

FORM
4Rev
04/13State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80205 Phone: (303) 894-2100 Fax: (303) 894-2109



DE	ET	OE	ES
Document Number: 2145079			
RECEIVED 5/15/2013			

SUNDRY NOTICE

Submit a signed original. This form is to be used for general, technical and environmental sundry information. For proposed or completed operations, describe in full in Comments or provide as an attachment. Identify Well by API Number; identify Oil and Gas Location by Location ID Number; identify other Facility by Facility ID Number.

OGCC Operator Number: 100185 Contact Name Charlie Jensen
 Name of Operator: Encana Oil & Gas (USA) Inc. Phone: 970.285.2735
 Address: 143 Diamond Avenue Fax: 970.285.2705
 City: Parachute State: CO Zip: 81635 Email: charles.jensen@encana.com

Complete the Attachment
Checklist

OP OGCC

API Number: 05-04508199 OGCC Facility ID Number: NA
 Well/Facility Name: E13 Well Pad Well/Facility Number: 13-4C (E13) Pitman
 Location QtrQtr: SWNW Section: 13 Township: 7S Range: 93W Meridian: 6
 County: Garfield Field Name: Mamm
 Federal, Indian or State Lease Number: NA

Survey Plat		
Directional Survey		
Srvc Eqpmt Diagram		
Technical Info Page		
Other		

CHANGE OF LOCATION OR AS BUILT GPS REPORT

☐ Change of Location * ☐ As-Built GPS Location Report ☐ As-Built GPS Location Report with Survey

* Well location change requires new plat. A substantive surface location change may require new Form 2A.

SURFACE LOCATION GPS DATA Data must be provided for Change of Surface Location and As Built Reports.

Latitude _____ PDOP Reading _____ Date of Measurement _____
 Longitude _____ GPS Instrument Operator's Name _____

LOCATION CHANGE (all measurements in Feet)

Well will be: _____ (Vertical, Directional, Horizontal)

Change of **Surface** Footage **From** Exterior Section Lines:

Change of **Surface** Footage **To** Exterior Section Lines:

Current **Surface** Location **From** QtrQtr Sec

New **Surface** Location **To** QtrQtr Sec

Change of **Top of Productive Zone** Footage **From** Exterior Section Lines:

Change of **Top of Productive Zone** Footage **To** Exterior Section Lines:

Current **Top of Productive Zone** Location **From** Sec

New **Top of Productive Zone** Location **To** Sec

Change of **Bottomhole** Footage **From** Exterior Section Lines:

Change of **Bottomhole** Footage **To** Exterior Section Lines:

Current **Bottomhole** Location Sec Twp Range

New **Bottomhole** Location Sec Twp Range

Is location in High Density Area? _____

Distance, in feet, to nearest building _____, public road: _____, above ground utility: _____, railroad: _____,

property line: _____, lease line: _____, well in same formation: _____

Ground Elevation _____ feet Surface owner consultation date _____

FNL/FSL		FEL/FWL	
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Twp <input type="text"/>	Range <input type="text"/>	Meridian <input type="text"/>	
Twp <input type="text"/>	Range <input type="text"/>	Meridian <input type="text"/>	
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Twp <input type="text"/>	Range <input type="text"/>		
Twp <input type="text"/>	Range <input type="text"/>		
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
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Twp <input type="text"/>	Range <input type="text"/>		
Twp <input type="text"/>	Range <input type="text"/>		

**

**

** attach deviated drilling plan

CHANGE OR ADD OBJECTIVE FORMATION AND/OR SPACING UNIT

<u>Objective Formation</u>	<u>Formation Code</u>	<u>Spacing Order Number</u>	<u>Unit Acreage</u>	<u>Unit Configuration</u>

OTHER CHANGES

☐ **REMOVE FROM SURFACE BOND** Signed surface use agreement is a required attachment

☐ **CHANGE OF WELL, FACILITY OR OIL & GAS LOCATION NAME OR NUMBER**

From: Name _____ Number _____ Effective Date: _____

To: Name _____ Number _____

☐ **ABANDON PERMIT: Permit can only be abandoned if the permitted operation has NOT been conducted.**
Field inspection will be conducted to verify site status.

☐ WELL: Abandon Application for Permit-to-Drill (Form 2) – Well API Number _____ has not been drilled.

☐ PIT: Abandon Earthen Pit Permit (Form 15) – COGCC Pit Facility ID Number _____ has not been constructed (Permitted and constructed pit requires closure per Rule 905)

☐ CENTRALIZED E&P WASTE MANAGEMENT FACILITY: Abandon Centralized E&P Waste Management Facility Permit (Form 28) – Facility ID Number _____ has not been constructed (Constructed facility requires closure per Rule 908)

OIL & GAS LOCATION ID Number: _____

☐ Abandon Oil & Gas Location Assessment (Form 2A) – Location has not been constructed and site will not be used in the future.

☐ Keep Oil & Gas Location Assessment (Form 2A) active until expiration date. This site will be used in the future.

Surface disturbance from Oil and Gas Operations must be reclaimed per Rule 1003 and Rule 1004.

☐ **REQUEST FOR CONFIDENTIAL STATUS**

☐ **DIGITAL WELL LOG UPLOAD**

☐ **DOCUMENTS SUBMITTED** Purpose of Submission: _____

RECLAMATION**INTERIM RECLAMATION**

☐ Interim Reclamation will commence approximately _____

Per Rule 1003.e.(3) operator shall submit Sundry Notice reporting interim reclamation is complete and site is ready for inspection when vegetation reaches 80% coverage.

☐ Interim reclamation complete, site ready for inspection.

Per Rule 1003.e(3) describe interim reclamation procedure in Comments below or provide as an attachment and attach required location photographs.

Field inspection will be conducted to document Rule 1003.e. compliance

FINAL RECLAMATION

☐ Final Reclamation will commence approximately _____

Per Rule 1004.c.(4) operator shall submit Sundry Notice reporting final reclamation is complete and site is ready for inspection when vegetation reaches 80% coverage.

☐ Final reclamation complete, site ready for inspection. Per Rule 1004.c(4) describe final reclamation procedure in Comments below or provide as an attachment.

Field inspection will be conducted to document Rule 1004.c. compliance

Comments:

ENGINEERING AND ENVIRONMENTAL WORK

☐ NOTICE OF CONTINUED TEMPORARILY ABANDONED STATUS

Indicate why the well is temporarily abandoned and describe future plans for utilization in the COMMENTS box below or provide as an attachment, as required by Rule 319.b.(3).

Date well temporarily abandoned _____ Has Production Equipment been removed from site? _____

Mechanical Integrity Test (MIT) required if shut in longer than 2 years. Date of last MIT _____

☐ SPUD DATE: _____

TECHNICAL ENGINEERING AND ENVIRONMENTAL WORK

Details of work must be described in full in the COMMENTS below or provided as an attachment.

☐ NOTICE OF INTENT Approximate Start Date _____

☒ REPORT OF WORK DONE Date Work Completed 4/3/13

<input type="checkbox"/> Intent to Recomplete (Form 2 also required)	<input type="checkbox"/> Request to Vent or Flare	<input type="checkbox"/> E&P Waste Mangement Plan
<input type="checkbox"/> Change Drilling Plan	<input type="checkbox"/> Repair Well	<input type="checkbox"/> Beneficial Reuse of E&P Waste
<input type="checkbox"/> Gross Interval Change	<input type="checkbox"/> Rule 502 variance requested. Must provide detailed info regarding request.	
<input checked="" type="checkbox"/> Other <u>Remediation #5169</u>	<input checked="" type="checkbox"/> Status Update/Change of Remediation Plans for Spills and Releases	

COMMENTS:

Per Remediation #5169, follow-up soil sampling of a historical produced water spill (pre-2005) associated with the E13 well pad. The soil sampling occurred on April 3, 2013. Results indicate that SAR levels in surficial soils continue to decrease.

CASING AND CEMENTING CHANGES

Casing Type	Size	Of /	Hole	Size	Of /	Casing	Wt/Ft	Csg/LinTop	Setting Depth	Sacks of Cement	Cement Bottom	Cement Top

H2S REPORTING

Data Fields in this section are intended to document Sample and Location Data associated with the collection of a Gas Sample that is submitted for Laboratory Analysis.

Gas Analysis Report must be attached.

H2S Concentration: _____ in ppm (parts per million) Date of Measurement or Sample Collection _____

Description of Sample Point:

Absolute Open Flow Potential _____ in CFPD (cubic feet per day)

Description of Release Potential and Duration (If flow is not open to the atmosphere, identify the duration in which the container or pipeline would likely be opened for servicing operations.):

Distance to nearest occupied residence, school, church, park, school bus stop, place of business, or other areas where the public could reasonably be expected to frequent: _____

Distance to nearest Federal, State, County, or municipal road or highway owned and principally maintained for public use: _____

COMMENTS:

BMP

Type

Comment

GROUND WATER SAMPLING

Uses of Ground Water Sampling Section

Request an Exception to Ground Water Sampling Requirements in Greater Wattenberg Area Rule 318A.e(4) or in Statewide Rule 609.c.
Request a Previously Sampled Water Source in the COGIS database be used to meet sampling requirements as described in Rule 609.d.(3).

NOTE: If this Sundry Notice is being submitted to request a Ground Water Sampling Exception it cannot be used for any other purpose except requesting the use of a Previously Sampled Water Source in the COGIS database.

☐ Request an Exception to Ground Water Sampling Requirements per Greater Wattenberg Area Rule 318A.e(4): There are no Available Water Sources located within the governmental quarter section or within a previously unsampled governmental quarter section within a 1/2-mile radius of this proposed Oil and Gas Well, Multi-Well Site, or Dedicated Injection Well.

☐ Request an Exception to Ground Water Sampling Requirements per Statewide Rule 609.c.

_____ Number of Water Sources located within one-half (1/2) mile of a proposed Oil and Gas Well, Multi-Well Site, or Dedicated Injection Well.

_____ Number of Water Source Exceptions requested per Rule 609.c.

_____ Number of Water Sources determined to be unsuitable. **The condition of these Water Sources MUST be documented in the comments below or in an attachment.**

_____ Number of Water Sources suitable for testing whose owners refused to grant access despite an operator's reasonable good faith efforts to obtain consent to conduct sampling.

The reasonable good faith efforts used to obtain access from the owners of these Water Sources MUST be documented in the comments below or in an attachment.

☐ Request a Previously Sampled Water Source in the COGIS database be used to meet sampling requirements as described in Rule 609.d(3)

_____ Type of Sample Substitution Request

Enter Sample ID Number from COGIS Maps for each Previous Water Sample:

Sample ID Facility ID Sample Date Sample Purpose

COMMENTS

Operator Comments:

In reference to Remediation #5169 (and previously submitted Form 27), and recent soil analytical data at the surface showing SAR concentrations naturally leaching to allowable concentrations per COGCC Table 910-1, Encana requests the Remediation #5169 be closed out. The overall trend in data illustrates the natural attenuation and leaching is bringing the Area of Concern back to background levels. A site diagram illustrating the soil sample locations, including depths, and the laboratory analytical reports are attached for reference. Also attached for reference are the previous laboratory data showing the background concentrations at the surface. Stressed vegetation was not observed during the soil sampling visit on April 3, 2013.

I hereby certify all statements made in this form are, to the best of my knowledge, true, correct, and complete.

Signed: Charles H. Jensen, Jr.

Print Name: Charles H. Jensen, Jr., P.G., C.P.G.

Title: Environmental Field Coordinator

Email: charles.jensen@encana.com

Date: 5/13/2013

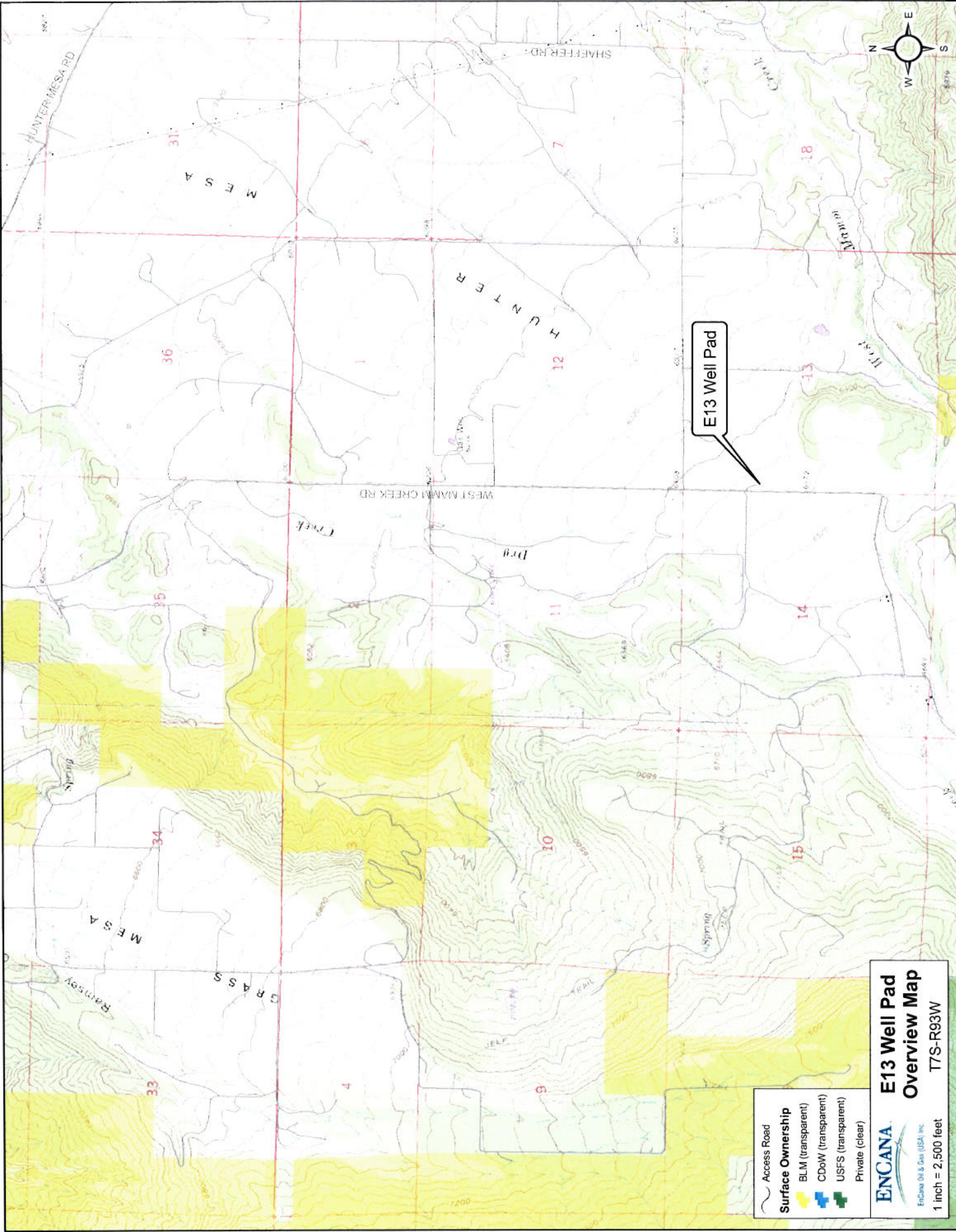
Based on the information provided herein, this Sundry Notice (Form 4) complies with COGCC Rules and applicable orders and is hereby approved.

COGCC Approved: ACE for Carlos Luján, EPS NW Region Date: 5/20/2013

Conditions of Approval:

Continue to monitor SAR & pH levels;
Table 910-1 standards are still exceeded
in multiple samples. REM # 5169 will
remain unresolved until compliance
and vegetation regrowth are achieved.
Request an inspection via Form 4 Sundry
when these conditions have been met.

Ann C. Eckman
5/20/2013



E13 Well Pad

- Access Road
- Surface Ownership
 - BLM (transparent)
 - CDOW (transparent)
 - USFS (transparent)
 - Private (clear)

**ENCANA**
E13 Well Pad
Overview Map
T7S-R93W

1 inch = 2,500 feet
Encana Oil & Gas (USA), Inc.

5pt Composite - Area of Concern Sample Results

Matrix	Date	Sample Analytes			
		EC	SAR	pH	Arsenic
Surface	07/06/09	0.25	17.3	9.4	6.3
	06/23/10	0.94	11.2	9.2	4.5
	08/24/10	0.81	12.1	9.9	4.0
	09/01/11	0.61	17.0	8.8	5.0
	04/03/13	0.42	9.5	9.2	5.1
12" Depth	07/06/09	0.35	4.3	9.8	7.7
	06/23/10	2.58	30.1	9.9	7.3
	08/24/10	2.27	29.4	10.0	8.2
	09/01/11	1.20	33.0	9.0	6.0
	04/03/13	1.00	2.8	9.6	5.4
24" Depth	06/23/10	4.65	32.1	9.5	6.1
	08/24/10	3.95	39.6	9.7	6.6
	09/01/11	1.90	36.0	8.5	5.7
	04/03/13	1.30	19.0	9.4	5.9

MIDSW Area of Concern Sample Results

Matrix	Date	Sample Analytes			
		EC	SAR	pH	Arsenic
Surface	09/01/11	0.49	2.1	9.6	5.4
	04/03/13	0.48	9.9	8.4	3.8
12"	09/01/11	0.92	18	9.9	6
	04/03/13	1.3	31	9.7	6.7
24"	09/01/11	2.5	53	9.2	6.5
	04/03/13	3.8	49	8.9	6

NE Area of Concern Sample Results

Matrix	Date	Sample Analytes			
		EC	SAR	pH	Arsenic
Surface	09/01/11	0.19	4.7	8	4.3
	04/03/13	0.47	1.3	8.9	4.9
12"	09/01/11	0.42	12	9.3	6.6
	04/03/13	0.65	9.2	9	4.6
24"	09/01/11	1.6	13	8	7
	04/03/13	0.59	11	9.1	5.6

Area of Concern

MIDNE Area of Concern Sample Results

Matrix	Date	Sample Analytes			
		EC	SAR	pH	Arsenic
Surface	09/01/11	0.39	13	9.2	4.6
	04/03/13	0.47	1.5	9	5
12"	09/01/11	1.6	24	8	4.6
	04/03/13	0.76	7	9.5	5.8
24"	09/01/11	2.8	9.6	7.4	5.4
	04/03/13	1	9.1	9.6	5.3

MID Area of Concern Sample Results

Matrix	Date	Sample Analytes			
		EC	SAR	pH	Arsenic
Surface	09/01/11	0.59	14	8.2	4.1
	04/03/13	0.39	1.8	9.2	2.8
12"	09/01/11	1.7	58	9.2	4.8
	04/03/13	0.98	14	9.6	4.9
24"	09/01/11	2.2	45	8.7	5.2
	04/03/13	1.5	19	9.3	3

S Area of Concern Sample Results

Matrix	Date	Sample Analytes			
		EC	SAR	pH	Arsenic
Surface	09/01/11	1.5	29	9.3	4.9
	04/03/13	0.36	1.7	9.2	3.9
12"	09/01/11	3.1	22	8	7.3
	04/03/13	1.1	6.2	9.7	5.3
24"	09/01/11	1.6	5.1	7.9	8.2
	04/03/13	1.1	9	9.8	6.4

E13 Areas of Concern

E13 Site Assessment
Laboratory Results for Background

	Background			
EC	0.0761			
SAR (mmhos/cm)	3.7			
pH	8			
Arsenic (mg/kg)	6.5			
Boron (mg/kg)	0.534			



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Chris Hines / Matt Kasten
EnCana Oil & Gas Inc. - CO
143 Diamond Avenue
Parachute, CO 81635

Report Summary

Friday April 12, 2013

Report Number: L628558

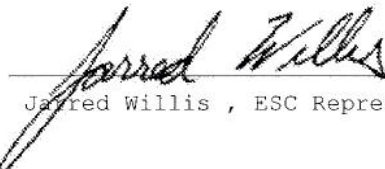
Samples Received: 04/04/13

Client Project: E13

Description: E13 Spill-Area of Concern

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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REPORT OF ANALYSIS

Chris Hines / Matt Kasten
EnCana Oil & Gas Inc. - CO
143 Diamond Avenue
Parachute, CO 81635

April 12, 2013

Date Received : April 04, 2013
Description : E13 Spill-Area of Concern
Sample ID : E13-AOC-NE-SURFACE-040313
Collected By : Matt Kasten
Collection Date : 04/03/13 09:15

ESC Sample # : L628558-01

Site ID : E13

Project # : E13

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	8.9		su	9045D	04/05/13	1
Sodium Adsorption Ratio	1.3			Calc.	04/12/13	1
Specific Conductance	470		umhos/cm	9050AMod	04/05/13	1
Arsenic	4.9	1.0	mg/kg	6010B	04/10/13	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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L628558-01 (PH) - 8.9@22.5c



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REPORT OF ANALYSIS

Chris Hines / Matt Kasten
EnCana Oil & Gas Inc. - CO
143 Diamond Avenue
Parachute, CO 81635

April 12, 2013

Date Received : April 04, 2013
Description : E13 Spill-Area of Concern
Sample ID : E13-AOC-MIDNE-SURFACE-040313
Collected By : Matt Kasten
Collection Date : 04/03/13 09:20

ESC Sample # : L628558-02

Site ID : E13

Project # : E13

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	9.0		su	9045D	04/05/13	1
Sodium Adsorption Ratio	1.5			Calc.	04/12/13	1
Specific Conductance	470		umhos/cm	9050AMod	04/05/13	1
Arsenic	5.0	1.0	mg/kg	6010B	04/10/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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L628558-02 (PH) - 9.0@22.1c



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REPORT OF ANALYSIS

Chris Hines / Matt Kasten
EnCana Oil & Gas Inc. - CO
143 Diamond Avenue
Parachute, CO 81635

April 12, 2013

Date Received : April 04, 2013
Description : E13 Spill-Area of Concern
Sample ID : E13-AOC-MID-SURFACE-040313
Collected By : Matt Kasten
Collection Date : 04/03/13 09:23

ESC Sample # : L628558-03

Site ID : E13

Project # : E13

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	9.2		su	9045D	04/05/13	1
Sodium Adsorption Ratio	1.8			Calc.	04/12/13	1
Specific Conductance	390		umhos/cm	9050AMod	04/05/13	1
Arsenic	2.8	1.0	mg/kg	6010B	04/10/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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L628558-03 (PH) - 9.2@22.2c



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REPORT OF ANALYSIS

April 12, 2013

Chris Hines / Matt Kasten
EnCana Oil & Gas Inc. - CO
143 Diamond Avenue
Parachute, CO 81635

ESC Sample # : L628558-04

Date Received : April 04, 2013
Description : E13 Spill-Area of Concern
Sample ID : E13-AOC-MIDSW-SURFACE-040313
Collected By : Matt Kasten
Collection Date : 04/03/13 09:27

Site ID : E13
Project # : E13

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	9.6		su	9045D	04/05/13	1
Sodium Adsorption Ratio	2.1			Calc.	04/12/13	1
Specific Conductance	490		umhos/cm	9050AMod	04/05/13	1
Arsenic	5.4	1.0	mg/kg	6010B	04/10/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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L628558-04 (PH) - 9.6@22.2c



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REPORT OF ANALYSIS

April 12, 2013

Chris Hines / Matt Kasten
EnCana Oil & Gas Inc. - CO
143 Diamond Avenue
Parachute, CO 81635

Date Received : April 04, 2013
Description : E13 Spill-Area of Concern
Sample ID : E13-AOC-S-SURFACE-040313
Collected By : Matt Kasten
Collection Date : 04/03/13 09:30

ESC Sample # : L628558-05

Site ID : E13

Project # : E13

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	9.2		su	9045D	04/05/13	1
Sodium Adsorption Ratio	1.7			Calc.	04/12/13	1
Specific Conductance	360		umhos/cm	9050AMod	04/05/13	1
Arsenic	3.9	1.0	mg/kg	6010B	04/10/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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L628558-05 (PH) - 9.2@22.0c



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REPORT OF ANALYSIS

April 12, 2013

Chris Hines / Matt Kasten
EnCana Oil & Gas Inc. - CO
143 Diamond Avenue
Parachute, CO 81635

Date Received : April 04, 2013
Description : E13 Spill-Area of Concern
Sample ID : E13-AOC-SURFACE-040313
Collected By : Matt Kasten
Collection Date : 04/03/13 09:35

ESC Sample # : L628558-06

Site ID : E13

Project # : E13

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	9.2		su	9045D	04/05/13	1
Sodium Adsorption Ratio	9.5			Calc.	04/12/13	1
Specific Conductance	420		umhos/cm	9050AMod	04/05/13	1
Arsenic	5.1	1.0	mg/kg	6010B	04/10/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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L628558-06 (PH) - 9.2@21.8c



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REPORT OF ANALYSIS

Chris Hines / Matt Kasten
EnCana Oil & Gas Inc. - CO
143 Diamond Avenue
Parachute, CO 81635

April 12, 2013

Date Received : April 04, 2013
Description : E13 Spill-Area of Concern
Sample ID : E13-AOC-NE-1 FT-040313
Collected By : Matt Kasten
Collection Date : 04/03/13 09:35

ESC Sample # : L628558-07

Site ID : E13

Project # : E13

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	9.0		su	9045D	04/05/13	1
Sodium Adsorption Ratio	9.2			Calc.	04/12/13	1
Specific Conductance	650		umhos/cm	9050AMod	04/05/13	1
Arsenic	4.6	1.0	mg/kg	6010B	04/10/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 04/12/13 10:17 Printed: 04/12/13 10:17
L628558-07 (PH) - 9.0@22.0c



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REPORT OF ANALYSIS

Chris Hines / Matt Kasten
EnCana Oil & Gas Inc. - CO
143 Diamond Avenue
Parachute, CO 81635

April 12, 2013

Date Received : April 04, 2013
Description : E13 Spill-Area of Concern
Sample ID : E13-AOC-MIDNE-1 FT-040313
Collected By : Matt Kasten
Collection Date : 04/03/13 09:40

ESC Sample # : L628558-08

Site ID : E13

Project # : E13

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	9.5		su	9045D	04/05/13	1
Sodium Adsorption Ratio	7.0			Calc.	04/12/13	1
Specific Conductance	760		umhos/cm	9050AMod	04/05/13	1
Arsenic	5.8	1.0	mg/kg	6010B	04/10/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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L628558-08 (PH) - 9.5@21.9c



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REPORT OF ANALYSIS

April 12, 2013

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143 Diamond Avenue
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ESC Sample # : L628558-09

Date Received : April 04, 2013
Description : E13 Spill-Area of Concern

Site ID : E13

Sample ID : E13-AOC-MID-1 FT-040313

Project # : E13

Collected By : Matt Kasten
Collection Date : 04/03/13 09:45

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	9.6		su	9045D	04/05/13	1
Sodium Adsorption Ratio	14.			Calc.	04/12/13	1
Specific Conductance	980		umhos/cm	9050AMod	04/05/13	1
Arsenic	4.9	1.0	mg/kg	6010B	04/10/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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L628558-09 (PH) - 9.6@21.3c



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REPORT OF ANALYSIS

April 12, 2013

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143 Diamond Avenue
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ESC Sample # : L628558-10

Date Received : April 04, 2013
Description : E13 Spill-Area of Concern

Site ID : E13

Sample ID : E13-AOC-MIDSW-1 FT-040313

Project # : E13

Collected By : Matt Kasten
Collection Date : 04/03/13 09:50

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	9.7		su	9045D	04/05/13	1
Sodium Adsorption Ratio	31.			Calc.	04/12/13	1
Specific Conductance	1300		umhos/cm	9050AMod	04/05/13	1
Arsenic	6.7	1.0	mg/kg	6010B	04/10/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 04/12/13 10:17 Printed: 04/12/13 10:17
L628558-10 (PH) - 9.7@21.2c



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REPORT OF ANALYSIS

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143 Diamond Avenue
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April 12, 2013

Date Received : April 04, 2013
Description : E13 Spill-Area of Concern
Sample ID : E13-AOC-S-1 FT-040313
Collected By : Matt Kasten
Collection Date : 04/03/13 09:55

ESC Sample # : L628558-11

Site ID : E13

Project # : E13

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	9.7		su	9045D	04/05/13	1
Sodium Adsorption Ratio	6.2			Calc.	04/12/13	1
Specific Conductance	1100		umhos/cm	9050AMod	04/05/13	1
Arsenic	5.3	1.0	mg/kg	6010B	04/10/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 04/12/13 10:17 Printed: 04/12/13 10:17
L628558-11 (PH) - 9.7@21.1c



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April 12, 2013

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EnCana Oil & Gas Inc. - CO
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ESC Sample # : L628558-12

Date Received : April 04, 2013
Description : E13 Spill-Area of Concern

Site ID : E13

Sample ID : E13-AOC-1 FT-040313

Project # : E13

Collected By : Matt Kasten
Collection Date : 04/03/13 10:00

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	9.6		su	9045D	04/05/13	1
Sodium Adsorption Ratio	2.8			Calc.	04/12/13	1
Specific Conductance	1000		umhos/cm	9050AMod	04/05/13	1
Arsenic	5.4	1.0	mg/kg	6010B	04/10/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Note:

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Reported: 04/12/13 10:17 Printed: 04/12/13 10:17
L628558-12 (PH) - 9.6@21.0c



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REPORT OF ANALYSIS

April 12, 2013

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143 Diamond Avenue
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ESC Sample # : L628558-13

Date Received : April 04, 2013
Description : E13 Spill-Area of Concern

Site ID : E13

Sample ID : E13-AOC-NE-2 FT-040313

Project # : E13

Collected By : Matt Kasten
Collection Date : 04/03/13 10:05

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	9.1		su	9045D	04/05/13	1
Sodium Adsorption Ratio	11.			Calc.	04/12/13	1
Specific Conductance	590		umhos/cm	9050AMod	04/05/13	1
Arsenic	5.6	1.0	mg/kg	6010B	04/10/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 04/12/13 10:17 Printed: 04/12/13 10:17
L628558-13 (PH) - 9.1@20.8c



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REPORT OF ANALYSIS

Chris Hines / Matt Kasten
EnCana Oil & Gas Inc. - CO
143 Diamond Avenue
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April 12, 2013

Date Received : April 04, 2013
Description : E13 Spill-Area of Concern
Sample ID : E13-AOC-MIDNE-2 FT-040313
Collected By : Matt Kasten
Collection Date : 04/03/13 10:10

ESC Sample # : L628558-14

Site ID : E13

Project # : E13

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	9.6		su	9045D	04/05/13	1
Sodium Adsorption Ratio	9.1			Calc.	04/12/13	1
Specific Conductance	1000		umhos/cm	9050AMod	04/05/13	1
Arsenic	5.3	1.0	mg/kg	6010B	04/10/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 04/12/13 10:17 Printed: 04/12/13 10:17
L628558-14 (PH) - 9.6@21.2c



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REPORT OF ANALYSIS

April 12, 2013

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ESC Sample # : L628558-15

Date Received : April 04, 2013
Description : E13 Spill-Area of Concern

Site ID : E13

Sample ID : E13-AOC-MID-2 FT-040313

Project # : E13

Collected By : Matt Kasten
Collection Date : 04/03/13 10:15

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	9.3		su	9045D	04/05/13	1
Sodium Adsorption Ratio	19.			Calc.	04/12/13	1
Specific Conductance	1500		umhos/cm	9050AMod	04/05/13	1
Arsenic	3.0	1.0	mg/kg	6010B	04/10/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 04/12/13 10:17 Printed: 04/12/13 10:17
L628558-15 (PH) - 9.3@20.3c



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REPORT OF ANALYSIS

April 12, 2013

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Date Received : April 04, 2013
Description : E13 Spill-Area of Concern
Sample ID : E13-AOC-MIDSW-2 FT-040313
Collected By : Matt Kasten
Collection Date : 04/03/13 10:20

ESC Sample # : L628558-16

Site ID : E13

Project # : E13

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	8.9		su	9045D	04/05/13	1
Sodium Adsorption Ratio	49.			Calc.	04/12/13	1
Specific Conductance	3800		umhos/cm	9050AMod	04/05/13	1
Arsenic	6.0	1.0	mg/kg	6010B	04/10/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 04/12/13 10:17 Printed: 04/12/13 10:17
L628558-16 (PH) - 8.9@20.2c



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REPORT OF ANALYSIS

April 12, 2013

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143 Diamond Avenue
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Date Received : April 04, 2013
Description : E13 Spill-Area of Concern
Sample ID : E13-AOC-S-2 FT-040313
Collected By : Matt Kasten
Collection Date : 04/03/13 10:25

ESC Sample # : L628558-17

Site ID : E13

Project # : E13

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	9.8		su	9045D	04/05/13	1
Sodium Adsorption Ratio	9.0			Calc.	04/12/13	1
Specific Conductance	1100		umhos/cm	9050AMod	04/05/13	1
Arsenic	6.4	1.0	mg/kg	6010B	04/10/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Note:

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Reported: 04/12/13 10:17 Printed: 04/12/13 10:17
L628558-17 (PH) - 9.8@20.5c



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REPORT OF ANALYSIS

April 12, 2013

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EnCana Oil & Gas Inc. - CO
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ESC Sample # : L628558-18

Date Received : April 04, 2013
Description : E13 Spill-Area of Concern

Site ID : E13

Sample ID : E13-AOC-2 FT-040313

Project # : E13

Collected By : Matt Kasten
Collection Date : 04/03/13 10:30

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	9.4		su	9045D	04/05/13	1
Sodium Adsorption Ratio	19.			Calc.	04/12/13	1
Specific Conductance	1300		umhos/cm	9050AMod	04/11/13	1
Arsenic	5.9	1.0	mg/kg	6010B	04/10/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 04/12/13 10:17 Printed: 04/12/13 10:17
L628558-18 (PH) - 9.4@20.4c

Summary of Remarks For Samples Printed
04/12/13 at 10:17:55

TSR Signing Reports: 358
R5 - Desired TAT

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

Sample: L628558-01 Account: ENCANACO Received: 04/04/13 09:00 Due Date: 04/11/13 00:00 RPT Date: 04/12/13 10:17
Sample: L628558-02 Account: ENCANACO Received: 04/04/13 09:00 Due Date: 04/11/13 00:00 RPT Date: 04/12/13 10:17
Sample: L628558-03 Account: ENCANACO Received: 04/04/13 09:00 Due Date: 04/11/13 00:00 RPT Date: 04/12/13 10:17
Sample: L628558-04 Account: ENCANACO Received: 04/04/13 09:00 Due Date: 04/11/13 00:00 RPT Date: 04/12/13 10:17
Sample: L628558-05 Account: ENCANACO Received: 04/04/13 09:00 Due Date: 04/11/13 00:00 RPT Date: 04/12/13 10:17
Sample: L628558-06 Account: ENCANACO Received: 04/04/13 09:00 Due Date: 04/11/13 00:00 RPT Date: 04/12/13 10:17
Sample: L628558-07 Account: ENCANACO Received: 04/04/13 09:00 Due Date: 04/11/13 00:00 RPT Date: 04/12/13 10:17
Sample: L628558-08 Account: ENCANACO Received: 04/04/13 09:00 Due Date: 04/11/13 00:00 RPT Date: 04/12/13 10:17
Sample: L628558-09 Account: ENCANACO Received: 04/04/13 09:00 Due Date: 04/11/13 00:00 RPT Date: 04/12/13 10:17
Sample: L628558-10 Account: ENCANACO Received: 04/04/13 09:00 Due Date: 04/11/13 00:00 RPT Date: 04/12/13 10:17
Sample: L628558-11 Account: ENCANACO Received: 04/04/13 09:00 Due Date: 04/11/13 00:00 RPT Date: 04/12/13 10:17
Sample: L628558-12 Account: ENCANACO Received: 04/04/13 09:00 Due Date: 04/11/13 00:00 RPT Date: 04/12/13 10:17
Sample: L628558-13 Account: ENCANACO Received: 04/04/13 09:00 Due Date: 04/11/13 00:00 RPT Date: 04/12/13 10:17
Sample: L628558-14 Account: ENCANACO Received: 04/04/13 09:00 Due Date: 04/11/13 00:00 RPT Date: 04/12/13 10:17
Sample: L628558-15 Account: ENCANACO Received: 04/04/13 09:00 Due Date: 04/11/13 00:00 RPT Date: 04/12/13 10:17
Sample: L628558-16 Account: ENCANACO Received: 04/04/13 09:00 Due Date: 04/11/13 00:00 RPT Date: 04/12/13 10:17
Sample: L628558-17 Account: ENCANACO Received: 04/04/13 09:00 Due Date: 04/11/13 00:00 RPT Date: 04/12/13 10:17
Sample: L628558-18 Account: ENCANACO Received: 04/04/13 09:00 Due Date: 04/11/13 00:00 RPT Date: 04/12/13 10:17



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Quality Assurance Report
Level II

L628558

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April 12, 2013

Analyte	Result	Laboratory Blank Units % Rec	Limit	Batch	Date Analyzed
Specific Conductance	1.99	umhos/cm		WG654656	04/05/13 15:39
Arsenic	< 1	mg/kg		WG654758	04/10/13 08:07
Specific Conductance	13.7	umhos/cm		WG655557	04/11/13 15:31

Analyte	Units	Result	Duplicate Duplicate	RPD	Limit	Ref Samp	Batch
pH	su	9.40	9.50	0.740	1	L628558-08	WG654621
pH	su	9.40	9.40	0.426	1	L628558-18	WG654621
Specific Conductance	umhos/cm	2500	2500	1.21	20	L628484-02	WG654656
Specific Conductance	umhos/cm	730.	760.	4.03	20	L628558-08	WG654656
Arsenic	mg/kg	22.0	25.0	12.8	20	L628532-02	WG654758
Specific Conductance	umhos/cm	1300	1300	2.33	20	L628558-18	WG655557
Specific Conductance	umhos/cm	950.	940.	1.48	20	L629643-01	WG655557

Analyte	Units	Laboratory Control Sample Known Val Result	% Rec	Limit	Batch
pH	su	5.79 5.87	101.	98.3-101.7	WG654621
Specific Conductance	umhos/cm	878 896.	102.	85-115	WG654656
Arsenic	mg/kg	237 256.	108.	83.1-117	WG654758
Specific Conductance	umhos/cm	878 906.	103.	85-115	WG655557

Analyte	Units	Laboratory Control Sample Duplicate Result Ref %Rec	Limit	RPD	Limit	Batch
pH	su	5.88 5.87 102*	98.3-101.7	0.170	20	WG654621
Specific Conductance	umhos/	897. 896. 102.	85-115	0.112	20	WG654656
Specific Conductance	umhos/	905. 906. 103.	85-115	0.110	20	WG655557

Analyte	Units	Matrix Spike MS Res Ref Res TV	% Rec	Limit	Ref Samp	Batch
Arsenic	mg/kg	66.0 25.0 50	82.0	75-125	L628532-02	WG654758

Analyte	Units	Matrix Spike Duplicate MSD Ref %Rec	Limit	RPD	Limit	Ref Samp	Batch
Arsenic	mg/kg	66.0 66.0 82.0	75-125	0	20	L628532-02	WG654758

* 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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Quality Assurance Report
Level II

L628558

April 12, 2013

Batch number / Run number / Sample number cross reference

WG654621: R2604957: L628558-01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18
WG654656: R2605200: L628558-01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17
WG654758: R2612920: L628558-01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18
WG655557: R2613780: L628558-18
WG655296: R2614941: L628558-01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18

- * * 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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Level II

L628558

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April 12, 2013

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.