



12065 Lebanon Rd.
Mt. Juliet, TN 37122
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Tax I.D. 62-0814289

Est. 1970

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

Report Summary

Wednesday May 06, 2015

Report Number: L761624

Samples Received: 04/25/15

Client Project: N21-3-101

Description: N21-3-10 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

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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,
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REPORT OF ANALYSIS

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

May 06, 2015

Date Received : April 25, 2015
Description : N21-3-10 Pit
Sample ID : 20150424-N21-3-101 PIT BOT
Collected By : Matt Kasten
Collection Date : 04/24/15 09:15

ESC Sample # : L761624-01
Site ID : N21-3-101
Project # : N21-3-101

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	04/30/15	1
Chromium, Trivalent	6.6	2.0	mg/kg	Calc.	05/01/15	1
ORP	140		mV	2580 B-2011	04/30/15	1
pH	8.2	0.10	su	9045D	04/29/15	1
Sodium Adsorption Ratio	58.			Calc.	05/06/15	1
Specific Conductance	4300		umhos/cm	9050AMod	04/30/15	1
Mercury	0.025	0.020	mg/kg	7471A	04/28/15	1
Arsenic	3.0	2.0	mg/kg	6010B	05/01/15	1
Barium	71.	0.50	mg/kg	6010B	05/01/15	1
Cadmium	BDL	0.50	mg/kg	6010B	05/01/15	1
Chromium	6.6	1.0	mg/kg	6010B	05/01/15	1
Copper	22.	2.0	mg/kg	6010B	05/01/15	1
Lead	16.	0.50	mg/kg	6010B	05/01/15	1
Nickel	14.	2.0	mg/kg	6010B	05/01/15	1
Selenium	BDL	2.0	mg/kg	6010B	05/01/15	1
Silver	BDL	1.0	mg/kg	6010B	05/01/15	1
Zinc	68.	5.0	mg/kg	6010B	05/01/15	1
Benzene	BDL	0.0025	mg/kg	8021	05/02/15	5
Toluene	BDL	0.025	mg/kg	8021	05/02/15	5
Ethylbenzene	BDL	0.0025	mg/kg	8021	05/02/15	5
Total Xylene	BDL	0.0075	mg/kg	8021	05/02/15	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015	05/02/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	97.0		% Rec.	8015	05/02/15	1
a,a,a-Trifluorotoluene(PID)	101.		% Rec.	8021	05/02/15	1
TPH (GC/FID) High Fraction	140	4.0	mg/kg	8015D/DRO	05/01/15	1
Surrogate recovery(%)						
o-Terphenyl	45.6		% Rec.	8015D/DRO	05/01/15	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L761624-01 (PH) - 8.2 AT 20.6C



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May 06, 2015

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Description : N21-3-10 Pit
Sample ID : 20150424-N21-3-101 PIT BOT
Collected By : Matt Kasten
Collection Date : 04/24/15 09:15

ESC Sample # : L761624-01

Site ID : N21-3-101

Project # : N21-3-101

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
Benzo(g,h,i)perylene	0.0071	0.0060	mg/kg	8270C-SIM	05/01/15	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
Naphthalene	BDL	0.020	mg/kg	8270C-SIM	05/01/15	1
Phenanthrene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
1-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	05/01/15	1
2-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	05/01/15	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	05/01/15	1
Surrogate Recovery						
p-Terphenyl-d14	61.3		% Rec.	8270C-SIM	05/01/15	1
Nitrobenzene-d5	82.2		% Rec.	8270C-SIM	05/01/15	1
2-Fluorobiphenyl	76.6		% Rec.	8270C-SIM	05/01/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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L761624-01 (PH) - 8.2 AT 20.6C



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143 Diamond Avenue
Parachute, CO 81635

May 06, 2015

Date Received : April 25, 2015
Description : N21-3-10 Pit
Sample ID : 20150424-N21-3-101 PIT N WALL
Collected By : Matt Kasten
Collection Date : 04/24/15 09:20

ESC Sample # : L761624-02

Site ID : N21-3-101

Project # : N21-3-101

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	0.0025	mg/kg	8021	05/02/15	5
Toluene	BDL	0.025	mg/kg	8021	05/02/15	5
Ethylbenzene	BDL	0.0025	mg/kg	8021	05/02/15	5
Total Xylene	BDL	0.0075	mg/kg	8021	05/02/15	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015	05/02/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	96.6		% Rec.	8015	05/02/15	1
a,a,a-Trifluorotoluene(PID)	101.		% Rec.	8021	05/02/15	1
TPH (GC/FID) High Fraction	30.	4.0	mg/kg	8015D/DRO	04/29/15	1
Surrogate recovery(%)						
o-Terphenyl	57.2		% Rec.	8015D/DRO	04/29/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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143 Diamond Avenue
Parachute, CO 81635

May 06, 2015

Date Received : April 25, 2015
Description : N21-3-10 Pit
Sample ID : 20150424-N21-3-101 PIT E WELL
Collected By : Matt Kasten
Collection Date : 04/24/15 09:25

ESC Sample # : L761624-03

Site ID : N21-3-101

Project # : N21-3-101

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	0.0025	mg/kg	8021	04/30/15	5
Toluene	BDL	0.025	mg/kg	8021	04/30/15	5
Ethylbenzene	BDL	0.0025	mg/kg	8021	04/30/15	5
Total Xylene	BDL	0.0075	mg/kg	8021	04/30/15	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015	04/30/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	101.		% Rec.	8015	04/30/15	1
a,a,a-Trifluorotoluene(PID)	101.		% Rec.	8021	04/30/15	1
TPH (GC/FID) High Fraction	8.2	4.0	mg/kg	8015D/DRO	04/30/15	1
Surrogate recovery(%)						
o-Terphenyl	67.1		% Rec.	8015D/DRO	04/30/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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143 Diamond Avenue
Parachute, CO 81635

May 06, 2015

Date Received : April 25, 2015
Description : N21-3-10 Pit
Sample ID : 20150424-N21-3-101 PIT S WELL
Collected By : Matt Kasten
Collection Date : 04/24/15 09:30

ESC Sample # : L761624-04

Site ID : N21-3-101

Project # : N21-3-101

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	0.0025	mg/kg	8021	04/30/15	5
Toluene	BDL	0.025	mg/kg	8021	04/30/15	5
Ethylbenzene	BDL	0.0025	mg/kg	8021	04/30/15	5
Total Xylene	BDL	0.0075	mg/kg	8021	04/30/15	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015	04/30/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	101.		% Rec.	8015	04/30/15	1
a,a,a-Trifluorotoluene(PID)	101.		% Rec.	8021	04/30/15	1
TPH (GC/FID) High Fraction	BDL	4.0	mg/kg	8015D/DRO	04/30/15	1
Surrogate recovery(%)						
o-Terphenyl	52.2		% Rec.	8015D/DRO	04/30/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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143 Diamond Avenue
Parachute, CO 81635

May 06, 2015

Date Received : April 25, 2015
Description : N21-3-10 Pit
Sample ID : 20150424-N21-3-101 PIT W WALL
Collected By : Matt Kasten
Collection Date : 04/24/15 09:35

ESC Sample # : L761624-05

Site ID : N21-3-101

Project # : N21-3-101

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	0.0025	mg/kg	8021	04/30/15	5
Toluene	BDL	0.025	mg/kg	8021	04/30/15	5
Ethylbenzene	BDL	0.0025	mg/kg	8021	04/30/15	5
Total Xylene	BDL	0.0075	mg/kg	8021	04/30/15	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015	04/30/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	101.		% Rec.	8015	04/30/15	1
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021	04/30/15	1
TPH (GC/FID) High Fraction	55.	4.0	mg/kg	8015D/DRO	04/30/15	1
Surrogate recovery(%)						
o-Terphenyl	58.0		% Rec.	8015D/DRO	04/30/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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May 06, 2015

Date Received : April 25, 2015
Description : N21-3-10 Pit
Sample ID : 20150424-N21-3-101 PIT STOCKPILE
Collected By : Matt Kasten
Collection Date : 04/24/15 09:45

ESC Sample # : L761624-06
Site ID : N21-3-101
Project # : N21-3-101

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	04/30/15	1
Chromium, Trivalent	4.9	2.0	mg/kg	Calc.	05/01/15	1
ORP	150		mV	2580 B-2011	04/30/15	1
pH	8.1	0.10	su	9045D	04/30/15	1
Sodium Adsorption Ratio	70.			Calc.	05/06/15	1
Specific Conductance	5100		umhos/cm	9050AMod	04/30/15	1
Mercury	0.025	0.020	mg/kg	7471A	04/28/15	1
Arsenic	2.9	2.0	mg/kg	6010B	05/01/15	1
Barium	56.	0.50	mg/kg	6010B	05/01/15	1
Cadmium	BDL	0.50	mg/kg	6010B	05/01/15	1
Chromium	4.9	1.0	mg/kg	6010B	05/01/15	1
Copper	23.	2.0	mg/kg	6010B	05/01/15	1
Lead	15.	0.50	mg/kg	6010B	05/01/15	1
Nickel	12.	2.0	mg/kg	6010B	05/01/15	1
Selenium	BDL	2.0	mg/kg	6010B	05/01/15	1
Silver	BDL	1.0	mg/kg	6010B	05/01/15	1
Zinc	62.	5.0	mg/kg	6010B	05/01/15	1
Benzene	BDL	0.0025	mg/kg	8021	04/30/15	5
Toluene	BDL	0.025	mg/kg	8021	04/30/15	5
Ethylbenzene	BDL	0.0025	mg/kg	8021	04/30/15	5
Total Xylene	BDL	0.0075	mg/kg	8021	04/30/15	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015	04/30/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	101.		% Rec.	8015	04/30/15	1
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021	04/30/15	1
TPH (GC/FID) High Fraction	18.	4.0	mg/kg	8015D/DRO	04/30/15	1
Surrogate recovery(%)						
o-Terphenyl	54.4		% Rec.	8015D/DRO	04/30/15	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L761624-06 (PH) - 8.1 at 21.3c



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May 06, 2015

Date Received : April 25, 2015
Description : N21-3-10 Pit
Sample ID : 20150424-N21-3-101 PIT STOCKPILE
Collected By : Matt Kasten
Collection Date : 04/24/15 09:45

ESC Sample # : L761624-06

Site ID : N21-3-101

Project # : N21-3-101

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
Benzo(g,h,i)perylene	0.0072	0.0060	mg/kg	8270C-SIM	05/01/15	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
Naphthalene	BDL	0.020	mg/kg	8270C-SIM	05/01/15	1
Phenanthrene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	05/01/15	1
1-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	05/01/15	1
2-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	05/01/15	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	05/01/15	1
Surrogate Recovery						
p-Terphenyl-d14	92.3		% Rec.	8270C-SIM	05/01/15	1
Nitrobenzene-d5	89.4		% Rec.	8270C-SIM	05/01/15	1
2-Fluorobiphenyl	87.9		% Rec.	8270C-SIM	05/01/15	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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Reported: 05/06/15 09:19 Revised: 05/06/15 14:22
L761624-06 (PH) - 8.1 at 21.3c

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L761624-01	WG786008	SAMP	o-Terphenyl	R3034633	J2

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits

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.