

November 22, 2010



Carlos A. Luján, Ph.D.
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Denver, CO 80203
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720.272.2306

**RE: E34 Pit Closure Remediation Project
Laboratory Results Supplement Letter to Form 27**

Dr. Luján:

This letter was prepared as supplement to the Form 27 – Site Investigation and Remediation Workplan submitted to document pit closure remediation efforts on Encana Oil & Gas (USA) Inc. (Encana's) E34 well pad in the Story Gulch Unit. Site-specific information for this location can be found in the Form 19 – Spill/Release Report (COGCC Doc. # 2522040) submitted to document below-liner impacts identified during the site investigation on this location. The letter includes a laboratory results summary table, and full laboratory reports for samples collected subsequent to the initial Form 27 submittal. These results demonstrate the successful remediation of the pit bottom; however, additional remediation must be conducted on excavated material.

Elevated hydrocarbon concentrations in excavated material will be remediated in Spring, 2011. Documentation of successful remediation will be provided to the COGCC in a Notification of Completion. Encana will also prepare and submit a Sundry Notice (Form 4) to document the onsite disposal of material with arsenic levels in excess of the allowable concentration identified in COGCC Table 910-1, but within the range of background values for the area. The Form 4 will be delivered following submission of the Notification of Completion in 2011.

If you have any questions about this project, or the information presented here, please don't hesitate to contact me at christopher.hines@encana.com or 970.261.1127.

Regards,

A handwritten signature in black ink, appearing to read "C. Hines", with a horizontal line extending to the right.

Christopher C. Hines
Natural Resources Specialist
Contract Environmental Field Coordinator

Attachments:

- Laboratory Results Summary Table
- Laboratory Reports

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Parachute, Colorado
United States 81635
t 970.285.2600
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Sample Tracking
Project Tracking

Allowable Concentration -->							Organic Compounds in Soil (mg/kg [ppm])																				Inorganics in Soil			Metals in Soil (mg/kg [ppm])												
Location	Field - Route	Lab	Sampler:	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	Dbenzo(A,H)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-C,D)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	
E34	NPM - NW	ESC	BR	07/29/10	Background	SW background	32	BDL	32	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.07	0.38	7	4.4	350	0.3	56	BDL	11	0.78	0.027	25	4.8	BDL	39	
E34	NPM - NW	ESC	BR	07/29/10	Background	NW background																								4.1												
E34	NPM - NW	ESC	BR	08/17/10	Background	NE background																								3.6												
E34	NPM - NW	ESC	BR	08/17/10	Background	SE background																								2.7												
E34	NPM - NW	ESC	BR	08/17/10	Background	E background																								2.2												
E34	NPM - NW	ESC	BR	08/17/10	Cuttings	S cuttings pile	65	BDL	65	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.21	BDL	2.9	46	8.6	2.7	7000	BDL	6.7	BDL	10	7.2	BDL	3.5	BDL	BDL	27	
E34	NPM - NW	ESC	BR	08/17/10	Cuttings	N cuttings pile	302.2	2.2	300	BDL	BDL	0.0051	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.2	310	12	8.2	4200	1.6	16	5.3	23	27	0.024	38	BDL	BDL	110	
E34	NPM - NW	ESC	BR	07/29/10	Pit	N pit bottom	3707.6	7.6	3700	0.084	0.19	0.021	0.3	0.18	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.78	BDL	0.81	BDL	3.6	26	12	8.7	5400	0.92	20	BDL	15	53	0.021	13	BDL	BDL	67	
E34	NPM - NW	ESC	BR	07/29/10	Pit	S pit bottom	1212	12	1200	BDL	BDL	0.0044	0.02	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.1	20	8.2	2.2	350	BDL	54	BDL	8.3	9.6	BDL	20	1.6	BDL	31	
E34	NPM - NW	ESC	BR	08/17/10	Pit	N pit bottom	5320	20	5300																					6.5												
E34	NPM - NW	ESC	BR	08/17/10	Pit	S pit bottom	2500	BDL	2500																																	
E34	NPM - NW	ESC	BR	08/17/10	Pit	spoil	3130	30	3100																						6.6											
E34	NPM - NW	ESC	CJ	09/13/10	Pit	N pit bottom	1400	BDL	1400																																	
E34	NPM - NW	ESC	CJ	09/13/10	Pit	S pit bottom	780	BDL	780																																	
E34	NPM - NW	Accute	BR	09/28/10	Pit	spoil	2494.9	14.9	2480																					7.1												
E34	NPM - NW	ESC	JH	10/27/10	Pit	pit bottom - incorrect	160	BDL	160																																	
E34	NPM - NW	ESC	JH	10/27/10	Pit	spoil	1300	BDL	1300																																	

Technical Report for

ENCANA

E34 Spoils Pile

Accutest Job Number: T60783

Sampling Date: 09/28/10

Report to:

**EnCana
2717 Co. Rd. 215
Parachute, CO 81635
christopher.hines@encana.com**

ATTN: Chris Hines

Total number of pages in report: 26



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Paul K Canevaro

**Paul Canevaro
Laboratory Director**

Client Service contact: Sylvia Garza 713-271-4700

Certifications: TX (T104704220-09C-TX) AR (88-0756) FL (E87628) KS (E-10366) LA (85695/04004)
OK (9103)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.

Table of Contents

-1-

Section 1: Sample Summary	3
Section 2: Case Narrative/Conformance Summary	4
Section 3: Sample Results	6
3.1: T60783-1: E34-SPOILS-092810	7
Section 4: Misc. Forms	10
4.1: Chain of Custody	11
Section 5: GC Volatiles - QC Data Summaries	14
5.1: Method Blank Summary	15
5.2: Blank Spike Summary	16
5.3: Matrix Spike/Matrix Spike Duplicate Summary	17
Section 6: GC Semi-volatiles - QC Data Summaries	18
6.1: Method Blank Summary	19
6.2: Blank Spike/Blank Spike Duplicate Summary	20
Section 7: Metals Analysis - QC Data Summaries	21
7.1: Prep QC MP12990: As	22



Sample Summary

ENCANA

Job No: T60783

E34 Spoils Pile

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
T60783-1	09/28/10	10:50	09/29/10	SO	Soil	E34-SPOILS-092810

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: ENCANA

Job No T60783

Site: E34 Spoils Pile

Report Date 10/1/2010 3:25:50 PM

1 Sample(s) were collected on 09/28/2010 and were received at Accutest on 09/29/2010 properly preserved, at 4.4 Deg. C and intact. These Samples received an Accutest job number of T60783. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GC By Method SW846 8015

Matrix SO	Batch ID: GHH87
------------------	------------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) T60778-1MS, T60778-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Recovery(s) for TPH-GRO (C6-C10) are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for TPH-GRO (C6-C10) are outside control limits. Probable cause due to matrix interference.

Extractables by GC By Method SW846 8015 M

Matrix SO	Batch ID: OP16217
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- T60783-1 for o-Terphenyl: Outside control limits due to dilution.

Metals By Method SW846 6010B

Matrix SO	Batch ID: MP12990
------------------	--------------------------

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T60278-1MS, T60278-1MSD, T60278-1DUP, T60278-1SDL were used as the QC samples for metals.
- RPD(s) for Duplicate for Arsenic are outside control limits for sample MP12990-D1. High RPD due to possible sample nonhomogeneity.
- RPD(s) for Serial Dilution for Arsenic are outside control limits for sample MP12990-SD1. Probable cause due to sample homogeneity.

Wet Chemistry By Method SM 2540 G

Matrix SO	Batch ID: GN25733
------------------	--------------------------

- Sample(s) T60548-7DUP were used as the QC samples for Solids, Percent.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: E34-SPOILS-092810**Lab Sample ID:** T60783-1**Date Sampled:** 09/28/10**Matrix:** SO - Soil**Date Received:** 09/29/10**Method:** SW846 8015**Percent Solids:** 80.3**Project:** E34 Spoils Pile

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	HH0001714.D	1	10/01/10	LB	n/a	n/a	GHH87
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.64 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	Units	Q
	TPH-GRO (C6-C10)	14.9	6.7	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	110%		46-127%
98-08-8	aaa-Trifluorotoluene	97%		44-120%

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: E34-SPOILS-092810**Lab Sample ID:** T60783-1**Date Sampled:** 09/28/10**Matrix:** SO - Soil**Date Received:** 09/29/10**Method:** SW846 8015 M SW846 3550B**Percent Solids:** 80.3**Project:** E34 Spoils Pile

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	JJ7186.D	10	09/29/10	EM	09/29/10	OP16217	GJF66
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	Units	Q
	TPH (C10-C28)	2480	41	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	0% ^a		33-115%

(a) Outside control limits due to dilution.

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	E34-SPOILS-092810		
Lab Sample ID:	T60783-1	Date Sampled:	09/28/10
Matrix:	SO - Soil	Date Received:	09/29/10
		Percent Solids:	80.3
Project:	E34 Spoils Pile		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	7.1	0.70	mg/kg	1	09/30/10	09/30/10 TW	SW846 6010B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA5135
(2) Prep QC Batch: MP12990

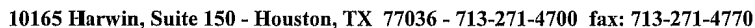
RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody



FED-EX Tracking #	Bottle Order Control #
Accutest Quote #	Accutest Job # T60783

T60783: Chain of Custody
Page 1 of 3

SAMPLE INSPECTION FORM

Accutest Job Number: T60783 Client: Sacoma Oil & Gas (USA) INC. Date/Time Received: 9-29-10 9:15
 # of Coolers Received: 1 Thermometer #: I 2 GUNNY Temperature Adjustment Factor: 0.0
 Cooler Temperatures (initial/adjusted): #1: 4.4 °C #2: _____ #3: _____ #4: _____ #5: _____
 #6: _____ #7: _____ #8: _____ #9: _____ #10: _____ #11: _____ #12: _____
 Method of Delivery: FEDEX UPS Accutest Courier Greyhound Delivery Other

COOLER INFORMATION

- ☐ Custody seal missing or not intact
- ☐ Temperature criteria not met
- ☐ Wet ice received in cooler

CHAIN OF CUSTODY

- ☐ Chain of Custody not received
- ☐ Sample D/T unclear or missing
- ☐ Analyses unclear or missing
- ☐ COC not properly executed

SAMPLE INFORMATION

- ☐ Sample containers received broken
- ☐ VOC vials have headspace
- ☐ Sample labels missing or illegible
- ☐ ID on COC does not match label(s)
- ☐ D/T on COC does not match label(s)
- ☐ Sample/Bottles rcvd but no analysis on COC
- ☐ Sample listed on COC, but not received
- ☐ Bottles missing for requested analysis
- ☐ Insufficient volume for analysis
- ☐ Sample received improperly preserved

TRIP BLANK INFORMATION

- ☐ Trip Blank on COC but not received
- ☐ Trip Blank received but not on COC
- ☐ Trip Blank not intact
- ☐ Received Water Trip Blank
- ☐ Received Soil TB

Number of Encores? _____
 Number of 5035 kits? _____
 Number of lab-filtered metals? _____

Summary of Discrepancies:

TECHNICIAN SIGNATURE/DATE: [Signature] 9-29-10
 INFORMATION AND SAMPLE LABELING VERIFIED BY: [Signature] 9/29/10

CORRECTIVE ACTIONS

Client Representative Notified: _____ Date: _____
 By Accutest Representative: _____ Via: Phone Email
 Client Instructions: _____

1:\mwalker\for\samplemanagement SM023 Revised 8/11/10

T60783: Chain of Custody

Page 2 of 3

SAMPLE RECEIPT LOG

JOB #: 760783 DATE/TIME RECEIVED: 9.29-10 915

CLIENT: Esso Oil & Gas (USA) Inc. INITIALS: EC

[illegible]

PRESERVATIVES: 1: None 2: HCL 3: HNO3 4: H2SO4 5: NAOH 6: DI 7: MeOH 8: Other

LOCATION: 1: Walk-In #1 (Waters) 2: Walk-In #2 (Soils) VR: Volatile Fridge M: Metals SUB: Subcontract EF: Encore Freezer

Rev 8/13/01 ewp

T60783: Chain of Custody

Page 3 of 3

GC Volatiles

5

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: T60783
Account: ENCACOP ENCANA
Project: E34 Spoils Pile

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GHH87-MB	HH0001709.D		10/01/10	LB	n/a	n/a	GHH87

The QC reported here applies to the following samples:

Method: SW846 8015

T60783-1

CAS No.	Compound	Result	RL	Units	Q
	TPH-GRO (C6-C10)	ND	5.0	mg/kg	

CAS No.	Surrogate Recoveries	Limits
460-00-4	4-Bromofluorobenzene	90% 46-127%
98-08-8	aaa-Trifluorotoluene	99% 44-120%

Blank Spike Summary

Job Number: T60783
Account: ENCACOP ENCANA
Project: E34 Spoils Pile

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GHH87-BS	HH0001707.D		10/01/10	LB	n/a	n/a	GHH87

The QC reported here applies to the following samples: Method: SW846 8015

T60783-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	0.4	0.394	99	78-115

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	92%	46-127%
98-08-8	aaa-Trifluorotoluene	104%	44-120%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: T60783
Account: ENCACOP ENCANA
Project: E34 Spoils Pile

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T60778-1MS	HH0001719.D		10/01/10	LB	n/a	n/a	GHH87
T60778-1MSD	HH0001720.D		10/01/10	LB	n/a	n/a	GHH87
T60778-1	HH0001710.D		10/01/10	LB	n/a	n/a	GHH87

The QC reported here applies to the following samples:

Method: SW846 8015

T60783-1

CAS No.	Compound	T60778-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	18.7		25.6	50.4	124*	50.7	125*	1	78-115/14

CAS No.	Surrogate Recoveries	MS	MSD	T60778-1	Limits
460-00-4	4-Bromofluorobenzene	122%	117%	111%	46-127%
98-08-8	aaa-Trifluorotoluene	106%	105%	99%	44-120%

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: T60783

Account: ENCACOP ENCANA

Project: E34 Spoils Pile

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP16217-MB	JJ7165.D	1	09/29/10	EM	09/29/10	OP16217	GJB66

The QC reported here applies to the following samples:

Method: SW846 8015 M

T60783-1

CAS No.	Compound	Result	RL	Units	Q
	TPH (C10-C28)	ND	3.3	mg/kg	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	94% 33-115%

Blank Spike/Blank Spike Duplicate Summary

Page 1 of 1

Job Number: T60783

Account: ENCACOP ENCANA

Project: E34 Spoils Pile

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP16217-BS	JJ7166.D	1	09/29/10	EM	09/29/10	OP16217	GJF66
OP16217-BSD	JJ7167.D	1	09/29/10	EM	09/29/10	OP16217	GJB66

The QC reported here applies to the following samples:

Method: SW846 8015 M

T60783-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	BSD mg/kg	BSD %	RPD	Limits Rec/RPD
	TPH (C10-C28)	33.1	27.0	82	27.2	82	1	45-107/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
84-15-1	o-Terphenyl	67%	101%	33-115%

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: T60783
Account: ENCACOP - ENCANA
Project: E34 Spoils Pile

QC Batch ID: MP12990
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 09/30/10

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.41	.73		
Antimony	0.50	.05	.085		
Arsenic	0.50	.085	.085	-0.018	<0.50
Barium	10	.049	.069		
Beryllium	0.25	.0028	.0055		
Boron	5.0	.07	.17		
Cadmium	0.25	.0055	.014		
Calcium	250	.37	1.3		
Chromium	0.50	.012	.023		
Cobalt	2.5	.0075	.03		
Copper	1.3	.056	.056		
Iron	5.0	.057	1.1		
Lead	0.50	.05	.05		
Lithium	15	.1			
Magnesium	250	.38	1.3		
Manganese	0.75	.0027	.037		
Molybdenum	0.50	.02	.025		
Nickel	2.0	.035	.057		
Potassium	250	2	10		
Selenium	0.50	.077	.14		
Silver	0.50	.058	.058		
Sodium	250	.46	1.6		
Strontium	1.0	.0031	.059		
Thallium	0.50	.034	.04		
Tin	1.0	.035	.035		
Titanium	1.0	.015	.029		
Vanadium	2.5	.015	.034		
Zinc	1.0	.026	.084		

Associated samples MP12990: T60783-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T60783
Account: ENCACOP - ENCANA
Project: E34 Spoils Pile

QC Batch ID: MP12990
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 09/30/10

09/30/10

Metal	T60278-1 Original	DUP	RPD	QC Limits	T60278-1 Original	MS	Spikelot MPTW4	% Rec	QC Limits
Aluminum									
Antimony									
Arsenic	7.9	14.4	58.3*(a)	0-20	7.9	40.3	27.3	118.6	80-120
Barium	anr								
Beryllium									
Boron									
Cadmium	anr								
Calcium									
Chromium	anr								
Cobalt									
Copper	anr								
Iron									
Lead	anr								
Lithium									
Magnesium									
Manganese									
Molybdenum									
Nickel	anr								
Potassium									
Selenium	anr								
Silver	anr								
Sodium									
Strontium									
Thallium									
Tin									
Titanium									
Vanadium									
Zinc	anr								

Associated samples MP12990: T60783-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) High RPD due to possible sample nonhomogeneity.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T60783
Account: ENCACOP - ENCANA
Project: E34 Spoils Pile

QC Batch ID: MP12990
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 09/30/10

Metal	T60278-1 Original	MSD	SpikeLot MPTW4	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	7.9	33.3	27.2	93.4	19.0	20
Barium	anr					
Beryllium						
Boron						
Cadmium	anr					
Calcium						
Chromium	anr					
Cobalt						
Copper	anr					
Iron						
Lead	anr					
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	anr					
Potassium						
Selenium	anr					
Silver	anr					
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc	anr					

Associated samples MP12990: T60783-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: T60783
Account: ENCACOP - ENCANA
Project: E34 Spoils Pile

QC Batch ID: MP12990
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 09/30/10

Metal	LCS Result	Spikelot MPLCD054	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	138	158	87.3	82-118
Barium	anr			
Beryllium				
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron				
Lead	anr			
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	anr			
Potassium				
Selenium	anr			
Silver	anr			
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	anr			

Associated samples MP12990: T60783-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: T60783
Account: ENCACOP - ENCANA
Project: E34 Spoils Pile

QC Batch ID: MP12990
Matrix Type: SOLID

Methods: SW846 6010B
Units: ug/l

Prep Date: 09/30/10

Metal	T60278-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	118	142	20.3*(a)	0-10
Barium	anr			
Beryllium				
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron				
Lead	anr			
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	anr			
Potassium				
Selenium	anr			
Silver	anr			
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	anr			

Associated samples MP12990: T60783-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Serial dilution indicates possible matrix interference.



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Chris Hines or Brad Kieding
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

Report Summary

Monday November 01, 2010

Report Number: L486212

Samples Received: 10/28/10

Client Project: E34

Description: E34

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 - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140
NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,
TX - T104704245, OK-9915

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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 or Brad Kieding
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

November 01, 2010

Date Received : October 28, 2010
Description : E34

Sample ID : E34-SPOIL-102710

Collected By : Jake Harris
Collection Date : 10/27/10 11:13

ESC Sample # : L486212-01

Site ID :

Project # : E34

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015D/GRO	10/30/10	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	89.7		% Rec.	602/8015	10/30/10	5
TPH (GC/FID) High Fraction	1300	80.	mg/kg	3546/DRO	11/01/10	20
Surrogate recovery(%) o-Terphenyl	0.00		% Rec.	3546/DRO	11/01/10	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: 11/01/10 17:30 Printed: 11/01/10 17:30



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REPORT OF ANALYSIS

Chris Hines or Brad Kieding
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

November 01, 2010

Date Received : October 28, 2010
Description : E34

Sample ID : E34-SP-102710

Collected By : Jake Harris
Collection Date : 10/27/10 12:00

ESC Sample # : L486212-02

Site ID :

Project # : E34

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015D/GRO	10/30/10	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	90.1		% Rec.	602/8015	10/30/10	5
TPH (GC/FID) High Fraction	160	4.0	mg/kg	3546/DRO	10/30/10	1
Surrogate recovery(%) o-Terphenyl	52.4		% Rec.	3546/DRO	10/30/10	1

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
L486212-01	WG505874	SAMP	TPH (GC/FID) Low Fraction	R1449629	J6
	WG505490	SAMP	o-Terphenyl	R1451511	J7

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
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

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
11/01/10 at 17:30:41

TSR Signing Reports: 358
R3 - Rush: Two Day

Log all samples beginning with different sample numbers to separate reports. Ex.- M34 N PIT and M34 S PIT go on one L#, but M34 S PIT and E34 S PIT go on separate L #s. Log project # as project name.

Sample: L486212-01 Account: ENCANACO Received: 10/28/10 09:00 Due Date: 11/01/10 00:00 RPT Date: 11/01/10 17:30

Sample: L486212-02 Account: ENCANACO Received: 10/28/10 09:00 Due Date: 11/01/10 00:00 RPT Date: 11/01/10 17:30



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Quality Assurance Report
Level II

L486212

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Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG505874	10/30/10 08:38
a,a,a-Trifluorotoluene(FID)		% Rec.	91.69	59-128	WG505874	10/30/10 08:38
TPH (GC/FID) High Fraction	< 4	ppm			WG505490	10/30/10 13:56
o-Terphenyl		% Rec.	67.28	50-150	WG505490	10/30/10 13:56

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
TPH (GC/FID) Low Fraction	mg/kg	5.5	5.38	97.8	67-135	WG505874
a,a,a-Trifluorotoluene(FID)				103.9	59-128	WG505874
TPH (GC/FID) High Fraction	ppm	60	46.0	76.6	50-150	WG505490
o-Terphenyl				65.38	50-150	WG505490

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
TPH (GC/FID) Low Fraction	mg/kg	5.38	5.38	98.0	67-135	0.0200	20	WG505874
a,a,a-Trifluorotoluene(FID)				104.2	59-128			WG505874
TPH (GC/FID) High Fraction	ppm	48.4	46.0	81.0	50-150	5.20	25	WG505490
o-Terphenyl				65.68	50-150			WG505490

Analyte	Units	Matrix Spike				Limit	Ref Samp	Batch
		MS Res	Ref Res	TV	% Rec			
TPH (GC/FID) Low Fraction	mg/kg	12.9	0	5.5	46.9*	55-109	L486212-01	WG505874
a,a,a-Trifluorotoluene(FID)					93.70	59-128		WG505874

Analyte	Units	Matrix Spike Duplicate			Limit	RPD	Limit	Ref Samp	Batch
		MSD	Ref	%Rec					
TPH (GC/FID) Low Fraction	mg/kg	11.1	12.9	40.3*	55-109	15.1	20	L486212-01	WG505874
a,a,a-Trifluorotoluene(FID)				93.64	59-128				WG505874

Batch number /Run number / Sample number cross reference

WG505874: R1449629: L486212-01 02
WG505490: R1451511: L486212-01 02

* * 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
Level II

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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.