



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

Monday March 02, 2015

Report Number: L749716


Samples Received: 02/20/15

Client Project: FED 36-2

Description: FED 36-2 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

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143 Diamond Avenue
Parachute, CO 81635

March 02, 2015

Date Received : February 20, 2015
Description : FED 36-2 Pit
Sample ID : 20150219-FED 36-2(PITE)
Collected By : Matt Kasten
Collection Date : 02/19/15 11:00

ESC Sample # : L749716-01

Site ID : FED 36-2

Project # : FED 36-2

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	02/23/15	1
Chromium, Trivalent	6.4	2.0	mg/kg	Calc.	02/24/15	1
ORP	80.		mV	2580 B-2011	02/21/15	1
pH	9.0	0.10	su	9045D	02/23/15	1
Sodium Adsorption Ratio	14.			Calc.	02/25/15	1
Specific Conductance	2600		umhos/cm	9050AMod	02/21/15	1
Mercury	BDL	0.020	mg/kg	7471A	02/23/15	1
Arsenic	4.7	2.0	mg/kg	6010B	02/24/15	1
Barium	300	0.50	mg/kg	6010B	02/24/15	1
Cadmium	BDL	0.50	mg/kg	6010B	02/24/15	1
Chromium	6.4	1.0	mg/kg	6010B	02/24/15	1
Copper	11.	2.0	mg/kg	6010B	02/24/15	1
Lead	9.9	0.50	mg/kg	6010B	02/24/15	1
Nickel	8.5	2.0	mg/kg	6010B	02/24/15	1
Selenium	BDL	2.0	mg/kg	6010B	02/24/15	1
Silver	BDL	1.0	mg/kg	6010B	02/24/15	1
Zinc	37.	5.0	mg/kg	6010B	02/24/15	1
Benzene	0.017	0.012	mg/kg	8021	02/24/15	25
Toluene	BDL	0.12	mg/kg	8021	02/24/15	25
Ethylbenzene	0.066	0.012	mg/kg	8021	02/24/15	25
Total Xylene	1.1	0.038	mg/kg	8021	02/24/15	25
TPH (GC/FID) Low Fraction	52.	2.5	mg/kg	8015	02/24/15	25
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	92.5		% Rec.	8015	02/24/15	1
a,a,a-Trifluorotoluene(PID)	100.		% Rec.	8021	02/24/15	1
TPH (GC/FID) High Fraction	250	4.0	mg/kg	8015D/DRO	02/23/15	1
Surrogate recovery(%)						
o-Terphenyl	75.4		% Rec.	8015D/DRO	02/23/15	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	0.030	0.0060	mg/kg	8270C-SIM	02/24/15	1
Acenaphthene	0.047	0.0060	mg/kg	8270C-SIM	02/24/15	1
Acenaphthylene	0.014	0.0060	mg/kg	8270C-SIM	02/24/15	1
Benzo(a)anthracene	0.0064	0.0060	mg/kg	8270C-SIM	02/24/15	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	02/24/15	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L749716-01 (PH) - 9.0@19.9c



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Collected By : Matt Kasten
Collection Date : 02/19/15 11:00

ESC Sample # : L749716-01

Site ID : FED 36-2

Project # : FED 36-2

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	02/24/15	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	02/24/15	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	02/24/15	1
Chrysene	0.0073	0.0060	mg/kg	8270C-SIM	02/24/15	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	02/24/15	1
Fluoranthene	0.0075	0.0060	mg/kg	8270C-SIM	02/24/15	1
Fluorene	0.13	0.0060	mg/kg	8270C-SIM	02/24/15	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	02/24/15	1
Naphthalene	0.91	0.020	mg/kg	8270C-SIM	02/24/15	1
Phenanthrene	0.16	0.0060	mg/kg	8270C-SIM	02/24/15	1
Pyrene	0.012	0.0060	mg/kg	8270C-SIM	02/24/15	1
1-Methylnaphthalene	0.59	0.020	mg/kg	8270C-SIM	02/24/15	1
2-Methylnaphthalene	0.91	0.020	mg/kg	8270C-SIM	02/24/15	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	02/24/15	1
Surrogate Recovery						
p-Terphenyl-d14	68.6		% Rec.	8270C-SIM	02/24/15	1
Nitrobenzene-d5	155.		% Rec.	8270C-SIM	02/24/15	1
2-Fluorobiphenyl	82.3		% Rec.	8270C-SIM	02/24/15	1

BDL - Below Detection Limit

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Reported: 02/28/15 19:23 Revised: 03/02/15 14:07
L749716-01 (PH) - 9.0@19.9c



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March 02, 2015

Date Received : February 20, 2015
Description : FED 36-2 Pit
Sample ID : 20150219-FED 36-2(PITW)
Collected By : Matt Kasten
Collection Date : 02/19/15 11:10

ESC Sample # : L749716-02

Site ID : FED 36-2

Project # : FED 36-2

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	02/23/15	1
Chromium, Trivalent	8.1	2.0	mg/kg	Calc.	02/24/15	1
ORP	70.		mV	2580 B-2011	02/21/15	1
pH	8.9	0.10	su	9045D	02/23/15	1
Sodium Adsorption Ratio	12.			Calc.	02/25/15	1
Specific Conductance	2400		umhos/cm	9050AMod	02/21/15	1
Mercury	BDL	0.020	mg/kg	7471A	02/23/15	1
Arsenic	4.9	2.0	mg/kg	6010B	02/24/15	1
Barium	820	0.50	mg/kg	6010B	02/24/15	1
Cadmium	BDL	0.50	mg/kg	6010B	02/24/15	1
Chromium	8.1	1.0	mg/kg	6010B	02/24/15	1
Copper	12.	2.0	mg/kg	6010B	02/24/15	1
Lead	15.	0.50	mg/kg	6010B	02/24/15	1
Nickel	9.9	2.0	mg/kg	6010B	02/24/15	1
Selenium	BDL	2.0	mg/kg	6010B	02/24/15	1
Silver	BDL	1.0	mg/kg	6010B	02/24/15	1
Zinc	57.	5.0	mg/kg	6010B	02/24/15	1
Benzene	0.13	0.0025	mg/kg	8021	02/26/15	5
Toluene	0.61	0.025	mg/kg	8021	02/26/15	5
Ethylbenzene	0.11	0.025	mg/kg	8021	02/24/15	50
Total Xylene	5.2	0.075	mg/kg	8021	02/24/15	50
TPH (GC/FID) Low Fraction	150	5.0	mg/kg	8015	02/24/15	50
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	92.9		% Rec.	8015	02/24/15	1
a,a,a-Trifluorotoluene(PID)	99.9		% Rec.	8021	02/24/15	1
TPH (GC/FID) High Fraction	17000	200	mg/kg	8015D/DRO	02/23/15	50
Surrogate recovery(%)						
o-Terphenyl	0.00		% Rec.	8015D/DRO	02/23/15	50
Polynuclear Aromatic Hydrocarbons						
Anthracene	0.14	0.030	mg/kg	8270C-SIM	02/25/15	5
Acenaphthene	0.12	0.030	mg/kg	8270C-SIM	02/25/15	5
Acenaphthylene	0.044	0.030	mg/kg	8270C-SIM	02/25/15	5
Benzo(a)anthracene	0.036	0.030	mg/kg	8270C-SIM	02/25/15	5
Benzo(a)pyrene	BDL	0.030	mg/kg	8270C-SIM	02/25/15	5

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L749716-02 (PH) - 8.9@20.8c



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Collection Date : 02/19/15 11:10

ESC Sample # : L749716-02

Site ID : FED 36-2

Project # : FED 36-2

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(b)fluoranthene	BDL	0.030	mg/kg	8270C-SIM	02/25/15	5
Benzo(g,h,i)perylene	BDL	0.030	mg/kg	8270C-SIM	02/25/15	5
Benzo(k)fluoranthene	BDL	0.030	mg/kg	8270C-SIM	02/25/15	5
Chrysene	0.040	0.030	mg/kg	8270C-SIM	02/25/15	5
Dibenz(a,h)anthracene	BDL	0.030	mg/kg	8270C-SIM	02/25/15	5
Fluoranthene	BDL	0.030	mg/kg	8270C-SIM	02/25/15	5
Fluorene	0.44	0.030	mg/kg	8270C-SIM	02/25/15	5
Indeno(1,2,3-cd)pyrene	BDL	0.030	mg/kg	8270C-SIM	02/25/15	5
Naphthalene	1.3	0.10	mg/kg	8270C-SIM	02/25/15	5
Phenanthrene	0.58	0.030	mg/kg	8270C-SIM	02/25/15	5
Pyrene	0.050	0.030	mg/kg	8270C-SIM	02/25/15	5
1-Methylnaphthalene	2.6	0.10	mg/kg	8270C-SIM	02/25/15	5
2-Methylnaphthalene	3.8	0.10	mg/kg	8270C-SIM	02/25/15	5
2-Chloronaphthalene	BDL	0.10	mg/kg	8270C-SIM	02/25/15	5
Surrogate Recovery						
p-Terphenyl-d14	71.6		% Rec.	8270C-SIM	02/25/15	5
Nitrobenzene-d5	136.		% Rec.	8270C-SIM	02/25/15	5
2-Fluorobiphenyl	77.2		% Rec.	8270C-SIM	02/25/15	5

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Det. Limit - Practical Quantitation Limit(PQL)

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L749716-02 (PH) - 8.9@20.8c

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L749716-01	WG771597	SAMP	Nitrobenzene-d5	R3021565	J1
L749716-02	WG771585	SAMP	o-Terphenyl	R3021304	J7

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits
J7	Surrogate recovery cannot be used for control limit evaluation due to 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.