mg/kg	8270C-SIM	05/14/14	1
Phenanthrene	0.63	0.0060	mg/kg	8270C-SIM	05/14/14	1
Pyrene	0.054	0.0060	mg/kg	8270C-SIM	05/14/14	1
1-Methylnaphthalene	2.4	0.020	mg/kg	8270C-SIM	05/14/14	1
2-Methylnaphthalene	4.0	0.020	mg/kg	8270C-SIM	05/14/14	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	05/14/14	1
Surrogate Recovery						
p-Terphenyl-d14	89.7		% Rec.	8270C-SIM	05/14/14	1
Nitrobenzene-d5	63.0		% Rec.	8270C-SIM	05/14/14	1
2-Fluorobiphenyl	52.7		% Rec.	8270C-SIM	05/14/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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L698119-01 (PH) - 8.9@21.5c



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143 Diamond Avenue
Parachute, CO 81635

May 20, 2014

Date Received : May 09, 2014
Description : FED 36-3 Pit
Sample ID : 20140514-FED36-3 MID PIT
Collected By : Matt Kasten
Collection Date : 05/08/14 14:30

ESC Sample # : L698119-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	4.0	mg/kg	3060A/7196A	05/14/14	2
Chromium, Trivalent	10.	4.0	mg/kg	Calc.	05/15/14	1
ORP	190		mV	2580 B-2011	05/14/14	1
pH	8.7		su	9045D	05/12/14	1
Sodium Adsorption Ratio	42.			Calc.	05/15/14	1
Specific Conductance	3400		umhos/cm	9050AMod	05/15/14	1
Mercury	BDL	0.020	mg/kg	7471	05/14/14	1
Arsenic	3.7	2.0	mg/kg	6010B	05/14/14	1
Barium	250	0.50	mg/kg	6010B	05/14/14	1
Cadmium	BDL	0.50	mg/kg	6010B	05/14/14	1
Chromium	10.	1.0	mg/kg	6010B	05/14/14	1
Copper	11.	2.0	mg/kg	6010B	05/14/14	1
Lead	9.0	0.50	mg/kg	6010B	05/14/14	1
Nickel	8.0	2.0	mg/kg	6010B	05/14/14	1
Selenium	BDL	2.0	mg/kg	6010B	05/14/14	1
Silver	BDL	1.0	mg/kg	6010B	05/14/14	1
Zinc	45.	3.0	mg/kg	6010B	05/14/14	1
Benzene	BDL	0.0025	mg/kg	8021	05/14/14	5
Toluene	BDL	0.025	mg/kg	8021	05/14/14	5
Ethylbenzene	BDL	0.0025	mg/kg	8021	05/14/14	5
Total Xylene	BDL	0.0075	mg/kg	8021	05/14/14	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015	05/14/14	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	97.6		% Rec.	8021/8015	05/14/14	5
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021/8015	05/14/14	5
TPH (GC/FID) High Fraction	19.	4.0	mg/kg	8015D/DRO	05/16/14	1
Surrogate recovery(%)						
o-Terphenyl	71.8		% Rec.	8015D/DRO	05/16/14	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	05/14/14	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	05/14/14	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	05/14/14	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	05/14/14	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	05/14/14	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L698119-02 (PH) - 8.7@21.4c
L698119-02 (CR6) - diluted due to sample color



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May 20, 2014

Date Received : May 09, 2014
Description : FED 36-3 Pit
Sample ID : 20140514-FED36-3 MID PIT
Collected By : Matt Kasten
Collection Date : 05/08/14 14:30

ESC Sample # : L698119-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	05/14/14	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	05/14/14	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	05/14/14	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	05/14/14	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	05/14/14	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	05/14/14	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	05/14/14	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	05/14/14	1
Naphthalene	BDL	0.020	mg/kg	8270C-SIM	05/14/14	1
Phenanthrene	BDL	0.0060	mg/kg	8270C-SIM	05/14/14	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	05/14/14	1
1-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	05/14/14	1
2-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	05/14/14	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	05/14/14	1
Surrogate Recovery						
p-Terphenyl-d14	88.6		% Rec.	8270C-SIM	05/14/14	1
Nitrobenzene-d5	62.9		% Rec.	8270C-SIM	05/14/14	1
2-Fluorobiphenyl	68.7		% Rec.	8270C-SIM	05/14/14	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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L698119-02 (PH) - 8.7@21.4c

L698119-02 (CR6) - diluted due to sample color



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143 Diamond Avenue
Parachute, CO 81635

May 20, 2014

Date Received : May 09, 2014
Description : FED 36-3 Pit
Sample ID : 20140514-FED36-3 MID PIT 9FT
Collected By : Matt Kasten
Collection Date : 05/08/14 14:35

ESC Sample # : L698119-03

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	4.0	mg/kg	3060A/7196A	05/14/14	2
Chromium, Trivalent	63.	4.0	mg/kg	Calc.	05/15/14	1
ORP	-61.		mV	2580 B-2011	05/14/14	1
pH	8.8		su	9045D	05/12/14	1
Sodium Adsorption Ratio	48.			Calc.	05/15/14	1
Specific Conductance	5300		umhos/cm	9050AMod	05/15/14	1
Mercury	BDL	0.020	mg/kg	7471	05/14/14	1
Arsenic	2.3	2.0	mg/kg	6010B	05/14/14	1
Barium	240	0.50	mg/kg	6010B	05/14/14	1
Cadmium	BDL	0.50	mg/kg	6010B	05/14/14	1
Chromium	63.	1.0	mg/kg	6010B	05/14/14	1
Copper	6.2	2.0	mg/kg	6010B	05/14/14	1
Lead	10.	0.50	mg/kg	6010B	05/14/14	1
Nickel	4.6	2.0	mg/kg	6010B	05/14/14	1
Selenium	BDL	2.0	mg/kg	6010B	05/14/14	1
Silver	BDL	1.0	mg/kg	6010B	05/14/14	1
Zinc	37.	3.0	mg/kg	6010B	05/14/14	1
Benzene	0.44	0.25	mg/kg	8021	05/14/14	500
Toluene	BDL	2.5	mg/kg	8021	05/14/14	500
Ethylbenzene	1.0	0.25	mg/kg	8021	05/14/14	500
Total Xylene	5.1	0.75	mg/kg	8021	05/14/14	500
TPH (GC/FID) Low Fraction	290	50.	mg/kg	8015	05/14/14	500
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	95.7		% Rec.	8021/8015	05/14/14	500
a,a,a-Trifluorotoluene(PID)	104.		% Rec.	8021/8015	05/14/14	500
TPH (GC/FID) High Fraction	5100	80.	mg/kg	8015D/DRO	05/16/14	20
Surrogate recovery(%)						
o-Terphenyl	0.00		% Rec.	8015D/DRO	05/16/14	20
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	05/16/14	1
Acenaphthene	0.18	0.0060	mg/kg	8270C-SIM	05/16/14	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	05/16/14	1
Benzo(a)anthracene	0.078	0.0060	mg/kg	8270C-SIM	05/16/14	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	05/16/14	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L698119-03 (PH) - 8.8@21.4c
L698119-03 (CR6) - diluted due to sample color



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May 20, 2014

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Description : FED 36-3 Pit
Sample ID : 20140514-FED36-3 MID PIT 9FT
Collected By : Matt Kasten
Collection Date : 05/08/14 14:35

ESC Sample # : L698119-03

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	05/16/14	1
Benzo(g,h,i)perylene	0.0068	0.0060	mg/kg	8270C-SIM	05/16/14	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	05/16/14	1
Chrysene	0.043	0.0060	mg/kg	8270C-SIM	05/16/14	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	05/16/14	1
Fluoranthene	0.066	0.0060	mg/kg	8270C-SIM	05/16/14	1
Fluorene	1.1	0.0060	mg/kg	8270C-SIM	05/16/14	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	05/16/14	1
Naphthalene	1.6	0.40	mg/kg	8270C-SIM	05/20/14	20
Phenanthrene	1.9	0.0060	mg/kg	8270C-SIM	05/16/14	1
Pyrene	0.071	0.0060	mg/kg	8270C-SIM	05/16/14	1
1-Methylnaphthalene	2.8	0.40	mg/kg	8270C-SIM	05/20/14	20
2-Methylnaphthalene	4.9	0.40	mg/kg	8270C-SIM	05/20/14	20
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	05/16/14	1
Surrogate Recovery						
p-Terphenyl-d14	72.0		% Rec.	8270C-SIM	05/16/14	1
Nitrobenzene-d5	195.		% Rec.	8270C-SIM	05/20/14	20
2-Fluorobiphenyl	80.1		% Rec.	8270C-SIM	05/16/14	1

BDL - Below Detection Limit

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L698119-03 (PH) - 8.8@21.4c

L698119-03 (CR6) - diluted due to sample color

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L698119-01	WG720690	SAMP	o-Terphenyl	R2923106	J7
L698119-02	WG720445	SAMP	Chromium,Hexavalent	R2921026	O
L698119-03	WG720690	SAMP	o-Terphenyl	R2923106	J7
	WG721215	SAMP	Nitrobenzene-d5	R2924526	J7
	WG720445	SAMP	Chromium,Hexavalent	R2921026	O

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
0	(ESC) Sample diluted due to matrix interferences that impaired the ability to make an accurate analytical determination. The detection limit is elevated in order to reflect the necessary dilution.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

- Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
05/20/14 at 13:21:00

TSR Signing Reports: 358
R5 - Desired TAT

Log all PAHs as PAHSIM. Log all BTEX waters by 8260. Log ALL samples for EDD (COGCC EDD).

Sample: L698119-01 Account: ENCANACO Received: 05/09/14 09:00 Due Date: 05/16/14 00:00 RPT Date: 05/20/14 13:20

Sample: L698119-02 Account: ENCANACO Received: 05/09/14 09:00 Due Date: 05/16/14 00:00 RPT Date: 05/20/14 13:20

Sample: L698119-03 Account: ENCANACO Received: 05/09/14 09:00 Due Date: 05/16/14 00:00 RPT Date: 05/20/14 13:20