

Table 1
Operation and Maintenance Field Parameters
PL35NW Well Pad
Encana Oil & Gas (USA) Inc.
Mesa County, Colorado

Well ID	Date	Velocity (fpm)	Flow (cfm)	Temperature (°F)	PID (ppm)	O ₂ (%)	H ₂ S (ppm)	CO (ppm)	CO ₂ (%)	CH ₄ (%)	*TPH mg/kg
SVEW04	7/30/2013	7	0.0875	92.1	4.2	17.3	0	5	5.7	>100	230
	7/3/2014	20	0.525	88.9	186	17.7	0	1	2.4	>100	
SVEE05	7/30/2013	2	0.0435	91.5	2.2	18.8	0	1	1.3	47	620
	7/3/2014	31	0.610	91.8	12.2	19.6	0	1	0.7	18	
SVEE04	7/30/2013	6	0.109	93.6	0.1	19.6	0	0	0.1	3	8.0
	7/3/2014	27	0.575	92.4	1.8	20.4	0	0	0.2	4	

Notes:

fpm - feet per minute

cfm - cubic feet per minute

TPH - total petroleum hydrocarbons

mg/kg - milligrams per kilogram

PID - photoionization detector

ppm - parts per million

O₂ - oxygen

H₂S - hydrogen sulfide

CO - carbon monoxide

CO₂ - carbon dioxide

CH₄ - methane

°F - degrees Fahrenheit

* - TPH values indicate concentrations in soil at time of well installation.

Laboratory Results Summary Table

				Organic Compounds in Soil (mg/kg [ppm])																		Inorganics in Soil			Metals in Soil (mg/kg [ppm])													
Allowable Concentration -->				500			0.17	85	100	175	1000	1000	0.22	0.22	2.2	0.022	22	0.022	1000	1000	0.22	23	1000		(<12)	(6-9)	0.39	15000	70	120000	23	3100	400	23	1600	390	390	23000
Location	Sample Date:	Sample Matrix	Matrix Notes	TPH (total volatile and extractable petroleum hydrocarbons)	TPH-GRO (C6-C10) Low Fraction	TPH-DRO (C10-C36) High Fraction	Benzene	Toluene	Ethylbenzene	Xylenes - total	Acenaphthene	Anthracene	Benzo(A)anthracene	Benzo(B)fluoranthene	Benzo(K)fluoranthene	Benzo(A)pyrene	Chrysene	Dibenzo(A,H)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-CD)pyrene	Naphthalene	Pyrene	EC (<4 mmhos/cm or 2x background)	SAR (calculation)	pH	Arsenic	Barium - EPA Total Barium	Cadmium	Chromium (III)	Chromium (VI)	Copper	Lead (inorganic)	Mercury	Nickel (soluble salts)	Selenium	Silver	Zinc
PL35NW	02/06/12	Cuttings	Composite 1	887.1	7.1	880	0.013	0.046	0.019	0.11	0.0072	BDL	0.029	BDL	BDL	BDL	BDL	BDL	0.013	0.0077	BDL	0.043	BDL	2.2	29	8.1	1.8	5500	0.84	5.3	BDL	18	2.3	0.059	5.5	BDL	BDL	41
PL35NW	02/06/12	Cuttings	Composite 2	627.9	7.9	620	0.0049	BDL	0.019	0.09	0.014	0.0074	0.024	BDL	BDL	BDL	BDL	BDL	0.0096	0.019	BDL	0.11	0.008				2.6											
PL35NW	02/06/12	Cuttings	Composite 3	508	8	500	0.01	0.043	0.018	0.11	0.05	BDL	0.081	BDL	BDL	BDL	BDL	BDL	0.012	0.013	BDL	0.049	BDL				2.4											
PL35NW	07/02/12	Cuttings	composite 1	850		850																																
PL35NW	07/02/12	Cuttings	composite 2	460		460																																
PL35NW	07/02/12	Cuttings	composite 3	1300		1300																																
PL35NW	06/03/13	Cuttings	boring E04 [5-10']	8		8																																
PL35NW	06/03/13	Cuttings	boring E05 [5-10']	620		620																																
PL35NW	06/04/13	Cuttings	boring W03 [5-10']	220		220																																
PL35NW	06/04/13	Cuttings	boring W04 [5-10']	230		230																																
PL35NW	06/04/13	Cuttings	boring W05 [5-10']	180		180																																
PL35NW	06/04/13	Cuttings	boring W06 [5-10']	40		40																																
PL35NW	06/04/13	Cuttings	boring W07 [5-10']	220		220																																



12065 Lebanon Rd.
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Tax I.D. 62-0814289

Est. 1970

Chris Hines / Matt Kasten
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

Report Summary

Thursday February 16, 2012

Report Number: L559192

Samples Received: 02/07/12

Client Project:

Description: PL35NW Cuttings

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:

Jayred Willis , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,
FL - E87487, GA - 923, IN - C-TN-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

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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REPORT OF ANALYSIS

Chris Hines / Matt Kasten
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

February 16, 2012

Date Received : February 07, 2012
Description : PL35NW Cuttings
Sample ID : PL35NW-CUT1-020612 10-12 IN
Collected By : Brennen Graff
Collection Date : 02/06/12 09:53

ESC Sample # : L559192-01

Site ID : PL35NW

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	02/10/12	1
Chromium, Trivalent	5.3	2.0	mg/kg	Calc.	02/08/12	1
ORP	-170		mV	2580	02/08/12	1
pH	8.1		su	9045D	02/09/12	1
Sodium Adsorption Ratio	29.			Calc.	02/08/12	1
Specific Conductance	2200		umhos/cm	9050AMod	02/08/12	1
Mercury	0.059	0.020	mg/kg	7471	02/09/12	1
Arsenic	1.8	1.0	mg/kg	6010B	02/08/12	1
Barium	5500	0.25	mg/kg	6010B	02/08/12	1
Cadmium	0.84	0.25	mg/kg	6010B	02/08/12	1
Chromium	5.3	0.50	mg/kg	6010B	02/08/12	1
Copper	18.	1.0	mg/kg	6010B	02/10/12	1
Lead	2.3	0.25	mg/kg	6010B	02/08/12	1
Nickel	5.5	1.0	mg/kg	6010B	02/08/12	1
Selenium	BDL	1.0	mg/kg	6010B	02/08/12	1
Silver	BDL	0.50	mg/kg	6010B	02/10/12	1
Zinc	41.	1.5	mg/kg	6010B	02/08/12	1
Benzene	0.013	0.0025	mg/kg	8021/8015	02/08/12	5
Toluene	0.046	0.025	mg/kg	8021/8015	02/08/12	5
Ethylbenzene	0.019	0.0025	mg/kg	8021/8015	02/08/12	5
Total Xylene	0.11	0.0075	mg/kg	8021/8015	02/08/12	5
TPH (GC/FID) Low Fraction	7.1	0.50	mg/kg	GRO	02/08/12	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	103.		% Rec.	8021/8015	02/08/12	5
a,a,a-Trifluorotoluene(PID)	103.		% Rec.	8021/8015	02/08/12	5
TPH (GC/FID) High Fraction	880	80.	mg/kg	3546/DRO	02/09/12	20
Surrogate recovery(%)						
o-Terphenyl	0.00		% Rec.	3546/DRO	02/09/12	20
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	02/16/12	1
Acenaphthene	0.0072	0.0060	mg/kg	8270C-SIM	02/16/12	1
Acenaphthylene	0.011	0.0060	mg/kg	8270C-SIM	02/16/12	1
Benzo(a)anthracene	0.029	0.0060	mg/kg	8270C-SIM	02/16/12	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	02/16/12	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L559192-01 (PH) - 8.1@19.7c



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February 16, 2012

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Sample ID : PL35NW-CUT1-020612 10-12 IN
Collected By : Brennen Graff
Collection Date : 02/06/12 09:53

ESC Sample # : L559192-01

Site ID : PL35NW

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	02/16/12	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	02/16/12	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	02/16/12	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	02/16/12	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	02/16/12	1
Fluoranthene	0.013	0.0060	mg/kg	8270C-SIM	02/16/12	1
Fluorene	0.0077	0.0060	mg/kg	8270C-SIM	02/16/12	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	02/16/12	1
Naphthalene	0.043	0.0060	mg/kg	8270C-SIM	02/16/12	1
Phenanthrene	0.0095	0.0060	mg/kg	8270C-SIM	02/16/12	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	02/16/12	1
1-Methylnaphthalene	0.039	0.0060	mg/kg	8270C-SIM	02/16/12	1
2-Methylnaphthalene	0.065	0.0060	mg/kg	8270C-SIM	02/16/12	1
2-Chloronaphthalene	BDL	0.0060	mg/kg	8270C-SIM	02/16/12	1
Surrogate Recovery						
Nitrobenzene-d5	100.		% Rec.	8270C-SIM	02/16/12	1
2-Fluorobiphenyl	54.9		% Rec.	8270C-SIM	02/16/12	1
p-Terphenyl-d14	65.4		% Rec.	8270C-SIM	02/16/12	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 02/16/12 17:23 Printed: 02/16/12 17:24

L559192-01 (PH) - 8.1@19.7c

REPORT OF ANALYSIS

Chris Hines / Matt Kasten
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

February 16, 2012

Date Received : February 07, 2012
Description : PL35NW Cuttings
Sample ID : PL35NW-CUT2-020612 10-12 IN
Collected By : Brennen Graff
Collection Date : 02/06/12 10:25

ESC Sample # : L559192-02

Site ID : PL35NW

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	2.6	1.0	mg/kg	6010B	02/08/12	1
Benzene	0.0049	0.0025	mg/kg	8021/8015	02/08/12	5
Toluene	BDL	0.025	mg/kg	8021/8015	02/08/12	5
Ethylbenzene	0.019	0.0025	mg/kg	8021/8015	02/08/12	5
Total Xylene	0.090	0.0075	mg/kg	8021/8015	02/08/12	5
TPH (GC/FID) Low Fraction	7.9	0.50	mg/kg	GRO	02/08/12	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	102.		% Rec.	8021/8015	02/08/12	5
a,a,a-Trifluorotoluene(PID)	101.		% Rec.	8021/8015	02/08/12	5
TPH (GC/FID) High Fraction	620	80.	mg/kg	3546/DRO	02/09/12	20
Surrogate recovery(%)						
o-Terphenyl	0.00		% Rec.	3546/DRO	02/09/12	20
Polynuclear Aromatic Hydrocarbons						
Anthracene	0.0074	0.0060	mg/kg	8270C-SIM	02/09/12	1
Acenaphthene	0.014	0.0060	mg/kg	8270C-SIM	02/09/12	1
Acenaphthylene	0.0070	0.0060	mg/kg	8270C-SIM	02/09/12	1
Benzo(a)anthracene	0.024	0.0060	mg/kg	8270C-SIM	02/09/12	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	02/15/12	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	02/15/12	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	02/15/12	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	02/15/12	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	02/09/12	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	02/15/12	1
Fluoranthene	0.0096	0.0060	mg/kg	8270C-SIM	02/09/12	1
Fluorene	0.019	0.0060	mg/kg	8270C-SIM	02/09/12	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	02/15/12	1
Naphthalene	0.11	0.0060	mg/kg	8270C-SIM	02/09/12	1
Phenanthrene	0.015	0.0060	mg/kg	8270C-SIM	02/09/12	1
Pyrene	0.0080	0.0060	mg/kg	8270C-SIM	02/09/12	1
1-Methylnaphthalene	0.10	0.0060	mg/kg	8270C-SIM	02/09/12	1
2-Methylnaphthalene	0.13	0.0060	mg/kg	8270C-SIM	02/09/12	1
2-Chloronaphthalene	BDL	0.0060	mg/kg	8270C-SIM	02/09/12	1
Surrogate Recovery						
Nitrobenzene-d5	129.		% Rec.	8270C-SIM	02/09/12	1
2-Fluorobiphenyl	69.7		% Rec.	8270C-SIM	02/09/12	1
p-Terphenyl-d14	159.		% Rec.	8270C-SIM	02/09/12	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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Reported: 02/16/12 17:23 Printed: 02/16/12 17:24

REPORT OF ANALYSIS

Chris Hines / Matt Kasten
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

February 16, 2012

Date Received : February 07, 2012
Description : PL35NW Cuttings
Sample ID : PL35NW-CUT3-020612 10-12 IN
Collected By : Brennen Graff
Collection Date : 02/06/12 11:07

ESC Sample # : L559192-03

Site ID : PL35NW

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	2.4	1.0	mg/kg	6010B	02/08/12	1
Benzene	0.010	0.0025	mg/kg	8021/8015	02/07/12	5
Toluene	0.043	0.025	mg/kg	8021/8015	02/07/12	5
Ethylbenzene	0.018	0.0025	mg/kg	8021/8015	02/07/12	5
Total Xylene	0.11	0.0075	mg/kg	8021/8015	02/07/12	5
TPH (GC/FID) Low Fraction	8.0	0.50	mg/kg	GRO	02/07/12	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	99.3		% Rec.	8021/8015	02/07/12	5
a,a,a-Trifluorotoluene(PID)	100.		% Rec.	8021/8015	02/07/12	5
TPH (GC/FID) High Fraction	500	20.	mg/kg	3546/DRO	02/09/12	5
Surrogate recovery(%)						
o-Terphenyl	89.5		% Rec.	3546/DRO	02/09/12	5
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	02/10/12	1
Acenaphthene	0.050	0.0060	mg/kg	8270C-SIM	02/10/12	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	02/10/12	1
Benzo(a)anthracene	0.081	0.012	mg/kg	8270C-SIM	02/16/12	2
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	02/16/12	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	02/16/12	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	02/16/12	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	02/16/12	1
Chrysene	BDL	0.012	mg/kg	8270C-SIM	02/16/12	2
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	02/16/12	1
Fluoranthene	0.012	0.0060	mg/kg	8270C-SIM	02/10/12	1
Fluorene	0.013	0.0060	mg/kg	8270C-SIM	02/10/12	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	02/16/12	1
Naphthalene	0.049	0.0060	mg/kg	8270C-SIM	02/10/12	1
Phenanthrene	0.019	0.0060	mg/kg	8270C-SIM	02/10/12	1
Pyrene	BDL	0.012	mg/kg	8270C-SIM	02/16/12	2
1-Methylnaphthalene	0.049	0.0060	mg/kg	8270C-SIM	02/10/12	1
2-Methylnaphthalene	0.086	0.0060	mg/kg	8270C-SIM	02/10/12	1
2-Chloronaphthalene	BDL	0.0060	mg/kg	8270C-SIM	02/10/12	1
Surrogate Recovery						
Nitrobenzene-d5	103.		% Rec.	8270C-SIM	02/10/12	1
2-Fluorobiphenyl	63.8		% Rec.	8270C-SIM	02/10/12	1
p-Terphenyl-d14	119.		% Rec.	8270C-SIM	02/16/12	2

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 02/16/12 17:23 Printed: 02/16/12 17:24

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L559192-01	WG577771	SAMP	pH	R2031372	T8
	WG577518	SAMP	ORP	R2029932	T8
	WG577493	SAMP	o-Terphenyl	R2030812	J7
L559192-02	WG577330	SAMP	p-Terphenyl-d14	R2030535	J1
	WG577493	SAMP	o-Terphenyl	R2030812	J7
L559192-03	WG577471	SAMP	TPH (GC/FID) Low Fraction	R2029632	J6

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low
J7	Surrogate recovery limits cannot be evaluated; surrogates were diluted out
T8	(ESC) - Additional method/sample information: Sample(s) received past/too close to holding time expiration.

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
02/16/12 at 17:24:13

TSR Signing Reports: 358
R5 - Desired TAT

Try not to report benzene as BDL above a 250x dilution. ONLY log soil samples under this account. Waters get logged under ENCRCO.

Sample: L559192-01 Account: ENCANACO Received: 02/07/12 09:00 Due Date: 02/15/12 00:00 RPT Date: 02/16/12 17:23

Sample: L559192-02 Account: ENCANACO Received: 02/07/12 09:00 Due Date: 02/15/12 00:00 RPT Date: 02/16/12 17:23

Sample: L559192-03 Account: ENCANACO Received: 02/07/12 09:00 Due Date: 02/15/12 00:00 RPT Date: 02/16/12 17:23



YOUR LAB OF CHOICE

EnCana Oil & Gas Inc. - CO
Chris Hines / Matt Kasten
2717 County Road 215, Suite 100

Parachute, CO 81635

Quality Assurance Report
Level II

L559192

12065 Lebanon Rd.
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Tax I.D. 62-0814289

Est. 1970

February 16, 2012

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Benzene	< .0005	mg/kg			WG577471	02/07/12 21:03
Ethylbenzene	< .0005	mg/kg			WG577471	02/07/12 21:03
Toluene	< .005	mg/kg			WG577471	02/07/12 21:03
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG577471	02/07/12 21:03
Total Xylene	< .0015	mg/kg			WG577471	02/07/12 21:03
a,a,a-Trifluorotoluene(FID)		% Rec.	100.9	59-128	WG577471	02/07/12 21:03
a,a,a-Trifluorotoluene(PID)		% Rec.	101.2	54-144	WG577471	02/07/12 21:03
Specific Conductance	2.60	umhos/cm			WG577505	02/08/12 12:37
Arsenic	< 1	mg/kg			WG577489	02/08/12 19:59
Barium	< .25	mg/kg			WG577489	02/08/12 19:59
Cadmium	< .25	mg/kg			WG577489	02/08/12 19:59
Chromium	< .5	mg/kg			WG577489	02/08/12 19:59
Lead	< .25	mg/kg			WG577489	02/08/12 19:59
Nickel	< 1	mg/kg			WG577489	02/08/12 19:59
Selenium	< 1	mg/kg			WG577489	02/08/12 19:59
Zinc	< 1.5	mg/kg			WG577489	02/08/12 19:59
Arsenic	< 1	mg/kg			WG577490	02/08/12 13:19
TPH (GC/FID) High Fraction	< 4	ppm			WG577493	02/08/12 20:46
o-Terphenyl		% Rec.	73.68	50-150	WG577493	02/08/12 20:46
1-Methylnaphthalene	< .006	mg/kg			WG577330	02/08/12 13:39
2-Chloronaphthalene	< .006	mg/kg			WG577330	02/08/12 13:39
2-Methylnaphthalene	< .006	mg/kg			WG577330	02/08/12 13:39
Acenaphthene	< .006	mg/kg			WG577330	02/08/12 13:39
Acenaphthylene	< .006	mg/kg			WG577330	02/08/12 13:39
Anthracene	< .006	mg/kg			WG577330	02/08/12 13:39
Benzo(a)anthracene	< .006	mg/kg			WG577330	02/08/12 13:39
Benzo(a)pyrene	< .006	mg/kg			WG577330	02/08/12 13:39
Benzo(b)fluoranthene	< .006	mg/kg			WG577330	02/08/12 13:39
Benzo(g,h,i)perylene	< .006	mg/kg			WG577330	02/08/12 13:39
Benzo(k)fluoranthene	< .006	mg/kg			WG577330	02/08/12 13:39
Chrysene	< .006	mg/kg			WG577330	02/08/12 13:39
Dibenz(a,h)anthracene	< .006	mg/kg			WG577330	02/08/12 13:39
Fluoranthene	< .006	mg/kg			WG577330	02/08/12 13:39
Fluorene	< .006	mg/kg			WG577330	02/08/12 13:39
Indeno(1,2,3-cd)pyrene	< .006	mg/kg			WG577330	02/08/12 13:39
Naphthalene	< .006	mg/kg			WG577330	02/08/12 13:39
Phenanthrene	< .006	mg/kg			WG577330	02/08/12 13:39
Pyrene	< .006	mg/kg			WG577330	02/08/12 13:39
2-Fluorobiphenyl		% Rec.	76.99	34-129	WG577330	02/08/12 13:39
Nitrobenzene-d5		% Rec.	76.77	14-141	WG577330	02/08/12 13:39
p-Terphenyl-d14		% Rec.	98.21	25-139	WG577330	02/08/12 13:39
Mercury	< .02	mg/kg			WG577601	02/09/12 10:53
pH	5.60	su			WG577771	02/09/12 14:50

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Level II

L559192

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Tax I.D. 62-0814289

Est. 1970

February 16, 2012

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Chromium, Hexavalent	< 2	mg/kg			WG577458	02/10/12 16:09
Copper	< 1	mg/kg			WG577742	02/10/12 15:20
Silver	< .5	mg/kg			WG577742	02/10/12 15:20
1-Methylnaphthalene	< .006	mg/kg			WG578578	02/16/12 10:13
2-Chloronaphthalene	< .006	mg/kg			WG578578	02/16/12 10:13
2-Methylnaphthalene	< .006	mg/kg			WG578578	02/16/12 10:13
Acenaphthene	< .006	mg/kg			WG578578	02/16/12 10:13
Acenaphthylene	< .006	mg/kg			WG578578	02/16/12 10:13
Anthracene	< .006	mg/kg			WG578578	02/16/12 10:13
Benzo(a)anthracene	< .006	mg/kg			WG578578	02/16/12 10:13
Benzo(a)pyrene	< .006	mg/kg			WG578578	02/16/12 10:13
Benzo(b)fluoranthene	< .006	mg/kg			WG578578	02/16/12 10:13
Benzo(g,h,i)perylene	< .006	mg/kg			WG578578	02/16/12 10:13
Benzo(k)fluoranthene	< .006	mg/kg			WG578578	02/16/12 10:13
Chrysene	< .006	mg/kg			WG578578	02/16/12 10:13
Dibenz(a,h)anthracene	< .006	mg/kg			WG578578	02/16/12 10:13
Fluoranthene	< .006	mg/kg			WG578578	02/16/12 10:13
Fluorene	< .006	mg/kg			WG578578	02/16/12 10:13
Indeno(1,2,3-cd)pyrene	< .006	mg/kg			WG578578	02/16/12 10:13
Naphthalene	< .006	mg/kg			WG578578	02/16/12 10:13
Phenanthrene	< .006	mg/kg			WG578578	02/16/12 10:13
Pyrene	< .006	mg/kg			WG578578	02/16/12 10:13
2-Fluorobiphenyl		% Rec.	80.14	34-129	WG578578	02/16/12 10:13
Nitrobenzene-d5		% Rec.	80.48	14-141	WG578578	02/16/12 10:13
p-Terphenyl-d14		% Rec.	102.5	25-139	WG578578	02/16/12 10:13

Analyte	Units	Result	Duplicate		RPD	Limit	Ref Samp	Batch
			Duplicate					
ORP	mV	130.	140.		4.38	20	L559168-01	WG577518
ORP	mV	110.	100.		9.52	20	L559218-04	WG577518
Specific Conductance	umhos/cm	790.	790.		0	20	L558965-01	WG577505
Specific Conductance	umhos/cm	170.	150.		12.5	20	L559218-06	WG577505
Arsenic	mg/kg	0	1.20		NA	20	L559170-02	WG577489
Barium	mg/kg	11.0	9.60		10.8	20	L559170-02	WG577489
Cadmium	mg/kg	0	0		0	20	L559170-02	WG577489
Chromium	mg/kg	1.20	1.00		15.7	20	L559170-02	WG577489
Lead	mg/kg	1.70	1.70		1.17	20	L559170-02	WG577489
Nickel	mg/kg	0	0.257		NA	20	L559170-02	WG577489
Selenium	mg/kg	0	0		0	20	L559170-02	WG577489
Zinc	mg/kg	6.50	7.54		15.1	20	L559170-02	WG577489
Arsenic	mg/kg	18.0	14.2		26.3*	20	L559221-08	WG577490
Mercury	mg/kg	0	0.00990		NA	20	L559170-04	WG577601
pH	su	7.80	7.90		1.53*	1	L559218-06	WG577771
pH	su	9.50	9.50		0.422	1	L559381-05	WG577771

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Analyte	Units	Duplicate		RPD	Limit	Ref Samp	Batch
		Result	Duplicate				
Chromium,Hexavalent	mg/kg	0	0	0	20	L559218-06	WG577458
Chromium,Hexavalent	mg/kg	0	0	0	20	L558965-01	WG577458
Copper	mg/kg	1.40	1.50	6.90	20	L559170-06	WG577742
Silver	mg/kg	0	0	0	20	L559170-06	WG577742

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Benzene	mg/kg	.05	0.0486	97.2	76-113	WG577471
Ethylbenzene	mg/kg	.05	0.0484	96.7	78-115	WG577471
Toluene	mg/kg	.05	0.0529	106.	76-114	WG577471
Total Xylene	mg/kg	.15	0.139	92.6	81-118	WG577471
a,a,a-Trifluorotoluene(PID)				99.34	54-144	WG577471
TPH (GC/FID) Low Fraction	mg/kg	5.5	5.78	105.	67-135	WG577471
a,a,a-Trifluorotoluene(FID)				105.7	59-128	WG577471
ORP	mV	229	238.	104.	95.6-104.37	WG577518
Specific Conductance	umhos/cm	350	340.	97.1	85-115	WG577505
Arsenic	mg/kg	92.6	92.8	100.	82.9-117	WG577489
Barium	mg/kg	169	171.	101.	82.8-117	WG577489
Cadmium	mg/kg	61.8	61.6	99.7	83.3-117	WG577489
Chromium	mg/kg	71.3	71.0	99.6	81.8-118	WG577489
Lead	mg/kg	92.4	94.5	102.	83.3-117	WG577489
Nickel	mg/kg	59.1	55.7	94.2	83.8-116	WG577489
Selenium	mg/kg	89.5	91.1	102.	79-121	WG577489
Zinc	mg/kg	141	148.	105.	80.9-119	WG577489
Arsenic	mg/kg	92.6	95.4	103.	82.9-117	WG577490
TPH (GC/FID) High Fraction	ppm	60	48.0	79.9	50-150	WG577493
o-Terphenyl				80.10	50-150	WG577493
1-Methylnaphthalene	mg/kg	.033	0.0249	75.3	48-113	WG577330
2-Chloronaphthalene	mg/kg	.033	0.0255	77.2	51-114	WG577330
2-Methylnaphthalene	mg/kg	.033	0.0254	77.0	44-109	WG577330
Acenaphthene	mg/kg	.033	0.0251	75.9	52-108	WG577330
Acenaphthylene	mg/kg	.033	0.0251	76.1	51-110	WG577330
Anthracene	mg/kg	.033	0.0249	75.5	58-120	WG577330
Benzo(a)anthracene	mg/kg	.033	0.0261	79.2	54-110	WG577330
Benzo(a)pyrene	mg/kg	.033	0.0238	72.3	56-118	WG577330
Benzo(b)fluoranthene	mg/kg	.033	0.0270	81.9	55-114	WG577330
Benzo(g,h,i)perylene	mg/kg	.033	0.0293	88.9	48-130	WG577330
Benzo(k)fluoranthene	mg/kg	.033	0.0285	86.3	55-122	WG577330
Chrysene	mg/kg	.033	0.0282	85.4	57-118	WG577330
Dibenz(a,h)anthracene	mg/kg	.033	0.0294	89.1	53-122	WG577330
Fluoranthene	mg/kg	.033	0.0280	84.8	58-118	WG577330
Fluorene	mg/kg	.033	0.0264	80.0	54-109	WG577330
Indeno(1,2,3-cd)pyrene	mg/kg	.033	0.0297	90.1	51-125	WG577330
Naphthalene	mg/kg	.033	0.0246	74.5	45-105	WG577330

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Analyte	Units	Laboratory Control		Sample	% Rec	Limit	Batch
		Known	Val	Result			
Phenanthrene	mg/kg	.033		0.0269	81.6	53-114	WG577330
Pyrene	mg/kg	.033		0.0284	86.0	53-121	WG577330
2-Fluorobiphenyl					72.33	34-129	WG577330
Nitrobenzene-d5					71.76	14-141	WG577330
p-Terphenyl-d14					102.6	25-139	WG577330
Mercury	mg/kg	3.77		3.58	95.0	71.6-128	WG577601
pH	su	7.98		7.94	99.5	98-101	WG577771
Chromium, Hexavalent	mg/kg	203		134.	66.0	50-150	WG577458
Copper	mg/kg	81.2		81.0	99.8	83.9-116	WG577742
Silver	mg/kg	34.4		31.8	92.4	66.3-134	WG577742
1-Methylnaphthalene	mg/kg	.033		0.0256	77.7	48-113	WG578578
2-Chloronaphthalene	mg/kg	.033		0.0265	80.3	51-114	WG578578
2-Methylnaphthalene	mg/kg	.033		0.0267	80.8	44-109	WG578578
Acenaphthene	mg/kg	.033		0.0253	76.7	52-108	WG578578
Acenaphthylene	mg/kg	.033		0.0269	81.5	51-110	WG578578
Anthracene	mg/kg	.033		0.0278	84.3	58-120	WG578578
Benzo(a)anthracene	mg/kg	.033		0.0278	84.2	54-110	WG578578
Benzo(a)pyrene	mg/kg	.033		0.0294	89.1	56-118	WG578578
Benzo(b)fluoranthene	mg/kg	.033		0.0266	80.5	55-114	WG578578
Benzo(g,h,i)perylene	mg/kg	.033		0.0277	84.0	48-130	WG578578
Benzo(k)fluoranthene	mg/kg	.033		0.0277	83.9	55-122	WG578578
Chrysene	mg/kg	.033		0.0295	89.3	57-118	WG578578
Dibenz(a,h)anthracene	mg/kg	.033		0.0277	83.8	53-122	WG578578
Fluoranthene	mg/kg	.033		0.0274	83.0	58-118	WG578578
Fluorene	mg/kg	.033		0.0269	81.5	54-109	WG578578
Indeno(1,2,3-cd)pyrene	mg/kg	.033		0.0278	84.2	51-125	WG578578
Naphthalene	mg/kg	.033		0.0248	75.2	45-105	WG578578
Phenanthrene	mg/kg	.033		0.0258	78.1	53-114	WG578578
Pyrene	mg/kg	.033		0.0306	92.8	53-121	WG578578
2-Fluorobiphenyl					75.51	34-129	WG578578
Nitrobenzene-d5					78.89	14-141	WG578578
p-Terphenyl-d14					98.69	25-139	WG578578

Analyte	Units	Laboratory Control		Sample Duplicate	Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Benzene	mg/kg	0.0495	0.0486	99.0	76-113	1.81	20	WG577471
Ethylbenzene	mg/kg	0.0491	0.0484	98.0	78-115	1.55	20	WG577471
Toluene	mg/kg	0.0534	0.0529	107.	76-114	0.910	20	WG577471
Total Xylene	mg/kg	0.140	0.139	93.0	81-118	0.880	20	WG577471
a,a,a-Trifluorotoluene(PID)				100.8	54-144			WG577471
TPH (GC/FID) Low Fraction	mg/kg	6.10	5.78	111.	67-135	5.44	20	WG577471
a,a,a-Trifluorotoluene(FID)				106.1	59-128			WG577471

ORP	mV	237.	238.	103.	95.6-104.37	0.421	20	WG577518
Specific Conductance	umhos/	340.	340.	97.0	85-115	0	20	WG577505

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Analyte	Units	Laboratory Control		Sample Duplicate		Limit	RPD	Limit	Batch
		Result	Ref	%Rec					
TPH (GC/FID) High Fraction	ppm	46.6	48.0	78.0		50-150	2.85	25	WG577493
o-Terphenyl				79.29		50-150			WG577493
1-Methylnaphthalene	mg/kg	0.0278	0.0249	84.0		48-113	11.1	24	WG577330
2-Chloronaphthalene	mg/kg	0.0276	0.0255	84.0		51-114	7.96	24	WG577330
2-Methylnaphthalene	mg/kg	0.0279	0.0254	85.0		44-109	9.48	24	WG577330
Acenaphthene	mg/kg	0.0267	0.0251	81.0		52-108	6.50	22	WG577330
Acenaphthylene	mg/kg	0.0268	0.0251	81.0		51-110	6.46	21	WG577330
Anthracene	mg/kg	0.0277	0.0249	84.0		58-120	10.6	20	WG577330
Benzo(a)anthracene	mg/kg	0.0273	0.0261	83.0		54-110	4.27	22	WG577330
Benzo(a)pyrene	mg/kg	0.0272	0.0238	82.0		56-118	13.3	21	WG577330
Benzo(b)fluoranthene	mg/kg	0.0275	0.0270	83.0		55-114	1.65	20	WG577330
Benzo(g,h,i)perylene	mg/kg	0.0293	0.0293	89.0		48-130	0.240	20	WG577330
Benzo(k)fluoranthene	mg/kg	0.0276	0.0285	83.0		55-122	3.31	25	WG577330
Chrysene	mg/kg	0.0281	0.0282	85.0		57-118	0.442	20	WG577330
Dibenz(a,h)anthracene	mg/kg	0.0293	0.0294	89.0		53-122	0.281	20	WG577330
Fluoranthene	mg/kg	0.0293	0.0280	89.0		58-118	4.51	20	WG577330
Fluorene	mg/kg	0.0278	0.0264	84.0		54-109	4.99	20	WG577330
Indeno(1,2,3-cd)pyrene	mg/kg	0.0294	0.0297	89.0		51-125	1.23	21	WG577330
Naphthalene	mg/kg	0.0271	0.0246	82.0		45-105	9.65	24	WG577330
Phenanthrene	mg/kg	0.0274	0.0269	83.0		53-114	1.93	20	WG577330
Pyrene	mg/kg	0.0275	0.0284	83.0		53-121	3.15	20	WG577330
2-Fluorobiphenyl				81.94		34-129			WG577330
Nitrobenzene-d5				80.10		14-141			WG577330
p-Terphenyl-d14				97.41		25-139			WG577330
pH	su	7.95	7.94	100.		98-101	0.126	20	WG577771
Chromium, Hexavalent	mg/kg	148.	134.	73.0		50-150	9.93	20	WG577458
1-Methylnaphthalene	mg/kg	0.0244	0.0256	74.0		48-113	4.93	24	WG578578
2-Chloronaphthalene	mg/kg	0.0251	0.0265	76.0		51-114	5.57	24	WG578578
2-Methylnaphthalene	mg/kg	0.0245	0.0267	74.0		44-109	8.61	24	WG578578
Acenaphthene	mg/kg	0.0245	0.0253	74.0		52-108	3.18	22	WG578578
Acenaphthylene	mg/kg	0.0247	0.0269	75.0		51-110	8.49	21	WG578578
Anthracene	mg/kg	0.0270	0.0278	82.0		58-120	2.86	20	WG578578
Benzo(a)anthracene	mg/kg	0.0268	0.0278	81.0		54-110	3.56	22	WG578578
Benzo(a)pyrene	mg/kg	0.0284	0.0294	86.0		56-118	3.60	21	WG578578
Benzo(b)fluoranthene	mg/kg	0.0251	0.0266	76.0		55-114	5.83	20	WG578578
Benzo(g,h,i)perylene	mg/kg	0.0264	0.0277	80.0		48-130	4.90	20	WG578578
Benzo(k)fluoranthene	mg/kg	0.0275	0.0277	83.0		55-122	0.579	25	WG578578
Chrysene	mg/kg	0.0290	0.0295	88.0		57-118	1.66	20	WG578578
Dibenz(a,h)anthracene	mg/kg	0.0265	0.0277	80.0		53-122	4.32	20	WG578578
Fluoranthene	mg/kg	0.0276	0.0274	84.0		58-118	0.603	20	WG578578
Fluorene	mg/kg	0.0258	0.0269	78.0		54-109	4.20	20	WG578578
Indeno(1,2,3-cd)pyrene	mg/kg	0.0267	0.0278	81.0		51-125	4.01	21	WG578578
Naphthalene	mg/kg	0.0225	0.0248	68.0		45-105	9.96	24	WG578578
Phenanthrene	mg/kg	0.0252	0.0258	76.0		53-114	2.14	20	WG578578
Pyrene	mg/kg	0.0302	0.0306	91.0		53-121	1.48	20	WG578578
2-Fluorobiphenyl				68.01		34-129			WG578578
Nitrobenzene-d5				67.48		14-141			WG578578
p-Terphenyl-d14				94.72		25-139			WG578578

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Analyte	Units	MS Res	Matrix Spike		% Rec	Limit	Ref Samp	Batch
			Ref Res	TV				
Benzene	mg/kg	0.200	0.0100	.05	76.0	32-137	L559192-03	WG577471
Ethylbenzene	mg/kg	0.141	0.0180	.05	49.4	10-150	L559192-03	WG577471
Toluene	mg/kg	0.203	0.0430	.05	64.1	20-142	L559192-03	WG577471
Total Xylene	mg/kg	0.440	0.110	.15	44.0	16-141	L559192-03	WG577471
a,a,a-Trifluorotoluene(PID)					99.23	54-144		WG577471
TPH (GC/FID) Low Fraction	mg/kg	19.5	8.00	5.5	42.0*	55-109	L559192-03	WG577471
a,a,a-Trifluorotoluene(FID)					100.4	59-128		WG577471
Arsenic	mg/kg	68.6	14.2	50	109.	75-125	L559221-08	WG577490
Arsenic	mg/kg	49.5	1.20	50	96.6	75-125	L559170-02	WG577489
Barium	mg/kg	57.5	9.60	50	95.8	75-125	L559170-02	WG577489
Cadmium	mg/kg	49.3	0	50	98.6	75-125	L559170-02	WG577489
Chromium	mg/kg	50.7	1.00	50	99.4	75-125	L559170-02	WG577489
Lead	mg/kg	52.0	1.70	50	101.	75-125	L559170-02	WG577489
Nickel	mg/kg	46.0	0.257	50	91.5	75-125	L559170-02	WG577489
Selenium	mg/kg	46.4	0	50	92.8	75-125	L559170-02	WG577489
Zinc	mg/kg	60.0	7.54	50	105.	75-125	L559170-02	WG577489
1-Methylnaphthalene	mg/kg	0.0363	0.00280	.033	101.	25-155	L559170-10	WG577330
2-Chloronaphthalene	mg/kg	0.0372	0	.033	113.	31-153	L559170-10	WG577330
2-Methylnaphthalene	mg/kg	0.0394	0.00270	.033	111.	22-172	L559170-10	WG577330
Acenaphthene	mg/kg	0.0282	0	.033	85.6	43-133	L559170-10	WG577330
Acenaphthylene	mg/kg	0.0279	0	.033	84.6	42-146	L559170-10	WG577330
Anthracene	mg/kg	0.0330	0.00150	.033	95.6	38-153	L559170-10	WG577330
Benzo(a)anthracene	mg/kg	0.0453	0.00990	.033	107.	31-142	L559170-10	WG577330
Benzo(a)pyrene	mg/kg	0.0513	0.0250	.033	79.7	26-152	L559170-10	WG577330
Benzo(b)fluoranthene	mg/kg	0.0522	0.0240	.033	85.5	10-188	L559170-10	WG577330
Benzo(g,h,i)perylene	mg/kg	0.0619	0.0300	.033	96.6	10-176	L559170-10	WG577330
Benzo(k)fluoranthene	mg/kg	0.0370	0.00660	.033	92.2	22-163	L559170-10	WG577330
Chrysene	mg/kg	0.0427	0.0110	.033	96.1	26-146	L559170-10	WG577330
Dibenz(a,h)anthracene	mg/kg	0.0444	0.00860	.033	108.	10-160	L559170-10	WG577330
Fluoranthene	mg/kg	0.0398	0.00760	.033	97.6	23-160	L559170-10	WG577330
Fluorene	mg/kg	0.0338	0.000700	.033	100.	44-143	L559170-10	WG577330
Indeno(1,2,3-cd)pyrene	mg/kg	0.0573	0.0240	.033	101.	10-157	L559170-10	WG577330
Naphthalene	mg/kg	0.0317	0.00190	.033	90.4	22-156	L559170-10	WG577330
Phenanthrene	mg/kg	0.0353	0.00520	.033	91.3	23-164	L559170-10	WG577330
Pyrene	mg/kg	0.0337	0.00800	.033	78.0	12-170	L559170-10	WG577330
2-Fluorobiphenyl					94.16	34-129		WG577330
Nitrobenzene-d5					76.04	14-141		WG577330
p-Terphenyl-d14					100.7	25-139		WG577330
TPH (GC/FID) High Fraction	ppm	47.5	0	60	79.2	50-150	L559177-03	WG577493
o-Terphenyl					79.75	50-150		WG577493
Mercury	mg/kg	0.281	0.00990	.25	108.	70-130	L559170-04	WG577601
Chromium,Hexavalent	mg/kg	2.68	0	20	13.4*	50-150	L559218-04	WG577458
Copper	mg/kg	49.5	1.50	50	96.0	75-125	L559170-06	WG577742
Silver	mg/kg	45.3	0	50	90.6	75-125	L559170-06	WG577742

* Performance of this Analyte is outside of established criteria.
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February 16, 2012

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref	Samp	Batch
			Ref	%Rec						
Benzene	mg/kg	0.201	0.200	76.3	32-137	0.450	39	L559192-03		WG577471
Ethylbenzene	mg/kg	0.133	0.141	46.1	10-150	5.86	44	L559192-03		WG577471
Toluene	mg/kg	0.198	0.203	61.8	20-142	2.83	42	L559192-03		WG577471
Total Xylene	mg/kg	0.433	0.440	43.0	16-141	1.71	46	L559192-03		WG577471
a,a,a-Trifluorotoluene(PID)				100.0	54-144					WG577471
TPH (GC/FID) Low Fraction	mg/kg	20.3	19.5	44.7*	55-109	3.71	20	L559192-03		WG577471
a,a,a-Trifluorotoluene(FID)				101.3	59-128					WG577471
Arsenic	mg/kg	50.0	49.5	97.6	75-125	1.01	20	L559170-02		WG577489
Barium	mg/kg	58.3	57.5	97.4	75-125	1.38	20	L559170-02		WG577489
Cadmium	mg/kg	49.6	49.3	99.2	75-125	0.607	20	L559170-02		WG577489
Chromium	mg/kg	50.4	50.7	98.8	75-125	0.593	20	L559170-02		WG577489
Lead	mg/kg	52.6	52.0	102.	75-125	1.15	20	L559170-02		WG577489
Nickel	mg/kg	46.5	46.0	92.5	75-125	1.08	20	L559170-02		WG577489
Selenium	mg/kg	46.6	46.4	93.2	75-125	0.430	20	L559170-02		WG577489
Zinc	mg/kg	59.8	60.0	104.	75-125	0.334	20	L559170-02		WG577489
Arsenic	mg/kg	61.9	68.6	95.4	75-125	10.3	20	L559221-08		WG577490
1-Methylnaphthalene	mg/kg	0.0354	0.0363	98.8	25-155	2.42	27	L559170-10		WG577330
2-Chloronaphthalene	mg/kg	0.0366	0.0372	111.	31-153	1.79	22	L559170-10		WG577330
2-Methylnaphthalene	mg/kg	0.0369	0.0394	104.	22-172	6.38	29	L559170-10		WG577330
Acenaphthene	mg/kg	0.0280	0.0282	84.9	43-133	0.805	26	L559170-10		WG577330
Acenaphthylene	mg/kg	0.0274	0.0279	83.1	42-146	1.78	22	L559170-10		WG577330
Anthracene	mg/kg	0.0325	0.0330	93.8	38-153	1.80	27	L559170-10		WG577330
Benzo(a)anthracene	mg/kg	0.0413	0.0453	95.0	31-142	9.35	31	L559170-10		WG577330
Benzo(a)pyrene	mg/kg	0.0446	0.0513	59.5	26-152	13.9	32	L559170-10		WG577330
Benzo(b)fluoranthene	mg/kg	0.0446	0.0522	62.3	10-188	15.8	33	L559170-10		WG577330
Benzo(g,h,i)perylene	mg/kg	0.0534	0.0619	70.9	10-176	14.8	30	L559170-10		WG577330
Benzo(k)fluoranthene	mg/kg	0.0363	0.0370	89.9	22-163	2.11	29	L559170-10		WG577330
Chrysene	mg/kg	0.0378	0.0427	81.2	26-146	12.2	30	L559170-10		WG577330
Dibenz(a,h)anthracene	mg/kg	0.0423	0.0444	102.	10-160	4.85	39	L559170-10		WG577330
Fluoranthene	mg/kg	0.0382	0.0398	92.8	23-160	4.05	22	L559170-10		WG577330
Fluorene	mg/kg	0.0316	0.0338	93.6	44-143	6.92	23	L559170-10		WG577330
Indeno(1,2,3-cd)pyrene	mg/kg	0.0505	0.0573	80.2	10-157	12.7	40	L559170-10		WG577330
Naphthalene	mg/kg	0.0319	0.0317	90.8	22-156	0.465	27	L559170-10		WG577330
Phenanthrene	mg/kg	0.0347	0.0353	89.3	23-164	1.89	25	L559170-10		WG577330
Pyrene	mg/kg	0.0326	0.0337	74.5	12-170	3.42	24	L559170-10		WG577330
2-Fluorobiphenyl				88.59	34-129					WG577330
Nitrobenzene-d5				77.13	14-141					WG577330
p-Terphenyl-d14				98.62	25-139					WG577330
TPH (GC/FID) High Fraction	ppm	53.2	47.5	88.7	50-150	11.4	25	L559177-03		WG577493
o-Terphenyl				80.35	50-150					WG577493
Mercury	mg/kg	0.291	0.281	112.	70-130	3.50	20	L559170-04		WG577601
Chromium,Hexavalent	mg/kg	2.12	2.68	10.6*	50-150	23.3*	20	L559218-04		WG577458
Copper	mg/kg	51.7	49.5	100.	75-125	4.35	20	L559170-06		WG577742
Silver	mg/kg	46.9	45.3	93.8	75-125	3.47	20	L559170-06		WG577742

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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Tax I.D. 62-0814289

Est. 1970

February 16, 2012

Batch number /Run number / Sample number cross reference

WG577471: R2029632: L559192-01 02 03
WG577518: R2029932: L559192-01
WG577505: R2030252: L559192-01
WG577489: R2030295: L559192-01
WG577490: R2030296: L559192-02 03
WG577330: R2030535: L559192-02 03
WG577493: R2030812: L559192-01 02 03
WG577601: R2030974: L559192-01
WG577771: R2031372: L559192-01
WG577477: R2032473: L559192-01
WG577458: R2032672: L559192-01
WG577742: R2033015: L559192-01
WG578578: R2039032: L559192-01

* * Calculations are performed prior to rounding of reported values.

* Performance of this Analyte is outside of established criteria.

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The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.



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Chris Hines / Matt Kasten
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

Report Summary

Wednesday July 11, 2012

Report Number: L583304

Samples Received: 07/03/12

Client Project:

Description: PL35NW Cuttings

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:

Jayred Willis , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,
FL - E87487, GA - 923, IN - C-TN-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

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Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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REPORT OF ANALYSIS

Chris Hines / Matt Kasten
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

July 11, 2012

Date Received : July 03, 2012
Description : PL35NW Cuttings
Sample ID : PL35NW-CUT1-070212 0-6 IN
Collected By : Chris Bak
Collection Date : 07/02/12 14:45

ESC Sample # : L583304-01

Site ID : PL35NW

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
TPH (GC/FID) High Fraction	850	80.	mg/kg	3546/DRO	07/09/12	20
Surrogate recovery(%) o-Terphenyl	2630		% Rec.	3546/DRO	07/09/12	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 07/11/12 13:04 Printed: 07/11/12 13:05



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REPORT OF ANALYSIS

Chris Hines / Matt Kasten
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

July 11, 2012

Date Received : July 03, 2012
Description : PL35NW Cuttings
Sample ID : PL35NW-CUT2-070212 0-6 IN
Collected By : Chris Bak
Collection Date : 07/02/12 15:06

ESC Sample # : L583304-02

Site ID : PL35NW

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
TPH (GC/FID) High Fraction	460	80.	mg/kg	3546/DRO	07/09/12	20
Surrogate recovery(%) o-Terphenyl	2310		% Rec.	3546/DRO	07/09/12	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 07/11/12 13:04 Printed: 07/11/12 13:05



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REPORT OF ANALYSIS

Chris Hines / Matt Kasten
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

July 11, 2012

Date Received : July 03, 2012
Description : PL35NW Cuttings
Sample ID : PL35NW-CUT3-070212
Collected By : Chris Bak
Collection Date : 07/02/12 15:35

ESC Sample # : L583304-03

Site ID : PL35NW

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
TPH (GC/FID) High Fraction	1300	80.	mg/kg	3546/DRO	07/09/12	20
Surrogate recovery(%) o-Terphenyl	8320		% Rec.	3546/DRO	07/09/12	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 07/11/12 13:04 Printed: 07/11/12 13:05



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2717 County Road 215, Suite 100
Parachute, CO 81635

July 11, 2012

Date Received : July 03, 2012
Description : PL35NW Cuttings
Sample ID : PL35NW-CUT1-070212 0-6 IN
Collected By : Chris Bak
Collection Date : 07/02/12 14:45

ESC Sample # : L583304-04

Site ID : PL35NW

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
SPLP Extraction	-			1312	07/05/12	1
TPH (GC/FID) High Fraction	BDL	1.0	mg/l	3510C / DRO	07/09/12	10
Surrogate recovery(%) o-Terphenyl	72.5		% Rec.	3510C / DRO	07/09/12	10

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 07/11/12 13:04 Printed: 07/11/12 13:05

L583304-04 (DRO) - extracted at a dilution



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REPORT OF ANALYSIS

Chris Hines / Matt Kasten
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

July 11, 2012

Date Received : July 03, 2012
Description : PL35NW Cuttings
Sample ID : PL35NW-CUT2-070212 0-6 IN
Collected By : Chris Bak
Collection Date : 07/02/12 15:06

ESC Sample # : L583304-05

Site ID : PL35NW

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
SPLP Extraction	-			1312	07/05/12	1
TPH (GC/FID) High Fraction	BDL	1.0	mg/l	3510C / DRO	07/09/12	10
Surrogate recovery(%) o-Terphenyl	61.7		% Rec.	3510C / DRO	07/09/12	10

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 07/11/12 13:04 Printed: 07/11/12 13:05

L583304-05 (DRO) - extracted at a dilution



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REPORT OF ANALYSIS

Chris Hines / Matt Kasten
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

July 11, 2012

Date Received : July 03, 2012
Description : PL35NW Cuttings
Sample ID : PL35NW-CUT3-070212
Collected By : Chris Bak
Collection Date : 07/02/12 15:35

ESC Sample # : L583304-06

Site ID : PL35NW

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
SPLP Extraction	-			1312	07/05/12	1
TPH (GC/FID) High Fraction	BDL	1.0	mg/l	3510C / DRO	07/09/12	10
Surrogate recovery(%) o-Terphenyl	76.4		% Rec.	3510C / DRO	07/09/12	10

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 07/11/12 13:04 Printed: 07/11/12 13:05
L583304-06 (DRO) - extracted at a dilution

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L583304-01	WG601259	SAMP	o-Terphenyl	R2245335	J7
L583304-02	WG601259	SAMP	o-Terphenyl	R2245335	J7
L583304-03	WG601259	SAMP	o-Terphenyl	R2245335	J7
L583304-04	WG601530	SAMP	TPH (GC/FID) High Fraction	R2246774	O
L583304-05	WG601530	SAMP	TPH (GC/FID) High Fraction	R2246774	O
L583304-06	WG601530	SAMP	TPH (GC/FID) High Fraction	R2246774	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
07/11/12 at 13:05:05

TSR Signing Reports: 358
R5 - Desired TAT

Try not to report benzene as BDL above a 250x dilution. ONLY log soil samples under this account. Waters get logged under ENCRCO. Log all PAHs as PAHSIM.

Sample: L583304-01 Account: ENCANACO Received: 07/03/12 09:00 Due Date: 07/11/12 00:00 RPT Date: 07/11/12 13:04

Sample: L583304-02 Account: ENCANACO Received: 07/03/12 09:00 Due Date: 07/11/12 00:00 RPT Date: 07/11/12 13:04

Sample: L583304-03 Account: ENCANACO Received: 07/03/12 09:00 Due Date: 07/11/12 00:00 RPT Date: 07/11/12 13:04

Sample: L583304-04 Account: ENCANACO Received: 07/03/12 09:00 Due Date: 07/11/12 00:00 RPT Date: 07/11/12 13:04
Rotate for DRO

Sample: L583304-05 Account: ENCANACO Received: 07/03/12 09:00 Due Date: 07/11/12 00:00 RPT Date: 07/11/12 13:04
Rotate for DRO

Sample: L583304-06 Account: ENCANACO Received: 07/03/12 09:00 Due Date: 07/11/12 00:00 RPT Date: 07/11/12 13:04
Rotate for DRO



YOUR LAB OF CHOICE

EnCana Oil & Gas Inc. - CO
Chris Hines / Matt Kasten
2717 County Road 215, Suite 100

Parachute, CO 81635

Quality Assurance Report
Level II

L583304

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

July 11, 2012

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed		
		Units	% Rec					
TPH (GC/FID) High Fraction o-Terphenyl	< 4	ppm			WG601259	07/07/12 00:14		
		% Rec.	56.33	50-150	WG601259	07/07/12 00:14		
TPH (GC/FID) High Fraction o-Terphenyl	< .1	ppm			WG601530	07/09/12 12:06		
		% Rec.	69.07	50-150	WG601530	07/09/12 12:06		
Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch		
		Known Val	Result					
TPH (GC/FID) High Fraction o-Terphenyl	ppm	60	46.6	77.6	50-150	WG601259		
				59.21	50-150	WG601259		
TPH (GC/FID) High Fraction o-Terphenyl	ppm	1.5	1.54	103.	50-150	WG601530		
				83.24	50-150	WG601530		
Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
TPH (GC/FID) High Fraction o-Terphenyl	ppm	46.7	46.6	78.0	50-150	0.384	25	WG601259
				59.14	50-150			WG601259
TPH (GC/FID) High Fraction o-Terphenyl	ppm	1.45	1.54	96.0	50-150	6.06	25	WG601530
				77.68	50-150			WG601530

Batch number /Run number / Sample number cross reference

WG601154: R2244333: L583304-04 05 06
WG601259: R2245335: L583304-01 02 03
WG601530: R2246774: L583304-04 05 06

* * Calculations are performed prior to rounding of reported values.
* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



YOUR LAB OF CHOICE

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Quality Assurance Report
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July 11, 2012

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.



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Chris McKisson / Rob Fishburn (LT Env)
EnCana Oil & Gas Inc. - CO
143 Diamond Avenue
Parachute, CO 81635

Report Summary

Wednesday June 12, 2013

Report Number: L639242


Samples Received: 06/05/13

Client Project: PL35NW CUTTINGS VAUL

Description: PL35NW

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:


Jarred 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

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

This report may not be reproduced, except in full, without written approval from ESC Lab Sciences. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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Est. 1970

REPORT OF ANALYSIS

Chris McKisson / Rob Fishburn (LT E
EnCana Oil & Gas Inc. - CO
143 Diamond Avenue
Parachute, CO 81635

June 12, 2013

Date Received : June 05, 2013
Description : PL35NW
Sample ID : PL35NW-SBE04-060313 5-10 FT
Collected By : Dustin Held
Collection Date : 06/03/13 15:30

ESC Sample # : L639242-01

Site ID : PL35NW

Project # : PL35NW CUTTINGS VAUL

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	73000		col/g	9215B	06/05/13	10000
Nitrate	BDL	1.0	mg/kg	9056	06/06/13	1
Sulfate	70.	50.	mg/kg	9056	06/06/13	1
Iron	17000	5.0	mg/kg	6010B	06/10/13	1
TPH (GC/FID) High Fraction	8.0	4.0	mg/kg	8015D/DRO	06/07/13	1
Surrogate recovery(%) o-Terphenyl	71.8		% Rec.	8015D/DRO	06/07/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 06/12/13 16:29 Printed: 06/12/13 16:29



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Est. 1970

REPORT OF ANALYSIS

Chris McKisson / Rob Fishburn (LT E
EnCana Oil & Gas Inc. - CO
143 Diamond Avenue
Parachute, CO 81635

June 12, 2013

Date Received : June 05, 2013
Description : PL35NW
Sample ID : PL35NW-SBE05-060313 5-10 FT
Collected By : Dustin Held
Collection Date : 06/03/13 16:05

ESC Sample # : L639242-02

Site ID : PL35NW

Project # : PL35NW CUTTINGS VAUL

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	44000		col/g	9215B	06/05/13	10000
Nitrate	BDL	1.0	mg/kg	9056	06/06/13	1
Sulfate	84.	50.	mg/kg	9056	06/06/13	1
Iron	8700	5.0	mg/kg	6010B	06/10/13	1
TPH (GC/FID) High Fraction	620	80.	mg/kg	8015D/DRO	06/10/13	20
Surrogate recovery(%) o-Terphenyl	110.		% Rec.	8015D/DRO	06/10/13	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 06/12/13 16:29 Printed: 06/12/13 16:29

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L639242-01	WG665937	SAMP	Standard Plate Count	R2704580	T8
L639242-02	WG664936	SAMP	o-Terphenyl	R2701921	J7
	WG665937	SAMP	Standard Plate Count	R2704580	T8

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
T8	(ESC) - Additional method/sample information: Sample(s) received past/too close to holding time expiration.

Qualifier Report Information

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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
06/12/13 at 16:29:19

TSR Signing Reports: 358
R5 - Desired TAT

Log ALL samples for EDD (COGCC EDD). Log all PAHs as PAHSIM. DRO and DRO-SGT needed if TPH is listed twice on COC, one being TPH-GEL EXTRACT. Try not to report benzene as BDL above a 250x dilution.

Sample: L639242-01 Account: ENCANACO Received: 06/05/13 09:00 Due Date: 06/12/13 00:00 RPT Date: 06/12/13 16:29
run SPC ooh
Sample: L639242-02 Account: ENCANACO Received: 06/05/13 09:00 Due Date: 06/12/13 00:00 RPT Date: 06/12/13 16:29
run SPC ooh



YOUR LAB OF CHOICE

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Chris McKisson / Rob Fishburn (LT Env)
143 Diamond Avenue

Parachute, CO 81635

Quality Assurance Report
Level II

L639242

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Est. 1970

June 12, 2013

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Nitrate	< 1	mg/kg			WG665038	06/06/13 12:52
Sulfate	< 50	mg/kg			WG665038	06/06/13 12:52
TPH (GC/FID) High Fraction	< 4	mg/kg			WG664936	06/07/13 11:56
o-Terphenyl		% Rec.	81.70	50-150	WG664936	06/07/13 11:56
Iron	< 5	mg/kg			WG665399	06/10/13 01:22

Analyte	Units	Duplicate		RPD	Limit	Ref Samp	Batch
		Result	Duplicate				
Nitrate	mg/kg	0	0	0	20	L639517-04	WG665038
Sulfate	mg/kg	130.	140.	7.41	20	L639517-04	WG665038
Nitrate	mg/kg	200.	240.	18.2	20	L639210-01	WG665038
Iron	mg/kg	16000	17600	9.52	20	L639594-36	WG665399

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Nitrate	mg/kg	20	19.0	95.0	80-120	WG665038
Sulfate	mg/kg	200	196.	98.0	85-115	WG665038
TPH (GC/FID) High Fraction	mg/kg	60	47.1	78.6	50-150	WG664936
o-Terphenyl				82.30	50-150	WG664936
Iron	mg/kg	13100	11000	84.0	50.8-150	WG665399

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Nitrate	mg/kg	19.9	19.0	100.	80-120	4.63	20	WG665038
Sulfate	mg/kg	205.	196.	102.	85-115	4.49	20	WG665038
TPH (GC/FID) High Fraction	mg/kg	47.1	47.1	78.0	50-150	0.130	20	WG664936
o-Terphenyl				82.80	50-150			WG664936

Analyte	Units	Matrix Spike			% Rec	Limit	Ref Samp	Batch
		MS Res	Ref Res	TV				
Nitrate	mg/kg	50.8	0	50	102.	80-120	L639242-02	WG665038
Sulfate	mg/kg	516.	84.0	500	86.4	80-120	L639242-02	WG665038
TPH (GC/FID) High Fraction	mg/kg	49.1	5.30	60	73.1	50-150	L638891-03	WG664936
o-Terphenyl					78.80	50-150		WG664936
Iron	mg/kg	17500	17600	50	0*	75-125	L639594-36	WG665399

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



YOUR LAB OF CHOICE

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Chris McKisson / Rob Fishburn (LT Env)
143 Diamond Avenue

Parachute, CO 81635

Quality Assurance Report
Level II

L639242

June 12, 2013

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Est. 1970

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Nitrate	mg/kg	50.1	50.8	100.	80-120	1.39	20	L639242-02	WG665038
Sulfate	mg/kg	506.	516.	84.4	80-120	1.96	20	L639242-02	WG665038
TPH (GC/FID) High Fraction	mg/kg	48.8	49.1	72.5	50-150	0.750	20	L638891-03	WG664936
o-Terphenyl				78.00	50-150				WG664936
Iron	mg/kg	17000	17500	0*	75-125	2.90	20	L639594-36	WG665399

Batch number /Run number / Sample number cross reference

WG665038: R2698161: L639242-01 02
WG664936: R2701044 R2701921: L639242-01 02
WG665399: R2701300: L639242-01 02
WG665937: R2704580: L639242-01 02

* * Calculations are performed prior to rounding of reported values.
* Performance of this Analyte is outside of established criteria.
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June 12, 2013

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Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.



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Est. 1970

Chris McKisson / Rob Fishburn (LT Env)
EnCana Oil & Gas Inc. - CO
143 Diamond Avenue
Parachute, CO 81635

Report Summary

Friday June 14, 2013

Report Number: L639517

Samples Received: 06/06/13

Client Project: PL35NW CUTTINGS VAUL

Description: PL35NW

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:

T. Alan Harvill , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,
FL - E87487, GA - 923, IN - C-TN-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

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

This report may not be reproduced, except in full, without written approval from ESC Lab Sciences. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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REPORT OF ANALYSIS

Chris McKisson / Rob Fishburn (LT E
EnCana Oil & Gas Inc. - CO
143 Diamond Avenue
Parachute, CO 81635

June 14, 2013

Date Received : June 06, 2013
Description : PL35NW
Sample ID : PL35NW-SBW03-060413 5-10 FT
Collected By : Dustin Held
Collection Date : 06/04/13 09:40

ESC Sample # : L639517-01

Site ID : PL35NW

Project # : PL35NW CUTTINGS VAUL

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	540000		col/g	9215B	06/06/13	10000
Nitrate	BDL	1.0	mg/kg	9056	06/06/13	1
Sulfate	120	50.	mg/kg	9056	06/06/13	1
Iron	9500	5.0	mg/kg	6010B	06/11/13	1
TPH (GC/FID) High Fraction	220	4.0	mg/kg	8015D/DRO	06/11/13	1
Surrogate recovery(%) o-Terphenyl	112.		% Rec.	8015D/DRO	06/11/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 06/14/13 15:26 Printed: 06/14/13 15:26



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REPORT OF ANALYSIS

Chris McKisson / Rob Fishburn (LT E
EnCana Oil & Gas Inc. - CO
143 Diamond Avenue
Parachute, CO 81635

June 14, 2013

Date Received : June 06, 2013
Description : PL35NW
Sample ID : PL35NW-SBW04-060413 5-10 FT
Collected By : Dustin Held
Collection Date : 06/04/13 10:10

ESC Sample # : L639517-02

Site ID : PL35NW

Project # : PL35NW CUTTINGS VAUL

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	5000		col/g	9215B	06/06/13	10000
Nitrate	BDL	1.0	mg/kg	9056	06/06/13	1
Sulfate	110	50.	mg/kg	9056	06/06/13	1
Iron	7400	5.0	mg/kg	6010B	06/11/13	1
TPH (GC/FID) High Fraction	230	4.0	mg/kg	8015D/DRO	06/11/13	1
Surrogate recovery(%) o-Terphenyl	110.		% Rec.	8015D/DRO	06/11/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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REPORT OF ANALYSIS

Chris McKisson / Rob Fishburn (LT E
EnCana Oil & Gas Inc. - CO
143 Diamond Avenue
Parachute, CO 81635

June 14, 2013

Date Received : June 06, 2013
Description : PL35NW
Sample ID : PL35NW-SBW05-060413 5-10 FT
Collected By : Dustin Held
Collection Date : 06/04/13 10:45

ESC Sample # : L639517-03

Site ID : PL35NW

Project # : PL35NW CUTTINGS VAUL

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	90000		col/g	9215B	06/06/13	10000
Nitrate	BDL	1.0	mg/kg	9056	06/06/13	1
Sulfate	170	50.	mg/kg	9056	06/06/13	1
Iron	9600	5.0	mg/kg	6010B	06/11/13	1
TPH (GC/FID) High Fraction	180	4.0	mg/kg	8015D/DRO	06/11/13	1
Surrogate recovery(%) o-Terphenyl	88.6		% Rec.	8015D/DRO	06/11/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 06/14/13 15:26 Printed: 06/14/13 15:26



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REPORT OF ANALYSIS

Chris McKisson / Rob Fishburn (LT E
EnCana Oil & Gas Inc. - CO
143 Diamond Avenue
Parachute, CO 81635

June 14, 2013

Date Received : June 06, 2013
Description : PL35NW
Sample ID : PL35NW-SBW06-060413 5-10FT
Collected By : Dustin Held
Collection Date : 06/04/13 11:00

ESC Sample # : L639517-04

Site ID : PL35NW

Project # : PL35NW CUTTINGS VAUL

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	110000		col/g	9215B	06/06/13	10000
Nitrate	BDL	1.0	mg/kg	9056	06/06/13	1
Sulfate	140	50.	mg/kg	9056	06/06/13	1
Iron	9100	5.0	mg/kg	6010B	06/12/13	1
TPH (GC/FID) High Fraction	40.	4.0	mg/kg	8015D/DRO	06/13/13	1
Surrogate recovery(%) o-Terphenyl	63.0		% Rec.	8015D/DRO	06/13/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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REPORT OF ANALYSIS

Chris McKisson / Rob Fishburn (LT E
EnCana Oil & Gas Inc. - CO
143 Diamond Avenue
Parachute, CO 81635

June 14, 2013

Date Received : June 06, 2013
Description : PL35NW
Sample ID : PL35NW-SBW07-060413 5-10 FT
Collected By : Dustin Held
Collection Date : 06/04/13 11:20

ESC Sample # : L639517-05

Site ID : PL35NW

Project # : PL35NW CUTTINGS VAUL

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	83000		col/g	9215B	06/06/13	10000
Nitrate	BDL	1.0	mg/kg	9056	06/06/13	1
Sulfate	110	50.	mg/kg	9056	06/06/13	1
Iron	11000	5.0	mg/kg	6010B	06/12/13	1
TPH (GC/FID) High Fraction	220	80.	mg/kg	8015D/DRO	06/13/13	20
Surrogate recovery(%) o-Terphenyl	96.7		% Rec.	8015D/DRO	06/13/13	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L639517-01	WG666110	SAMP	Standard Plate Count	R2704880	T8
L639517-02	WG666110	SAMP	Standard Plate Count	R2704880	T8
L639517-03	WG665705	SAMP	Iron	R2703421	V
	WG666110	SAMP	Standard Plate Count	R2704880	T8
L639517-04	WG666110	SAMP	Standard Plate Count	R2704880	T8
L639517-05	WG665811	SAMP	o-Terphenyl	R2707682	J7
	WG666110	SAMP	Standard Plate Count	R2704880	T8

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
T8	(ESC) - Additional method/sample information: Sample(s) received past/too close to holding time expiration.
V	(ESC) - Additional QC Info: The sample concentration is too high to evaluate accurate spike recoveries.

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
06/14/13 at 15:26:30

TSR Signing Reports: 358
R5 - Desired TAT

Log ALL samples for EDD (COGCC EDD). Log all PAHs as PAHSIM. DRO and DRO-SGT needed if TPH is listed twice on COC, one being TPH-GEL EXTRACT. Try not to report benzene as BDL above a 250x dilution.

Sample: L639517-01 Account: ENCANACO Received: 06/06/13 09:30 Due Date: 06/13/13 00:00 RPT Date: 06/14/13 15:26
Run SPC OOH
Sample: L639517-02 Account: ENCANACO Received: 06/06/13 09:30 Due Date: 06/13/13 00:00 RPT Date: 06/14/13 15:26
Run SPC OOH
Sample: L639517-03 Account: ENCANACO Received: 06/06/13 09:30 Due Date: 06/13/13 00:00 RPT Date: 06/14/13 15:26
Run SPC OOH
Sample: L639517-04 Account: ENCANACO Received: 06/06/13 09:30 Due Date: 06/13/13 00:00 RPT Date: 06/14/13 15:26
Run SPC OOH
Sample: L639517-05 Account: ENCANACO Received: 06/06/13 09:30 Due Date: 06/13/13 00:00 RPT Date: 06/14/13 15:26
Run SPC OOH



YOUR LAB OF CHOICE

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Quality Assurance Report
Level II

L639517

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Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Nitrate	< 1	mg/kg			WG665038	06/06/13 12:52
Sulfate	< 50	mg/kg			WG665038	06/06/13 12:52
Iron	< 5	mg/kg			WG665705	06/11/13 01:23
TPH (GC/FID) High Fraction	< 4	mg/kg			WG665304	06/11/13 10:27
o-Terphenyl		% Rec.	75.30	50-150	WG665304	06/11/13 10:27
Iron	< 5	mg/kg			WG665782	06/12/13 22:03
TPH (GC/FID) High Fraction	< 4	mg/kg			WG665811	06/13/13 16:43
o-Terphenyl		% Rec.	76.80	50-150	WG665811	06/13/13 16:43

Analyte	Units	Result	Duplicate		Limit	Ref Samp	Batch
			Duplicate	RPD			
Nitrate	mg/kg	0	0	0	20	L639517-04	WG665038
Sulfate	mg/kg	130.	140.	7.41	20	L639517-04	WG665038
Nitrate	mg/kg	200.	240.	18.2	20	L639210-01	WG665038
Iron	mg/kg	9500	9600	1.05	20	L639517-03	WG665705
Iron	mg/kg	32000	31400	1.89	20	L639768-02	WG665782

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Nitrate	mg/kg	20	19.0	95.0	80-120	WG665038
Sulfate	mg/kg	200	196.	98.0	85-115	WG665038
Iron	mg/kg	13100	11600	88.6	50.8-150	WG665705
TPH (GC/FID) High Fraction	mg/kg	60	47.6	79.3	50-150	WG665304
o-Terphenyl				79.00	50-150	WG665304
Iron	mg/kg	13100	12100	92.4	50.8-150	WG665782
TPH (GC/FID) High Fraction	mg/kg	60	34.0	56.7	50-150	WG665811
o-Terphenyl				66.30	50-150	WG665811

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Nitrate	mg/kg	19.9	19.0	100.	80-120	4.63	20	WG665038
Sulfate	mg/kg	205.	196.	102.	85-115	4.49	20	WG665038
TPH (GC/FID) High Fraction	mg/kg	45.1	47.6	75.0	50-150	5.41	20	WG665304
o-Terphenyl				75.30	50-150			WG665304

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
TPH (GC/FID) High Fraction	mg/kg	38.3	34.0	64.0	50-150	11.8	20	WG665811
o-Terphenyl				73.10	50-150			WG665811

Analyte	Units	MS Res	Matrix Spike		% Rec	Limit	Ref Samp	Batch
			Ref Res	TV				
Nitrate	mg/kg	50.8	0	50	102.	80-120	L639242-02	WG665038
Sulfate	mg/kg	516.	84.0	500	86.4	80-120	L639242-02	WG665038
Iron	mg/kg	8520	9600	50	0*	75-125	L639517-03	WG665705
TPH (GC/FID) High Fraction	mg/kg	943.	662.	12	468.*	50-150	L639460-02	WG665304
o-Terphenyl					66.50	50-150		WG665304
Iron	mg/kg	30600	31400	50	0*	75-125	L639768-02	WG665782

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Nitrate	mg/kg	50.1	50.8	100.	80-120	1.39	20	L639242-02	WG665038
Sulfate	mg/kg	506.	516.	84.4	80-120	1.96	20	L639242-02	WG665038
Iron	mg/kg	8300	8520	0*	75-125	2.62	20	L639517-03	WG665705
TPH (GC/FID) High Fraction	mg/kg	902.	943.	400.*	50-150	4.42	20	L639460-02	WG665304
o-Terphenyl				76.40	50-150				WG665304
Iron	mg/kg	29700	30600	0*	75-125	2.99	20	L639768-02	WG665782

Batch number /Run number / Sample number cross reference

WG665038: R2698161: L639517-01 02 03 04 05
WG665705: R2703421: L639517-01 02 03
WG665304: R2704021: L639517-01 02 03
WG666110: R2704880: L639517-01 02 03 04 05
WG665782: R2706021: L639517-04 05
WG665811: R2707682: L639517-04 05

* * Calculations are performed prior to rounding of reported values.

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.