



**K25A 596 (Location: 335649)**  
**Pit (Facility: 425565)**  
**Encana Oil & Gas (USA) Inc. (Operator: 100185)**

### **REPORT OF WORK COMPLETED**

- Form 27 (Doc: 2232901) (Rem: 7770)

Encana Oil & Gas (USA) Inc. (Encana) is submitting this Form 4 (Report of Work Completed and Notification of Completion) to document closure of a lined earthen pit on a well pad in the North Parachute area of operation in Garfield County.

Pit closure activities were carried out in June, 2010. The pit was drained, and the liner and above liner solids were removed for offsite disposal. Following removal of the pit liner, a composite sample of the pit bottom was collected and sent to the lab to be analyzed for COGCC Table 910-1 constituents of concern. Upon receipt of laboratory results identifying TPH concentrations above the allowable limit, heavy equipment was used to remove visually impacted material from the pit excavation, and lay the removed material out on the location to augment bioremediation.

In March 2011, composite samples were collected from the pit bottom and stockpiled material, and sent to the lab for TPH analysis.

### **NOTIFICATION OF COMPLETION**

Samples collected from the pit excavation and soil stockpile the following year were within COGCC Table 910-1 allowable concentration for TPH. The arsenic concentration initially identified in the pit bottom is above the allowable concentration in Table 910-1, but is within the range of background values for this area. Based on these results and Footnote 1 to COGCC Table 910-1, Encana requests that the COGCC consider the higher range of background arsenic values as the allowable concentration for this constituent. With regards to the inorganic constituents (SAR, EC, pH), the soils represented by these samples are within the former pit footprint, are greater than five feet below the current working surface, and will be at an even greater depth below the final reclaimed working surface where the constituents will have no effect on revegetation efforts.

After receipt of laboratory results demonstrating compliance for the pit excavation and soil stockpile, the stockpiled material was returned to the pit, which was backfilled and reclaimed.

If the information provided here is satisfactory, please close the associated remediation project, and pit facility, and provide documentation of these record closures.

### **ATTACHMENTS**

1. Topographic Location Map
2. Laboratory Results Summary Table
3. Laboratory Reports

# North Parachute Ranch

Garfield County, Colorado

0 3,200 6,400 Feet

1 inch = 3,000 feet

**K25A Well Pad and Pit**  
Location ID: 335649  
Facility ID: 425565  
Rem #: 7770

T005S-R096W

T005S-R095W

T006S-R096W

T006S-R095W

Encana Site Boundary  
 Access Road  
 Township Boundary

**Surface Ownership**

- Not Identified Below (clear)
- EnCana (transparent)
- USFS (transparent)
- BLM (transparent)

Analytes (BDL = Below Detection Limit; ND = Non Detect)

Location	Sample Date:	Sample Matrix	Matrix Notes	Organic Compounds in Soil (mg/kg [ppm])																	Inorganics in Soil			Metals in Soil (mg/kg [ppm])																
				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					
				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-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		
K25A	06/29/10	Pit	Pit bottom	4494.46	4.46	4490	0.107	0.46	0.0798	0.164	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.447	ND	0.424	ND	5.31	14.1	10.19	14.9	7860	BDL	19.7	BDL	22.4	13.9	BDL	13.1	BDL	BDL	52		
K25A	03/31/11	Pit	pit bottom	18	BDL	18																																		
K25A	03/31/11	Pit	pit spoil	240	BDL	240																																		



## Technical Report for

**EnCana**

**K25A Pit Closure**

**Accutest Job Number: D14849**

**Sampling Date: 06/29/10**

### Report to:

**EnCana  
2717 CR 215 Suite 100  
Parachute, CO 81635  
christopher.hines@encana.com**

**ATTN: Chris Hines**

**Total number of pages in report: 84**



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.

**Jesse L. Smith  
Laboratory Director**

**Client Service contact: Amanda Kissell 303-425-6021**

Certifications: CO, ID, NE, NM, ND (R-027) (PW) UT (NELAP CO00049)

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



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## Sample Summary

EnCana

**Job No:** D14849

K25A Pit Closure

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
D14849-1	06/29/10	15:05 BR	07/01/10	SO	Soil	K25A-NE BACK-062910
D14849-2	06/29/10	15:20 BR	07/01/10	SO	Soil	K25A-NW BACK-062910
D14849-2A	06/29/10	15:20 BR	07/01/10	SO	Soil	K25A-NW BACK-062910
D14849-3	06/29/10	15:45 BR	07/01/10	SO	Soil	K25A-PIT BOTTOM-062910
D14849-3A	06/29/10	15:45 BR	07/01/10	SO	Soil	K25A-PIT BOTTOM-062910

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

## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** EnCana

**Job No** D14849

**Site:** K25A Pit Closure

**Report Dat** 7/9/2010 2:00:45 PM

On 07/01/2010, 3 sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 4.3 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D14849 was assigned to the project. The lab sample IDs, client sample IDs, and dates of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

<b>Matrix</b> SO	<b>Batch ID:</b> V3V283
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) D14850-1MS, D14850-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

<b>Matrix</b> SO	<b>Batch ID:</b> V3V284
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D14746-2MS, D14746-2MSD were used as the QC samples indicated.

### Extractables by GCMS By Method SW846 8270C BY SIM

<b>Matrix</b> SO	<b>Batch ID:</b> OP2111
------------------	-------------------------

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D14817-3MS, D14817-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

### Volatiles by GC By Method SW846 8015B

<b>Matrix</b> SO	<b>Batch ID:</b> GGA445
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) D14907-2MS, D14907-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

### Extractables by GC By Method SW846-8015B

<b>Matrix</b> SO	<b>Batch ID:</b> OP2112
------------------	-------------------------

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D14764-1MS, D14764-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

## Metals By Method SW846 6010B

<b>Matrix</b> AQ	<b>Batch ID:</b> MP2263
------------------	-------------------------

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D14849-2AMS, D14849-2AMSD were used as the QC samples for metals.

<b>Matrix</b> SO	<b>Batch ID:</b> MP2238
------------------	-------------------------

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D14850-1MS, D14850-1MSD, D14850-1SDL were used as the QC samples for metals.
- Matrix Spike Recovery(s) for Barium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- RPD(s) for Serial Dilution for Cadmium, Selenium, Barium, Chromium, Lead, Nickel, Zinc are outside control limits for sample MP2238-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

## Metals By Method SW846 6020

<b>Matrix</b> SO	<b>Batch ID:</b> MP2239
------------------	-------------------------

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D14850-1MS, D14850-1MSD, D14850-1SDL were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Arsenic are outside control limits for sample MP2239-SD1. Probable cause due to sample homogeneity.

## Metals By Method SW846 7471A

<b>Matrix</b> SO	<b>Batch ID:</b> MP2250
------------------	-------------------------

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D14851-1MS, D14851-1MSD were used as the QC samples for metals.

## Wet Chemistry By Method ASTM E1498-76M

<b>Matrix</b> SO	<b>Batch ID:</b> M:GN32327
------------------	----------------------------

- The data for ASTM E1498-76M meets quality control requirements.
- The following samples were run outside of holding time for method ASTM E1498-76M: D14849-2, D14849-3.
- Redox Potential Vs H2: Analysis performed at Accutest Laboratories, Marlborough, MA.

## Wet Chemistry By Method LADNR29B

<b>Matrix</b> SO	<b>Batch ID:</b> R3127
------------------	------------------------

- The data for LADNR29B meets quality control requirements.
- Sodium Adsorption Ratio: Calculated as:  $(Na \text{ meq/L}) / \sqrt{[(Ca \text{ meq/L}) + (Mg \text{ meq/L})/2]}$

## Wet Chemistry By Method SM19 2540B M

<b>Matrix</b> SO	<b>Batch ID:</b> GN5174
------------------	-------------------------

- The data for SM19 2540B M meets quality control requirements.

### Wet Chemistry By Method SW846 3060/7196A M

<b>Matrix</b> SO	<b>Batch ID:</b> R3110
------------------	------------------------

- The data for SW846 3060/7196A M meets quality control requirements.
- Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

### Wet Chemistry By Method SW846 3060A/7196A

<b>Matrix</b> SO	<b>Batch ID:</b> M:GP11780
------------------	----------------------------

- The data for SW846 3060A/7196A meets quality control requirements.
- Chromium, Hexavalent: Analysis performed at Accutest Laboratories, Marlborough, MA.

### Wet Chemistry By Method SW846 9045C

<b>Matrix</b> SO	<b>Batch ID:</b> GN5177
------------------	-------------------------

- The following samples were run outside of holding time for method SW846 9045C: D14849-2, D14849-3.

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Accutest Mountain States

**Job No** D14849

**Site:** ENCACOP: K25A Pit Closure

**Report Date** 7/7/2010 4:39:32 PM

2 Sample(s) were collected on 06/29/2010 and were received at Accutest on 07/01/2010 properly preserved, at 3.7 Deg. C and intact. These Samples received an Accutest job number of D14849. 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.

### Wet Chemistry By Method ASTM E1498-76M

**Matrix** SO

**Batch ID:** GN32327

- Sample(s) D14852-2DUP were used as the QC samples for Redox Potential Vs H2.

### Wet Chemistry By Method SW846 3060A/7196A

**Matrix** SO

**Batch ID:** GP11780

- All samples were distilled 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) D14817-3DUP, D14817-3MS were used as the QC samples for Chromium, Hexavalent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(D14849).



## Sample Results

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## Report of Analysis

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## Report of Analysis

<b>Client Sample ID:</b> K25A-NE BACK-062910	<b>Date Sampled:</b> 06/29/10
<b>Lab Sample ID:</b> D14849-1	<b>Date Received:</b> 07/01/10
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 84.7
<b>Project:</b> K25A Pit Closure	

### Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	21.6	0.35	mg/kg	5	07/02/10	07/02/10 SH	SW846 6020 <sup>1</sup>	SW846 3050B <sup>2</sup>

(1) Instrument QC Batch: MA795

(2) Prep QC Batch: MP2239

---

RL = Reporting Limit

## Report of Analysis

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<b>Client Sample ID:</b> K25A-NW BACK-062910	
<b>Lab Sample ID:</b> D14849-2	<b>Date Sampled:</b> 06/29/10
<b>Matrix:</b> SO - Soil	<b>Date Received:</b> 07/01/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> 84.8
<b>Project:</b> K25A Pit Closure	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V05587.D	1	07/04/10	DC	n/a	n/a	V3V283
Run #2							

	Initial Weight
Run #1	1.00 g
Run #2	

### Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	5.9	1.8	ug/kg	
108-88-3	Toluene	ND	12	5.9	ug/kg	
100-41-4	Ethylbenzene	ND	12	2.4	ug/kg	
	m,p-Xylene	ND	24	4.1	ug/kg	
95-47-6	o-Xylene	ND	12	4.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	90%		70-130%
460-00-4	4-Bromofluorobenzene	81%		70-130%
17060-07-0	1,2-Dichloroethane-D4	92%		70-130%

ND = Not detected      MDL - Method Detection Limit  
 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

<b>Client Sample ID:</b> K25A-NW BACK-062910	
<b>Lab Sample ID:</b> D14849-2	<b>Date Sampled:</b> 06/29/10
<b>Matrix:</b> SO - Soil	<b>Date Received:</b> 07/01/10
<b>Method:</b> SW846 8270C BY SIM SW846 3540C	<b>Percent Solids:</b> 84.8
<b>Project:</b> K25A Pit Closure	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G01295.D	5	07/07/10	TMB	07/02/10	OP2111	E3G33
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

**BN PAH List**

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	39	37	ug/kg	
208-96-8	Acenaphthylene	ND	200	40	ug/kg	
120-12-7	Anthracene	ND	39	25	ug/kg	
56-55-3	Benzo(a)anthracene	ND	39	38	ug/kg	
50-32-8	Benzo(a)pyrene	ND	39	25	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	39	28	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	39	25	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	39	25	ug/kg	
218-01-9	Chrysene	ND	39	20	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	39	29	ug/kg	
206-44-0	Fluoranthene	ND	39	24	ug/kg	
86-73-7	Fluorene	ND	39	38	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	39	26	ug/kg	
90-12-0	1-Methylnaphthalene	ND	39	35	ug/kg	
91-57-6	2-Methylnaphthalene	ND	200	60	ug/kg	
91-20-3	Naphthalene	ND	200	43	ug/kg	
85-01-8	Phenanthrene	ND	39	31	ug/kg	
129-00-0	Pyrene	ND	39	27	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	66%		10-193%
321-60-8	2-Fluorobiphenyl	68%		20-138%
1718-51-0	Terphenyl-d14	97%		17-174%

ND = Not detected      MDL - Method Detection Limit  
 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

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3

<b>Client Sample ID:</b> K25A-NW BACK-062910	<b>Date Sampled:</b> 06/29/10
<b>Lab Sample ID:</b> D14849-2	<b>Date Received:</b> 07/01/10
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 84.8
<b>Method:</b> SW846 8015B	
<b>Project:</b> K25A Pit Closure	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GA7522.D	1	07/07/10	DG	n/a	n/a	GGA445
Run #2							

Run #	Initial Weight
Run #1	1.0 g
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	1.2	1.2	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	84%		60-140%		

ND = Not detected      MDL - Method Detection Limit  
 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

32  
3

<b>Client Sample ID:</b> K25A-NW BACK-062910	<b>Date Sampled:</b> 06/29/10
<b>Lab Sample ID:</b> D14849-2	<b>Date Received:</b> 07/01/10
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 84.8
<b>Method:</b> SW846-8015B SW846 3550B	
<b>Project:</b> K25A Pit Closure	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD2463.D	1	07/04/10	CP	07/02/10	OP2112	GFD131
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.2 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	Units	Q
	TPH-DRO (C10-C28)	19.5	16	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
84-15-1	o-Terphenyl	78%		63-130%	

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

<b>Client Sample ID:</b> K25A-NW BACK-062910	<b>Date Sampled:</b> 06/29/10
<b>Lab Sample ID:</b> D14849-2	<b>Date Received:</b> 07/01/10
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 84.8
<b>Project:</b> K25A Pit Closure	

## Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	24.7	0.38	mg/kg	5	07/02/10	07/02/10 SH	SW846 6020 <sup>1</sup>	SW846 3050B <sup>5</sup>
Barium	347	0.95	mg/kg	1	07/02/10	07/02/10 SH	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Cadmium	< 0.95	0.95	mg/kg	1	07/02/10	07/02/10 SH	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Chromium	28.0	0.95	mg/kg	1	07/02/10	07/02/10 SH	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Copper	25.7	0.48	mg/kg	1	07/02/10	07/02/10 SH	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Lead	14.4	4.8	mg/kg	1	07/02/10	07/02/10 SH	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Mercury	< 0.11	0.11	mg/kg	1	07/06/10	07/06/10 RN	SW846 7471A <sup>3</sup>	SW846 7471A <sup>6</sup>
Nickel	19.5	2.9	mg/kg	1	07/02/10	07/02/10 SH	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Selenium	< 4.8	4.8	mg/kg	1	07/02/10	07/02/10 SH	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Silver	< 2.9	2.9	mg/kg	1	07/02/10	07/02/10 SH	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Zinc	48.0	2.9	mg/kg	1	07/02/10	07/02/10 SH	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>

- (1) Instrument QC Batch: MA795
- (2) Instrument QC Batch: MA798
- (3) Instrument QC Batch: MA799
- (4) Prep QC Batch: MP2238
- (5) Prep QC Batch: MP2239
- (6) Prep QC Batch: MP2250

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> K25A-NW BACK-062910	
<b>Lab Sample ID:</b> D14849-2	<b>Date Sampled:</b> 06/29/10
<b>Matrix:</b> SO - Soil	<b>Date Received:</b> 07/01/10
	<b>Percent Solids:</b> 84.8
<b>Project:</b> K25A Pit Closure	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent <sup>a</sup>	< 2.3	2.3	mg/kg	1	07/07/10 12:07	AMA	SW846 3060A/7196A
Chromium, Trivalent <sup>b</sup>	28.0	3.3	mg/kg	1	07/07/10 12:07	AMA	SW846 3060/7196A M
Redox Potential Vs H2 <sup>a</sup>	408		mv	1	07/06/10	AMA	ASTM E1498-76M
Solids, Percent	84.8		%	1	07/02/10	JD	SM19 2540B M
Specific Conductivity	1940	1.0	umhos/cm	1	07/07/10	JD	DEPT.OF AG, BOOK N9
pH	9.35		su	1	07/02/10 10:15	CJ	SW846 9045C

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Calculated as: (Chromium) - (Chromium, Hexavalent)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> K25A-NW BACK-062910	<b>Date Sampled:</b> 06/29/10
<b>Lab Sample ID:</b> D14849-2A	<b>Date Received:</b> 07/01/10
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 84.8
<b>Project:</b> K25A Pit Closure	

### SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	24.3	2.0	mg/l	1	07/07/10 07/08/10	SH	SW846 6010B <sup>1</sup>	EPA 200.7 <sup>2</sup>
Magnesium	92.5	1.0	mg/l	1	07/07/10 07/08/10	SH	SW846 6010B <sup>1</sup>	EPA 200.7 <sup>2</sup>
Sodium	258	2.0	mg/l	1	07/07/10 07/08/10	SH	SW846 6010B <sup>1</sup>	EPA 200.7 <sup>2</sup>

(1) Instrument QC Batch: MA806

(2) Prep QC Batch: MP2263

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> K25A-NW BACK-062910	<b>Date Sampled:</b> 06/29/10
<b>Lab Sample ID:</b> D14849-2A	<b>Date Received:</b> 07/01/10
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 84.8
<b>Project:</b> K25A Pit Closure	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio <sup>a</sup>	5.35		ratio	1	07/08/10 01:41	SH	LADNR29B

(a) Calculated as:  $(Na \text{ meq/L}) / \sqrt{[(Ca \text{ meq/L}) + (Mg \text{ meq/L})/2]}$

RL = Reporting Limit

## Report of Analysis

3.4  
3

<b>Client Sample ID:</b> K25A-PIT BOTTOM-062910	
<b>Lab Sample ID:</b> D14849-3	<b>Date Sampled:</b> 06/29/10
<b>Matrix:</b> SO - Soil	<b>Date Received:</b> 07/01/10
<b>Method:</b> SW846 8260B	<b>Percent Solids:</b> 80.5
<b>Project:</b> K25A Pit Closure	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V05604.D	1	07/05/10	DC	n/a	n/a	V3V284
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.00 g	10.0 ml	100 ul
Run #2			

### Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	107	140	41	ug/kg	J
108-88-3	Toluene	460	270	140	ug/kg	
100-41-4	Ethylbenzene	79.8	270	55	ug/kg	J
	m,p-Xylene	834	550	95	ug/kg	
95-47-6	o-Xylene	164	270	95	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	86%		70-130%
460-00-4	4-Bromofluorobenzene	94%		70-130%
17060-07-0	1,2-Dichloroethane-D4	74%		70-130%

ND = Not detected      MDL - Method Detection Limit  
 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

<b>Client Sample ID:</b> K25A-PIT BOTTOM-062910	
<b>Lab Sample ID:</b> D14849-3	<b>Date Sampled:</b> 06/29/10
<b>Matrix:</b> SO - Soil	<b>Date Received:</b> 07/01/10
<b>Method:</b> SW846 8270C BY SIM SW846 3540C	<b>Percent Solids:</b> 80.5
<b>Project:</b> K25A Pit Closure	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G01313.D	10	07/07/10	TMB	07/02/10	OP2111	E3G33
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

**BN PAH List**

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	83	77	ug/kg	
208-96-8	Acenaphthylene	ND	410	85	ug/kg	
120-12-7	Anthracene	ND	83	53	ug/kg	
56-55-3	Benzo(a)anthracene	ND	83	81	ug/kg	
50-32-8	Benzo(a)pyrene	ND	83	52	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	83	60	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	83	52	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	83	52	ug/kg	
218-01-9	Chrysene	ND	83	41	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	83	61	ug/kg	
206-44-0	Fluoranthene	ND	83	51	ug/kg	
86-73-7	Fluorene	447	83	81	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	83	54	ug/kg	
90-12-0	1-Methylnaphthalene	321	83	73	ug/kg	
91-57-6	2-Methylnaphthalene	764	410	130	ug/kg	
91-20-3	Naphthalene	424	410	91	ug/kg	
85-01-8	Phenanthrene	282	83	66	ug/kg	
129-00-0	Pyrene	ND	83	56	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	108%		10-193%
321-60-8	2-Fluorobiphenyl	83%		20-138%
1718-51-0	Terphenyl-d14	114%		17-174%

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

3.4  
3

<b>Client Sample ID:</b> K25A-PIT BOTTOM-062910	<b>Date Sampled:</b> 06/29/10
<b>Lab Sample ID:</b> D14849-3	<b>Date Received:</b> 07/01/10
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 80.5
<b>Method:</b> SW846 8015B	
<b>Project:</b> K25A Pit Closure	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GA7523.D	1	07/07/10	DG	n/a	n/a	GGA445
Run #2							

Run #	Initial Weight
Run #1	1.0 g
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	4.46	1.2	1.2	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	128%		60-140%		

ND = Not detected      MDL - Method Detection Limit  
 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

<b>Client Sample ID:</b> K25A-PIT BOTTOM-062910	<b>Date Sampled:</b> 06/29/10
<b>Lab Sample ID:</b> D14849-3	<b>Date Received:</b> 07/01/10
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 80.5
<b>Method:</b> SW846-8015B SW846 3550B	
<b>Project:</b> K25A Pit Closure	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD2495.D	10	07/05/10	CP	07/02/10	OP2112	GFD132
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	Units	Q
	TPH-DRO (C10-C28)	4490	170	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
84-15-1	o-Terphenyl	94%		63-130%	

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

<b>Client Sample ID:</b> K25A-PIT BOTTOM-062910	<b>Date Sampled:</b> 06/29/10
<b>Lab Sample ID:</b> D14849-3	<b>Date Received:</b> 07/01/10
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 80.5
<b>Project:</b> K25A Pit Closure	

### Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	14.9	0.41	mg/kg	5	07/02/10	07/02/10 SH	SW846 6020 <sup>1</sup>	SW846 3050B <sup>6</sup>
Barium	7860	21	mg/kg	20	07/02/10	07/06/10 SH	SW846 6010B <sup>4</sup>	SW846 3050B <sup>5</sup>
Cadmium	< 1.0	1.0	mg/kg	1	07/02/10	07/02/10 SH	SW846 6010B <sup>2</sup>	SW846 3050B <sup>5</sup>
Chromium	19.7	1.0	mg/kg	1	07/02/10	07/02/10 SH	SW846 6010B <sup>2</sup>	SW846 3050B <sup>5</sup>
Copper	22.4	0.52	mg/kg	1	07/02/10	07/02/10 SH	SW846 6010B <sup>2</sup>	SW846 3050B <sup>5</sup>
Lead	13.9	5.2	mg/kg	1	07/02/10	07/02/10 SH	SW846 6010B <sup>2</sup>	SW846 3050B <sup>5</sup>
Mercury	< 0.12	0.12	mg/kg	1	07/06/10	07/06/10 RN	SW846 7471A <sup>3</sup>	SW846 7471A <sup>7</sup>
Nickel	13.1	3.1	mg/kg	1	07/02/10	07/02/10 SH	SW846 6010B <sup>2</sup>	SW846 3050B <sup>5</sup>
Selenium	< 5.2	5.2	mg/kg	1	07/02/10	07/02/10 SH	SW846 6010B <sup>2</sup>	SW846 3050B <sup>5</sup>
Silver	< 3.1	3.1	mg/kg	1	07/02/10	07/02/10 SH	SW846 6010B <sup>2</sup>	SW846 3050B <sup>5</sup>
Zinc	52.0	3.1	mg/kg	1	07/02/10	07/02/10 SH	SW846 6010B <sup>2</sup>	SW846 3050B <sup>5</sup>

- (1) Instrument QC Batch: MA795
- (2) Instrument QC Batch: MA798
- (3) Instrument QC Batch: MA799
- (4) Instrument QC Batch: MA800
- (5) Prep QC Batch: MP2238
- (6) Prep QC Batch: MP2239
- (7) Prep QC Batch: MP2250

RL = Reporting Limit

## Report of Analysis

34  
3

<b>Client Sample ID:</b> K25A-PIT BOTTOM-062910	<b>Date Sampled:</b> 06/29/10
<b>Lab Sample ID:</b> D14849-3	<b>Date Received:</b> 07/01/10
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 80.5
<b>Project:</b> K25A Pit Closure	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent <sup>a</sup>	< 2.5	2.5	mg/kg	1	07/07/10 12:07	AMA	SW846 3060A/7196A
Chromium, Trivalent <sup>b</sup>	19.7	3.5	mg/kg	1	07/07/10 12:07	AMA	SW846 3060/7196A M
Redox Potential Vs H2 <sup>a</sup>	312		mv	1	07/06/10	AMA	ASTM E1498-76M
Solids, Percent	80.5		%	1	07/02/10	JD	SM19 2540B M
Specific Conductivity	5310	1.0	umhos/cm	1	07/07/10	JD	DEPT.OF AG, BOOK N9
pH	10.19		su	1	07/02/10 10:15	CJ	SW846 9045C

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Calculated as: (Chromium) - (Chromium, Hexavalent)

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RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> K25A-PIT BOTTOM-062910	<b>Date Sampled:</b> 06/29/10
<b>Lab Sample ID:</b> D14849-3A	<b>Date Received:</b> 07/01/10
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 80.5
<b>Project:</b> K25A Pit Closure	

### SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	264	2.0	mg/l	1	07/07/10	07/08/10 SH	SW846 6010B <sup>1</sup>	EPA 200.7 <sup>2</sup>
Magnesium	11.5	1.0	mg/l	1	07/07/10	07/08/10 SH	SW846 6010B <sup>1</sup>	EPA 200.7 <sup>2</sup>
Sodium	861	2.0	mg/l	1	07/07/10	07/08/10 SH	SW846 6010B <sup>1</sup>	EPA 200.7 <sup>2</sup>

(1) Instrument QC Batch: MA806

(2) Prep QC Batch: MP2263

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> K25A-PIT BOTTOM-062910	<b>Date Sampled:</b> 06/29/10
<b>Lab Sample ID:</b> D14849-3A	<b>Date Received:</b> 07/01/10
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 80.5
<b>Project:</b> K25A Pit Closure	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio <sup>a</sup>	14.1		ratio	1	07/08/10 01:59	SH	LADNR29B

(a) Calculated as:  $(Na \text{ meq/L}) / \sqrt{[(Ca \text{ meq/L}) + (Mg \text{ meq/L})/2]}$

RL = Reporting Limit



## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody



**Constituents of Concern: Allowable Concentrations and Analytical Methods (COGCC Table 910-1)**

CONTAMINANT OF CONCERN	CONCENTRATIONS	ANALYTICAL METHOD (SW846)
<i>Organic Compounds In Soil</i>		
TPH (total volatile and extractable petroleum hydrocarbons)	500 mg/kg	8015
Benzene	0.17 mg/kg <sup>1</sup>	8260B
Toluene	65 mg/kg <sup>2</sup>	8260B
Ethylbenzene	100 mg/kg <sup>2</sup>	8260B
Xylenes (total)	175 mg/kg <sup>2</sup>	8260B
Acenaphthene	1,000 mg/kg <sup>2</sup>	8270C
Anthracene	1,000 mg/kg <sup>2</sup>	8270C
Benzo(A)anthracene	0.22 mg/kg <sup>2</sup>	8270C
Benzo(B)fluoranthene	0.22 mg/kg <sup>2</sup>	8270C
Benzo(K)fluoranthene	2.2 mg/kg <sup>2</sup>	8270C
Benzo(A)pyrene	0.022 mg/kg <sup>2</sup>	8270C
Chrysene	22 mg/kg <sup>2</sup>	8270C
Dibenz(A,H)anthracene	0.022 mg/kg <sup>2</sup>	8270C
Fluoranthene	1,000 mg/kg <sup>2</sup>	8270C
Fluorene	1,000 mg/kg <sup>2</sup>	8270C
Indeno(1,2,3-C,D)pyrene	0.22 mg/kg <sup>2</sup>	8270C
Naphthalene	23 mg/kg <sup>2</sup>	8270C
Pyrene	1,000 mg/kg <sup>2</sup>	8270C
<i>Inorganics In Soils</i>		
Electrical Conductivity (EC)	<4 mmhos/cm or 2x background	9050
Sodium Adsorption Ratio (SAR)	<12	LABNR28B
pH	6-9	9045C
<i>Metals In Soils</i>		
Arsenic	0.39 mg/kg <sup>3</sup>	8010B
Barium	15,000 mg/kg <sup>3</sup>	8010B
Cadmium	70 mg/kg <sup>3a</sup>	8010B
Chromium (II)	120,000 mg/kg <sup>3</sup>	8010B
Chromium (VI)	23 mg/kg <sup>3b</sup>	8010B
Copper	3,100 mg/kg <sup>3</sup>	8010B
Lead (inorganic)	400 mg/kg <sup>3</sup>	8010B
Mercury	23 mg/kg <sup>3</sup>	8010B
Nickel (soluble salts)	1,600 mg/kg <sup>3a</sup>	8010B
Selenium	390 mg/kg <sup>3</sup>	8010B
Silver	390 mg/kg <sup>3</sup>	8010B
Zinc	23,000 mg/kg <sup>3</sup>	8010B
<i>Liquid Hydrocarbons In Soils and Ground Water</i>		
Liquid hydrocarbons including condensate and oil	Below detection level	Visual

COGCC recommends that the latest version of EPA SW 846 analytical methods be used where possible and that analyses of samples be performed by laboratories that maintain state or national accreditation programs.

1 Consideration shall be given to background levels in native soils and ground water.  
 2 Concentrations taken from COPHE-WQCC Regulation 41. The Basis Standards for Ground Water health-based standards. The second number in this range is a strictly health-based value, based on the WQCC's established methodology for human health-based standards. The first number in this range is a maximum contaminant level (MCL), established under the Federal Safe Drinking Water Act which has been 900-22 As of April 1, 2009 800-23 As of April 1, 2009.  
 3 Concentrations taken from COPHE-WQCC Regulation 41. The Basis Standards for Ground Water health-based standards. The second number in this range is a strictly health-based value, based on the WQCC's established methodology for human health-based standards. The first number in this range is a maximum contaminant level (MCL), established under the Federal Safe Drinking Water Act which has been 900-22 As of April 1, 2009 800-23 As of April 1, 2009.  
 4 For this range of standards, the first number in the range is a strictly health-based value, based on the WQCC's established methodology for human health-based standards. The second number in this range is a maximum contaminant level (MCL), established under the Federal Safe Drinking Water Act which has been 900-22 As of April 1, 2009 800-23 As of April 1, 2009.  
 5 WQCC has determined that this chemical is not expected to be present in public water supplies, taking treatability and laboratory detection limits into account. The WQCC has determined that this chemical is not expected to be present in public water supplies, taking treatability and laboratory detection limits into account. The WQCC has determined that this chemical is not expected to be present in public water supplies, taking treatability and laboratory detection limits into account. The WQCC has determined that this chemical is not expected to be present in public water supplies, taking treatability and laboratory detection limits into account.  
 6 The table value for these inorganic constituents is taken from the COPHE-HMMWD Table 1 Colorado Soil Evaluation Values (December 2007). However, because these values are high, it is possible that site-specific geochemical conditions may exist that could allow these constituents to migrate into ground water at levels exceeding ground water standards even though the concentrations are below the table values. Therefore, when these constituents are present as contaminants, a secondary evaluation of their leachability must be performed to ensure ground water protection.



## GC/MS Volatiles

### QC Data Summaries

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Includes the following where applicable:

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

## Method Blank Summary

**Job Number:** D14849  
**Account:** ENCACOP EnCana  
**Project:** K25A Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V283-MB1	3V05570.D	1	07/03/10	DC	n/a	n/a	V3V283

The QC reported here applies to the following samples:

Method: SW846 8260B

D14849-2

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	5.0	1.5	ug/kg	
100-41-4	Ethylbenzene	ND	10	2.0	ug/kg	
108-88-3	Toluene	ND	10	5.0	ug/kg	
	m,p-Xylene	ND	20	3.5	ug/kg	
95-47-6	o-Xylene	ND	10	3.5	ug/kg	

CAS No.	Surrogate Recoveries	Limits
2037-26-5	Toluene-D8	88% 70-130%
460-00-4	4-Bromofluorobenzene	81% 70-130%
17060-07-0	1,2-Dichloroethane-D4	84% 70-130%

## Method Blank Summary

**Job Number:** D14849  
**Account:** ENCACOP EnCana  
**Project:** K25A Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V284-MB1	3V05593.D	1	07/05/10	DC	n/a	n/a	V3V284

The QC reported here applies to the following samples:

Method: SW846 8260B

D14849-3

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	100	30	ug/kg	
100-41-4	Ethylbenzene	ND	200	40	ug/kg	
108-88-3	Toluene	ND	200	100	ug/kg	
	m,p-Xylene	ND	400	70	ug/kg	
95-47-6	o-Xylene	ND	200	70	ug/kg	

CAS No.	Surrogate Recoveries	Results	Limits
2037-26-5	Toluene-D8	88%	70-130%
460-00-4	4-Bromofluorobenzene	81%	70-130%
17060-07-0	1,2-Dichloroethane-D4	89%	70-130%

# Blank Spike Summary

**Job Number:** D14849  
**Account:** ENCACOP EnCana  
**Project:** K25A Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V283-BS1	3V05571.D	1	07/03/10	DC	n/a	n/a	V3V283

The QC reported here applies to the following samples:

Method: SW846 8260B

D14849-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	48.2	96	68-130
100-41-4	Ethylbenzene	50	53.8	108	70-130
108-88-3	Toluene	50	53.5	107	70-130
95-47-6	m,p-Xylene	50	45.9	92	53-130
	o-Xylene	50	47.8	96	61-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	89%	70-130%
460-00-4	4-Bromofluorobenzene	88%	70-130%
17060-07-0	1,2-Dichloroethane-D4	85%	70-130%

# Blank Spike Summary

**Job Number:** D14849  
**Account:** ENCACOP EnCana  
**Project:** K25A Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V284-BS1	3V05594.D	1	07/05/10	DC	n/a	n/a	V3V284

The QC reported here applies to the following samples:

Method: SW846 8260B

D14849-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	48.6	97	68-130
100-41-4	Ethylbenzene	50	54.0	108	70-130
108-88-3	Toluene	50	52.1	104	70-130
	m,p-Xylene	50	45.9	92	53-130
95-47-6	o-Xylene	50	47.3	95	61-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	89%	70-130%
460-00-4	4-Bromofluorobenzene	87%	70-130%
17060-07-0	1,2-Dichloroethane-D4	85%	70-130%

# Matrix Spike/Matrix Spike Duplicate Summary

**Job Number:** D14849  
**Account:** ENCACOP EnCana  
**Project:** K25A Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D14850-1MS	3V05573.D	1	07/03/10	DC	n/a	n/a	V3V283
D14850-1MSD	3V05574.D	1	07/03/10	DC	n/a	n/a	V3V283
D14850-1	3V05572.D	1	07/03/10	DC	n/a	n/a	V3V283

The QC reported here applies to the following samples:

Method: SW846 8260B

D14849-2

CAS No.	Compound	D14850-1 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	290	273	94	282	97	3	55-140/30
100-41-4	Ethylbenzene	ND	290	294	101	303	104	3	56-139/30
108-88-3	Toluene	ND	290	302	104	318	110	5	57-144/30
	m,p-Xylene	ND	290	254	88	255	88	0	47-130/30
95-47-6	o-Xylene	ND	290	263	91	266	92	1	51-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D14850-1	Limits
2037-26-5	Toluene-D8	90%	91%	92%	70-130%
460-00-4	4-Bromofluorobenzene	84%	85%	80%	70-130%
17060-07-0	1,2-Dichloroethane-D4	88%	84%	89%	70-130%

5.3.1  
5

# Matrix Spike/Matrix Spike Duplicate Summary

**Job Number:** D14849  
**Account:** ENCACOP EnCana  
**Project:** K25A Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D14746-2MS	3V05601.D	1	07/05/10	DC	n/a	n/a	V3V284
D14746-2MSD	3V05602.D	1	07/05/10	DC	n/a	n/a	V3V284
D14746-2	3V05600.D	1	07/05/10	DC	n/a	n/a	V3V284

The QC reported here applies to the following samples:

Method: SW846 8260B

D14849-3

CAS No.	Compound	D14746-2 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	254	J	16200	15000	91	15000	91	0	55-140/30
100-41-4	Ethylbenzene	353	J	16200	17600	107	17800	108	1	56-139/30
108-88-3	Toluene	925		16200	16900	99	17600	103	4	57-144/30
	m,p-Xylene	2260		16200	16900	91	17100	92	1	47-130/30
95-47-6	o-Xylene	800		16200	16100	95	16300	96	1	51-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D14746-2	Limits
2037-26-5	Toluene-D8	85%	86%	88%	70-130%
460-00-4	4-Bromofluorobenzene	100%	101%	101%	70-130%
17060-07-0	1,2-Dichloroethane-D4	76%	77%	87%	70-130%

5.3.2  
5



## GC/MS Semi-volatiles

### QC Data Summaries

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Includes the following where applicable:

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

## Method Blank Summary

**Job Number:** D14849  
**Account:** ENCACOP EnCana  
**Project:** K25A Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2111-MB	3G01289.D	1	07/06/10	TMB	07/02/10	OP2111	E3G33

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D14849-2, D14849-3

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	6.7	6.2	ug/kg	
208-96-8	Acenaphthylene	ND	33	6.9	ug/kg	
120-12-7	Anthracene	ND	6.7	4.3	ug/kg	
56-55-3	Benzo(a)anthracene	ND	6.7	6.5	ug/kg	
50-32-8	Benzo(a)pyrene	ND	6.7	4.2	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	6.7	4.8	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	6.7	4.2	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	6.7	4.2	ug/kg	
218-01-9	Chrysene	ND	6.7	3.3	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	6.7	4.9	ug/kg	
206-44-0	Fluoranthene	ND	6.7	4.1	ug/kg	
86-73-7	Fluorene	ND	6.7	6.5	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	6.7	4.4	ug/kg	
90-12-0	1-Methylnaphthalene	ND	6.7	5.9	ug/kg	
91-57-6	2-Methylnaphthalene	ND	33	10	ug/kg	
91-20-3	Naphthalene	ND	33	7.4	ug/kg	
85-01-8	Phenanthrene	ND	6.7	5.3	ug/kg	
129-00-0	Pyrene	ND	6.7	4.5	ug/kg	

CAS No.	Surrogate Recoveries	Limits	
4165-60-0	Nitrobenzene-d5	62%	10-193%
321-60-8	2-Fluorobiphenyl	61%	20-138%
1718-51-0	Terphenyl-d14	80%	17-174%

# Blank Spike Summary

**Job Number:** D14849  
**Account:** ENCACOP EnCana  
**Project:** K25A Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2111-BS	3G01290.D	1	07/06/10	TMB	07/02/10	OP2111	E3G33

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D14849-2, D14849-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	53.5	64	40-136
208-96-8	Acenaphthylene	83.3	52.1	63	42-139
120-12-7	Anthracene	83.3	55.3	66	40-141
56-55-3	Benzo(a)anthracene	83.3	56.8	68	38-143
50-32-8	Benzo(a)pyrene	83.3	59.4	71	39-145
205-99-2	Benzo(b)fluoranthene	83.3	60.0	72	38-151
191-24-2	Benzo(g,h,i)perylene	83.3	60.6	73	35-136
207-08-9	Benzo(k)fluoranthene	83.3	58.3	70	38-147
218-01-9	Chrysene	83.3	60.0	72	39-137
53-70-3	Dibenzo(a,h)anthracene	83.3	59.4	71	35-139
206-44-0	Fluoranthene	83.3	56.7	68	34-132
86-73-7	Fluorene	83.3	54.2	65	41-136
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	53.7	64	31-144
90-12-0	1-Methylnaphthalene	83.3	52.2	63	36-130
91-57-6	2-Methylnaphthalene	83.3	56.3	68	40-131
91-20-3	Naphthalene	83.3	54.3	65	36-130
85-01-8	Phenanthrene	83.3	56.1	67	40-135
129-00-0	Pyrene	83.3	59.6	72	29-157

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	65%	10-193%
321-60-8	2-Fluorobiphenyl	62%	20-138%
1718-51-0	Terphenyl-d14	71%	17-174%

# Matrix Spike/Matrix Spike Duplicate Summary

**Job Number:** D14849  
**Account:** ENCACOP EnCana  
**Project:** K25A Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2111-MS	3G01293.D	1	07/07/10	TMB	07/02/10	OP2111	E3G33
OP2111-MSD	3G01294.D	1	07/07/10	TMB	07/02/10	OP2111	E3G33
D14817-3	3G01292.D	1	07/06/10	TMB	07/02/10	OP2111	E3G33

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D14849-2, D14849-3

CAS No.	Compound	D14817-3 ug/kg	Spike Q	ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND	95.2	61.7	65	55.7	59	10	20-151/30	
208-96-8	Acenaphthylene	ND	95.2	62.0	65	56.7	60	9	23-156/30	
120-12-7	Anthracene	ND	95.2	62.3	65	55.6	59	11	25-149/30	
56-55-3	Benzo(a)anthracene	ND	95.2	73.7	77	66.3	70	11	22-157/30	
50-32-8	Benzo(a)pyrene	ND	95.2	70.8	74	63.0	66	12	23-153/30	
205-99-2	Benzo(b)fluoranthene	ND	95.2	71.2	75	62.8	66	13	22-161/30	
191-24-2	Benzo(g,h,i)perylene	ND	95.2	70.1	74	66.9	71	5	20-158/30	
207-08-9	Benzo(k)fluoranthene	ND	95.2	63.6	67	56.0	59	13	17-161/30	
218-01-9	Chrysene	ND	95.2	65.2	68	57.3	60	13	16-159/30	
53-70-3	Dibenzo(a,h)anthracene	ND	95.2	76.8	81	69.6	73	10	21-154/30	
206-44-0	Fluoranthene	ND	95.2	70.3	74	60.5	64	15	16-140/30	
86-73-7	Fluorene	ND	95.2	66.0	69	60.8	64	8	15-153/30	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	95.2	74.5	78	68.0	72	9	21-159/30	
90-12-0	1-Methylnaphthalene	ND	95.2	58.8	62	55.7	59	5	10-148/30	
91-57-6	2-Methylnaphthalene	ND	95.2	64.0	67	58.0	61	10	10-181/30	
91-20-3	Naphthalene	ND	95.2	61.0	64	54.8	58	11	10-176/30	
85-01-8	Phenanthrene	ND	95.2	62.0	65	55.5	58	11	22-152/30	
129-00-0	Pyrene	ND	95.2	74.4	78	69.1	73	7	10-200/30	

CAS No.	Surrogate Recoveries	MS	MSD	D14817-3	Limits
4165-60-0	Nitrobenzene-d5	63%	56%	63%	10-193%
321-60-8	2-Fluorobiphenyl	61%	57%	62%	20-138%
1718-51-0	Terphenyl-d14	72%	66%	64%	17-174%



## GC Volatiles

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## QC Data Summaries

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Includes the following where applicable:

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

## Method Blank Summary

**Job Number:** D14849  
**Account:** ENCACOP EnCana  
**Project:** K25A Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGA445-MB	GA7497.D	1	07/07/10	DG	n/a	n/a	GGA445

The QC reported here applies to the following samples:

Method: SW846 8015B

D14849-2, D14849-3

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	1.0	1.0	mg/kg	

CAS No.	Surrogate Recoveries	Limits
120-82-1	1,2,4-Trichlorobenzene	100% 60-140%

# Blank Spike Summary

**Job Number:** D14849  
**Account:** ENCACOP EnCana  
**Project:** K25A Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGA445-BS	GA7498.D	1	07/07/10	DG	n/a	n/a	GGA445

The QC reported here applies to the following samples:

Method: SW846 8015B

D14849-2, D14849-3

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	11	10.1	92	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	117%	60-140%

7.2.1

7

# Matrix Spike/Matrix Spike Duplicate Summary

**Job Number:** D14849  
**Account:** ENCACOP EnCana  
**Project:** K25A Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D14907-2MS	GA7504.D	1	07/07/10	DG	n/a	n/a	GGA445
D14907-2MSD	GA7501.D	1	07/07/10	DG	n/a	n/a	GGA445
D14907-2	GA7499.D	1	07/07/10	DG	n/a	n/a	GGA445

The QC reported here applies to the following samples:

Method: SW846 8015B

D14849-2, D14849-3

CAS No.	Compound	D14907-2 mg/kg	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND	11.4	9.86	86	8.34	73	17	62-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D14907-2	Limits
120-82-1	1,2,4-Trichlorobenzene	127%	95%	102%	60-140%

7.3.1

7



## GC Semi-volatiles

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### QC Data Summaries

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Includes the following where applicable:

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

## Method Blank Summary

**Job Number:** D14849  
**Account:** ENCACOP EnCana  
**Project:** K25A Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2112-MB	FD2427.D	1	07/03/10	CP	07/02/10	OP2112	GFD131

The QC reported here applies to the following samples:

Method: SW846-8015B

D14849-2, D14849-3

CAS No.	Compound	Result	RL	Units	Q
	TPH-DRO (C10-C28)	ND	13	mg/kg	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	80% 63-130%

# Blank Spike Summary

**Job Number:** D14849  
**Account:** ENCACOP EnCana  
**Project:** K25A Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2112-BS	FD2428.D	1	07/03/10	CP	07/02/10	OP2112	GFD131

The QC reported here applies to the following samples:

Method: SW846-8015B

D14849-2, D14849-3

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	581	87	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	81%	63-130%

8.2.1

8

# Matrix Spike/Matrix Spike Duplicate Summary

**Job Number:** D14849  
**Account:** ENCACOP EnCana  
**Project:** K25A Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2112-MS	FD2430.D	1	07/03/10	CP	07/02/10	OP2112	GFD131
OP2112-MSD	FD2431.D	1	07/03/10	CP	07/02/10	OP2112	GFD131
D14764-1	FD2429.D	1	07/03/10	CP	07/02/10	OP2112	GFD131

The QC reported here applies to the following samples:

Method: SW846-8015B

D14849-2, D14849-3

CAS No.	Compound	D14764-1 mg/kg	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	1040	754	1670	84	1630	78	2	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D14764-1	Limits
84-15-1	o-Terphenyl	76%	81%	81%	63-130%

8.3.1  
8



## 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: D14849  
Account: ENCACOP - EnCana  
Project: K25A Pit Closure

QC Batch ID: MP2238  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date: 07/02/10

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.7	2		
Antimony	3.0	.17	.5		
Arsenic	2.5	.28	.72		
Barium	1.0	.014	.05	0.17	<1.0
Beryllium	1.0	.14	.21		
Boron	5.0	.35	.91		
Cadmium	1.0	.022	.12	-0.11	<1.0
Calcium	40	1.7	2.7		
Chromium	1.0	.027	.18	0.17	<1.0
Cobalt	0.50	.048	.058		
Copper	0.50	.16	.38	0.34	<0.50
Iron	7.0	.77	.91		
Lead	5.0	.13	.24	0.16	<5.0
Lithium	0.20	.076	.09		
Magnesium	20	.58	.93		
Manganese	0.50	.021	.028		
Molybdenum	1.0	.041	.16		
Nickel	3.0	.038	.075	0.050	<3.0
Phosphorus	10	1.5	3.5		
Potassium	200	38	130		
Selenium	5.0	.28	.54	-0.10	<5.0
Silicon	5.0	1.2	.68		
Silver	3.0	.098	.068	0.0	<3.0
Sodium	40	23	6.3		
Strontium	5.0	.0091	.02		
Thallium	1.0	.31	.21		
Tin	5.0	1.4	.56		
Titanium	1.0	.0098	.041		
Uranium	5.0	.22	.53		
Vanadium	1.0	.027	.034		
Zinc	3.0	.076	.49	0.40	<3.0

Associated samples MP2238: D14849-2, D14849-3

Results < IDL are shown as zero for calculation purposes  
(\* ) Outside of QC limits

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D14849  
Account: ENCACOP - EnCana  
Project: K25A Pit Closure

QC Batch ID: MP2238  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D14849  
 Account: ENCACOP - EnCana  
 Project: K25A Pit Closure

QC Batch ID: MP2238  
 Matrix Type: SOLID

Methods: SW846 6010B  
 Units: mg/kg

Prep Date: 07/02/10

Metal	D14850-1 Original MS		SpikeLot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic					
Barium	2780	3530	189	397.6(a)	75-125
Beryllium					
Boron	anr				
Cadmium	0.22	40.9	47.2	86.3	75-125
Calcium					
Chromium	12.2	53.5	47.2	87.6	75-125
Cobalt					
Copper	21.5	68.2	47.2	99.0	75-125
Iron					
Lead	12.5	91.6	94.3	83.9	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	15.0	54.1	47.2	82.9	75-125
Phosphorus					
Potassium					
Selenium	2.6	83.5	94.3	85.8	75-125
Silicon					
Silver	0.0	17.4	18.9	92.2	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	55.5	93.1	47.2	79.7	75-125

Associated samples MP2238: D14849-2, D14849-3

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits

9.1.2  
 9

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D14849  
Account: ENCACOP - EnCana  
Project: K25A Pit Closure

QC Batch ID: MP2238  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date:

Metal

- (N) Matrix Spike Rec. outside of QC limits
- (anr) Analyte not requested
- (a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D14849  
 Account: ENCACOP - EnCana  
 Project: K25A Pit Closure

QC Batch ID: MP2238  
 Matrix Type: SOLID

Methods: SW846 6010B  
 Units: mg/kg

Prep Date: 07/02/10

Metal	D14850-1 Original MSD		SpikeLot MPICPALL % Rec		MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium	2780	3480	186	377.1(a)	1.4	20
Beryllium						
Boron	anr					
Cadmium	0.22	41.8	46.4	89.6	2.2	20
Calcium						
Chromium	12.2	56.8	46.4	96.1	6.0	20
Cobalt						
Copper	21.5	73.8	46.4	112.7	7.9	20
Iron						
Lead	12.5	94.6	92.8	88.5	3.2	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	15.0	56.3	46.4	89.0	4.0	20
Phosphorus						
Potassium						
Selenium	2.6	85.7	92.8	89.5	2.6	20
Silicon						
Silver	0.0	18.0	18.6	97.0	3.4	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	55.5	99.5	46.4	94.8	6.6	20

Associated samples MP2238: D14849-2, D14849-3

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits

9.1.2  
 9

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D14849  
Account: ENCACOP - EnCana  
Project: K25A Pit Closure

QC Batch ID: MP2238  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date:

Metal

- (N) Matrix Spike Rec. outside of QC limits
- (anr) Analyte not requested
- (a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D14849  
 Account: ENCACOP - EnCana  
 Project: K25A Pit Closure

QC Batch ID: MP2238  
 Matrix Type: SOLID

Methods: SW846 6010B  
 Units: mg/kg

Prep Date: 07/02/10

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	198	200	99.0	80-120
Beryllium				
Boron	anr			
Cadmium	46.1	50	92.2	80-120
Calcium				
Chromium	50.0	50	100.0	80-120
Cobalt				
Copper	49.2	50	98.4	80-120
Iron				
Lead	95.7	100	95.7	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	48.0	50	96.0	80-120
Phosphorus				
Potassium				
Selenium	92.0	100	92.0	80-120
Silicon				
Silver	19.4	20	97.0	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	47.7	50	95.4	80-120

Associated samples MP2238: D14849-2, D14849-3

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits

9.1.3  
 9

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D14849  
Account: ENCACOP - EnCana  
Project: K25A Pit Closure

QC Batch ID: MP2238  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D14849  
 Account: ENCACOP - EnCana  
 Project: K25A Pit Closure

QC Batch ID: MP2238  
 Matrix Type: SOLID

Methods: SW846 6010B  
 Units: ug/l

Prep Date: 07/02/10

Metal	D14850-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	29400	34800	18.1*(a)	0-10
Beryllium				
Boron	anr			
Cadmium	2.30	0.00	100.0(b)	0-10
Calcium				
Chromium	130	159	22.2*(a)	0-10
Cobalt				
Copper	228	248	8.6	0-10
Iron				
Lead	133	167	25.5*(a)	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	159	201	26.3*(a)	0-10
Phosphorus				
Potassium				
Selenium	27.9	38.0	36.2 (b)	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	588	765	30.1*(a)	0-10

Associated samples MP2238: D14849-2, D14849-3

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits

9.1.4  
 9

SERIAL DILUTION RESULTS SUMMARY

Login Number: D14849  
Account: ENCACOP - EnCana  
Project: K25A Pit Closure

QC Batch ID: MP2238  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: ug/l

Prep Date:

Metal

- (anr) Analyte not requested
- (a) Serial dilution indicates possible matrix interference.
- (b) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D14849  
Account: ENCACOP - EnCana  
Project: K25A Pit Closure

QC Batch ID: MP2239  
Matrix Type: SOLID

Methods: SW846 6020  
Units: mg/kg

Prep Date: 07/02/10

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.14	.89		
Antimony	0.20	.001	.045		
Arsenic	0.40	.049	.26	-0.16	<0.40
Barium	1.0	.0035	.17		
Beryllium	0.10	.0075	.014		
Boron	20	.97	2		
Cadmium	0.050	.023	.048		
Calcium	200	1.8	6.1		
Chromium	1.0	.021	.23		
Cobalt	0.10	.0033	.088		
Copper	1.0	.011	.14		
Iron	20	.81	6.1		
Lead	0.25	.0012	.18		
Magnesium	50	.067	1.3		
Manganese	0.50	.007	.089		
Molybdenum	0.50	.0044	.2		
Nickel	1.0	.0029	.074		
Phosphorus	30	1.8	5.6		
Potassium	100	2	9.1		
Selenium	0.20	.075	.14		
Silver	0.050	.0008	.029		
Sodium	250	.8	1.8		
Strontium	10	.004	.047		
Thallium	0.10	.015	.071		
Tin	5.0	.006	.17		
Titanium	1.0	.035	.071		
Uranium	0.25	.00038	.12		
Vanadium	2.0	.052	.99		
Zinc	5.0	.039	.53		

Associated samples MP2239: D14849-1, D14849-2, D14849-3

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

9.2.1  
9

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D14849  
 Account: ENCACOP - EnCana  
 Project: K25A Pit Closure

QC Batch ID: MP2239  
 Matrix Type: SOLID

Methods: SW846 6020  
 Units: mg/kg

Prep Date: 07/02/10

Metal	D14850-1 Original MS		Spike/lot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic	14.0	93.5	94.3	84.3	60-119
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP2239: D14849-1, D14849-2, D14849-3

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

9.2.2  
 9

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D14849  
 Account: ENCACOP - EnCana  
 Project: K25A Pit Closure

QC Batch ID: MP2239  
 Matrix Type: SOLID

Methods: SW846 6020  
 Units: mg/kg

Prep Date: 07/02/10

Metal	D14850-1 Original MSD		SpikeLot MPICPAL % Rec		MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	14.0	96.5	92.8	88.9	3.2	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP2239: D14849-1, D14849-2, D14849-3

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

9.2.2  
 9

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D14849  
 Account: ENCACOP - EnCana  
 Project: K25A Pit Closure

QC Batch ID: MP2239  
 Matrix Type: SOLID

Methods: SW846 6020  
 Units: mg/kg

Prep Date: 07/02/10

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	90.1	100	90.1	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP2239: D14849-1, D14849-2, D14849-3

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

9.2.3  
 9

SERIAL DILUTION RESULTS SUMMARY

Login Number: D14849  
 Account: ENCACOP - EnCana  
 Project: K25A Pit Closure

QC Batch ID: MP2239  
 Matrix Type: SOLID

Methods: SW846 6020  
 Units: ug/l

Prep Date: 07/02/10

Metal	D14850-1	QC
	Original	Limits

Metal	Original	SDL 5:25	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	149	164	10.4*(a)	0-10
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP2239: D14849-1, D14849-2, D14849-3

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

9.2.4  
 9

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D14849  
Account: ENCACOP - EnCana  
Project: K25A Pit Closure

QC Batch ID: MP2250  
Matrix Type: SOLID

Methods: SW846 7471A  
Units: mg/kg

Prep Date: 07/06/10

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.10	.0011	.0012	0.0036	<0.10

Associated samples MP2250: D14849-2, D14849-3

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: D14849  
Account: ENCACOP - EnCana  
Project: K25A Pit Closure

QC Batch ID: MP2250  
Matrix Type: SOLID

Methods: SW846 7471A  
Units: mg/kg

Prep Date: 07/06/10

Metal	D14851-1 Original MS	SpikeLot HGWSR1	% Rec	QC Limits
-------	-------------------------	--------------------	-------	--------------

Mercury 0.019 0.41 0.424 92.2 85-115

Associated samples MP2250: D14849-2, D14849-3

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D14849  
 Account: ENCACOP - EnCana  
 Project: K25A Pit Closure

QC Batch ID: MP2250  
 Matrix Type: SOLID

Methods: SW846 7471A  
 Units: mg/kg

Prep Date: 07/06/10

Metal	D14851-1 Original MSD	SpikeLot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.019	0.41	0.432	90.5	0.0 20

Associated samples MP2250: D14849-2, D14849-3

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: D14849  
Account: ENCACOP - EnCana  
Project: K25A Pit Closure

QC Batch ID: MP2250  
Matrix Type: SOLID

Methods: SW846 7471A  
Units: mg/kg

Prep Date: 07/06/10

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.38	0.4	95.0	80-120

Associated samples MP2250: D14849-2, D14849-3

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D14849  
Account: ENCACOP - EnCana  
Project: K25A Pit Closure

QC Batch ID: MP2263  
Matrix Type: AQUEOUS

Methods: SW846 6010B  
Units: ug/l

Prep Date: 07/07/10

Metal	RL	IDL	MDL	MB raw	final
Aluminum	500	35	250		
Antimony	150	8.5	65		
Arsenic	130	14	33		
Barium	50	.7	12		
Beryllium	50	7	22		
Boron	250	18	93		
Cadmium	50	1.1	6		
Calcium	2000	85	46	-16	<2000
Chromium	50	1.4	8		
Cobalt	25	2.4	1.5		
Copper	25	8	14		
Iron	350	39	50		
Lead	250	6.5	16		
Lithium	10	3.8	8		
Magnesium	1000	29	62	22.0	<1000
Manganese	25	1.1	3.5		
Molybdenum	50	2.1	6		
Nickel	150	1.9	3		
Phosphorus	500	75	270		
Potassium	5000	1900	2700		
Selenium	250	14	36		
Silicon	250	60	100		
Silver	150	4.9	1.5		
Sodium	2000	1200	110	-120	<2000
Strontium	25	.46	17		
Thallium	50	16	11		
Tin	250	70	22		
Titanium	50	.49	3.5		
Uranium	250	11	20		
Vanadium	50	1.4	1.5		
Zinc	150	3.8	8.5		

Associated samples MP2263: D14849-2A, D14849-3A

Results < IDL are shown as zero for calculation purposes  
(\* ) Outside of QC limits

9.4.1  
9

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D14849  
Account: ENCACOP - EnCana  
Project: K25A Pit Closure

QC Batch ID: MP2263  
Matrix Type: AQUEOUS

Methods: SW846 6010B  
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D14849  
 Account: ENCACOP - EnCana  
 Project: K25A Pit Closure

QC Batch ID: MP2263  
 Matrix Type: AQUEOUS

Methods: SW846 6010B  
 Units: ug/l

Prep Date: 07/07/10

Metal	D14849-2A Original MS		SpikeLot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	24300	149000	125000	99.8	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	92500	217000	125000	99.6	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	258000	384000	125000	100.8	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP2263: D14849-2A, D14849-3A

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits

9.4.2  
9

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D14849  
Account: ENCACOP - EnCana  
Project: K25A Pit Closure

QC Batch ID: MP2263  
Matrix Type: AQUEOUS

Methods: SW846 6010B  
Units: ug/l

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits  
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D14849  
 Account: ENCACOP - EnCana  
 Project: K25A Pit Closure

QC Batch ID: MP2263  
 Matrix Type: AQUEOUS

Methods: SW846 6010B  
 Units: ug/l

Prep Date: 07/07/10

Metal	D14849-2A Original MSD		SpikeLot MPICPAL % Rec		MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	24300	152000	125000	102.2	2.0	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	92500	222000	125000	103.6	2.3	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	258000	387000	125000	103.2	0.8	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP2263: D14849-2A, D14849-3A

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits

9.4.2  
9

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D14849  
Account: ENCACOP - EnCana  
Project: K25A Pit Closure

QC Batch ID: MP2263  
Matrix Type: AQUEOUS

Methods: SW846 6010B  
Units: ug/l

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits  
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D14849  
 Account: ENCACOP - EnCana  
 Project: K25A Pit Closure

QC Batch ID: MP2263  
 Matrix Type: AQUEOUS

Methods: SW846 6010B  
 Units: ug/l

Prep Date: 07/07/10

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	128000	125000	102.4	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	120000	125000	96.0	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	124000	125000	99.2	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP2263: D14849-2A, D14849-3A

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits

9.4.3  
 9

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D14849  
Account: ENCACOP - EnCana  
Project: K25A Pit Closure

QC Batch ID: MP2263  
Matrix Type: AQUEOUS

Methods: SW846 6010B  
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested



## General Chemistry

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### QC Data Summaries

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Includes the following where applicable:

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

METHOD BLANK AND SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D14849  
Account: ENCACOP - EnCana  
Project: K25A Pit Closure

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Specific Conductivity	GP2303/GN5236			umhos/cm	9985	9920	99.3	90-110%
pH	GN5177			su	8.00	8.02	100.3	99.3-100.7%

Associated Samples:

Batch GN5177: D14849-2, D14849-3

Batch GP2303: D14849-2, D14849-3

(\* ) Outside of QC limits

10.1  
10



## Misc. Forms

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### Custody Documents and Other Forms

(Accutest Labs of New England, Inc.)

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Includes the following where applicable:

- Chain of Custody





4036 Youngfield St., Wheat Ridge, CO 80033  
303-425-6021 FAX: 303-425-6854

Accutest Job #: D14849  
Accutest Quote #:  
AMS P.O. #:  
Project No.:

Client Information			Subcontract Laboratory Information							Analytical Information			
Name Accutest Mountain States (AMS)			Name Accutest - New England										
Address 4036 Youngfield St.			Address 495 Technology Center West, BLDG O										
City Wheat Ridge,	State CO	Zip 80033	City Marlborough	State MA	Zip 01752								
Send Report to: Tiffany Pham			Contact: Sample Management										
Any questions contact: Amanda Kissell			Phone: (508) 481-6200										
Phone/Fax #: (303) 425-6021; (303) 425-6854			Phone: (508) 481-6200										
Field ID / Point of Collection			Collection			Preservation							
	Date	Time	Matrix	# of bottles	HCL	NaOH	HNO3	H2SO4	None	X CRA	H E	Comments	
D14849 -2	6/29/10	3:20 PM	Soil	1						X	X		
-3		3:45 PM	Soil	1						X	X		
-													
-													
-													
-													
-													
-													
-													
Turnaround Information			Data Deliverable Information							Comments / Remarks			
<input checked="" type="checkbox"/> 3 - 5 Business Day Rush <input type="checkbox"/> Other _____ (Days)			<input type="checkbox"/> Commercial "A" <input type="checkbox"/> PDF <input type="checkbox"/> Commercial "B" <input type="checkbox"/> Compact Disk Deliverable <input type="checkbox"/> Commercial "BN" <input type="checkbox"/> Electronic Delivery: _____ <input type="checkbox"/> Reduced Tier 1 <input type="checkbox"/> State Forms <input type="checkbox"/> Full Tier 1 <input type="checkbox"/> Other (Specify) _____							Approved By: _____ 10 Day Turnaround Hardcopy, RUSH is FAX Data unless previously approved. <b>Please use Colorado regulations and RLs.</b>			
Sample Custody must be documented below each time samples change possession, including courier delivery.										For Subcontract Laboratory Use Only			
Relinquished by:	Date & Time:	Received By:	Date & Time:	Seal #:	Headspace:								
1	7/1/10	FedEx	1	1	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>								
Relinquished by:	Date & Time:	Received By:	Date & Time:	Preserved where applicable:									
2	7/3/10	FedEx	2	2	<input type="checkbox"/> 15A								
Relinquished by:	Date & Time:	Received By:	Date & Time:	Temperature °C	On Ice								
3			3	3	3.7	<input checked="" type="checkbox"/>							

D14849: Chain of Custody

Page 1 of 2

Accutest Labs of New England, Inc.



# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D14849

Client: AMS

Immediate Client Services Action Required: No

Date / Time Received: 7/3/2010 10:30:00 AM

No. Coolers: 1

Client Service Action Required at Login: No

Project:

Airbill #'s:

<u>Cooler Security</u>	<u>Y</u>	<u>or</u>	<u>N</u>		<u>Y</u>	<u>or</u>	<u>N</u>
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>		<input type="checkbox"/>

<u>Cooler Temperature</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Cooler temp verification:			Infrared gun
3. Cooler media:			Ice (bag)

<u>Quality Control Preservation</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input type="checkbox"/>	
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input type="checkbox"/>	
3. Samples preserved property:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

<u>Sample Integrity - Documentation</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

<u>Sample Integrity - Condition</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:			Intact

<u>Sample Integrity - Instructions</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume rec'd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

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## General Chemistry

### QC Data Summaries

(Accutest Labs of New England, Inc.)

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Includes the following where applicable:

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

METHOD BLANK AND SPIKE RESULTS SUMMARY  
 GENERAL CHEMISTRY

Login Number: D14849  
 Account: ALMS - Accutest Mountain States  
 Project: ENCACOP: K25A Pit Closure

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP11780/GN32325	2.0	0.0	mg/kg	40	36.9	92.3	80-120%
Chromium, Hexavalent	GP11780/GN32325			mg/kg	844	818	96.9	80-120%

Associated Samples:  
 Batch GP11780: D14849-2, D14849-3  
 (\*) Outside of QC limits

DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D14849  
Account: ALMS - Accutest Mountain States  
Project: ENCACOP: K25A Pit Closure

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP11780/GN32325	D14817-3	mg/kg	0.0	0.0	0.0	0-20%
Redox Potential Vs H2	GN32327	D14852-2	mv	391	387	1.0	0-20%

Associated Samples:

Batch GN32327: D14849-2, D14849-3

Batch GP11780: D14849-2, D14849-3

(\*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D14849  
Account: ALMS - Accutest Mountain States  
Project: ENCACOP: K25A Pit Closure

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP11780/GN32325	D14817-3	mg/kg	0.0	45.5	39.1	86.0	75-125%
Chromium, Hexavalent	GP11780/GN32325	D14817-3	mg/kg	0.0	988	1020	103.3	75-125%

Associated Samples:

Batch GP11780: D14849-2, D14849-3

(\*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits



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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

Tuesday April 05, 2011

Report Number: L509170


Samples Received: 04/01/11

Client Project:

Description: K25A

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

  
Jared Willis, ESC Representative

#### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487  
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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,  
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REPORT OF ANALYSIS

April 05, 2011

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

ESC Sample # : L509170-01

Date Received : April 01, 2011
Description : K25A

Site ID :

Sample ID : K25A-PB-033111

Project # :

Collected By : Jake Harris
Collection Date : 03/31/11 11:30

Table with 7 columns: Parameter, Result, Det. Limit, Units, Method, Date, Dil. Rows include TPH (GC/FID) Low Fraction, Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID), TPH (GC/FID) High Fraction, and Surrogate recovery(%) o-Terphenyl.

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: 04/05/11 12:57 Printed: 04/05/11 13:11



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REPORT OF ANALYSIS

April 05, 2011

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

ESC Sample # : L509170-02

Date Received : April 01, 2011  
Description : K25A

Site ID :

Sample ID : K25A-SPOIL-033111

Project # :

Collected By : Jake Harris  
Collection Date : 03/31/11 11:40

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015D/GRO	04/01/11	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	104.		% Rec.	602/8015	04/01/11	5
TPH (GC/FID) High Fraction	240	4.0	mg/kg	3546/DRO	04/05/11	1
Surrogate recovery(%) o-Terphenyl	60.0		% Rec.	3546/DRO	04/05/11	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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Parachute, CO 81635

Quality Assurance Report  
Level II

L509170

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April 05, 2011

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG529101	04/01/11 18:49
a,a,a-Trifluorotoluene(FID)		% Rec.	106.3	59-128	WG529101	04/01/11 18:49
TPH (GC/FID) High Fraction	< 4	ppm			WG529149	04/04/11 13:41
o-Terphenyl		% Rec.	73.07	50-150	WG529149	04/04/11 13:41

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
TPH (GC/FID) Low Fraction	mg/kg	5.5	6.97	127.	67-135	WG529101
a,a,a-Trifluorotoluene(FID)				95.46	59-128	WG529101
TPH (GC/FID) High Fraction	ppm	60	44.8	74.6	50-150	WG529149
o-Terphenyl				72.53	50-150	WG529149

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
TPH (GC/FID) Low Fraction	mg/kg	7.10	6.97	129.	67-135	1.89	20	WG529101
a,a,a-Trifluorotoluene(FID)				94.75	59-128			WG529101
TPH (GC/FID) High Fraction	ppm	41.7	44.8	69.0	50-150	7.08	25	WG529149
o-Terphenyl				68.27	50-150			WG529149

Analyte	Units	Matrix Spike				Limit	Ref Samp	Batch
		MS Res	Ref Res	TV	% Rec			
TPH (GC/FID) Low Fraction	mg/kg	29.9	0	5.5	108.	55-109	L509013-02	WG529101
a,a,a-Trifluorotoluene(FID)					96.28	59-128		WG529101
TPH (GC/FID) High Fraction	ppm	199.	190.	60	15.7*	50-150	L509268-02	WG529149
o-Terphenyl					65.61	50-150		WG529149

Analyte	Units	Matrix Spike Duplicate			Limit	RPD	Limit	Ref Samp	Batch
		MSD	Ref	%Rec					
TPH (GC/FID) Low Fraction	mg/kg	26.7	29.9	97.0	55-109	11.2	20	L509013-02	WG529101
a,a,a-Trifluorotoluene(FID)				97.66	59-128				WG529101
TPH (GC/FID) High Fraction	ppm	260.	199.	116.	50-150	26.3*	25	L509268-02	WG529149
o-Terphenyl				83.96	50-150				WG529149

Batch number /Run number / Sample number cross reference

WG529101: R1634670: L509170-01 02  
WG529149: R1636211: L509170-01 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.'



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April 05, 2011

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.