

Blair Rollins  
Environmental Specialist  
Caerus Oil & Gas LLC (Operator #: 10456)

REPORT OF WORK COMPLETED	
<b>COGCC Location Name (ID)</b>	N. PARACHUTE-65S96W 25NESW (335649)
<b>Operator Location Name</b>	K25A
<b>COGCC Remediation Project #</b>	18190
<b>Legal Description</b>	NESW Section 25, T5S-R96W
<b>Coordinates (Lat/Long)</b>	39.500221 / -107.755214
<b>County</b>	Garfield County, Colorado

Mr. Rollins,

Confluence Compliance Companies, LLC (Confluence) prepared this Report of Work Completed (ROWC) for Caerus Oil & Gas LLC (Caerus) to document recent investigation activities associated with a historical release of drilling mud at the K25A Well Pad (Location). The Location is 9.7 miles north-northwest of Parachute, Colorado in Garfield County as illustrated in the attached Topographic Map. Additional information on the Location and the associated remediation project is provided in the title block above, the attached Site Diagram, and laboratory analytical reports. This ROWC provides background on the Location, methods used to complete the remedial investigation, results of the investigation, and recommendations for how to proceed with this information.

## Background

On December 22, 2006, 200 barrels (bbls) of drilling mud were released after a shale shaker failed. The release was confined to the working surface of the pad and all 200 bbls of drilling mud were recovered using a vacuum truck and excavation equipment. The release was reported in a Colorado Oil and Gas Conservation Commission (COGCC) Form 19 (Document # 1630710). No additional activities associated with this release have been documented.

## Methodology

On July 15, 2021, Confluence coordinated and oversaw investigation activities associated with the historical drilling mud release at the Location. All activities were conducted in accordance with approved COGCC Form 27 Document # 402638907. Using a hydro vacuum truck, four potholes were advanced within the spill area. Investigation activities were directed by Confluence personnel who characterized the soil using visual and olfactory observations and field-screened soil samples for volatile organic compounds using a photoionization detector (PID). Field screening was conducted at each pothole location between six and 12 inches below ground surface (bgs) and between 24 and 30 inches bgs. Field screening did not indicate impacts to soil, with PID measurements ranging from 0.9 to 2.7 parts per million (ppm). No staining or odor were noted in any of the potholes. Using a hand auger, soil samples were collected from the terminus of each pothole,

placed into laboratory provided jars, immediately placed on ice, and shipped for laboratory analysis of constituents listed in COGCC Table 915-1. Sample locations are illustrated in the attached Site Diagram.

## Results

These results summarize observations from onsite investigation efforts and associated laboratory analytical results. For organizational and presentation purposes the results summary is divided between general observations of lithology and hydrogeology for the entire Location and excavation activities.

Collected spatial data are depicted in the attached Site Diagram. Laboratory analytical reports are attached and summarized in the Laboratory Results Summary Table.

### Lithology and Hydrogeology

Lithology at the Location is characterized by silty gravel with angular and subangular cobbles. Groundwater is expected to flow southeast along the West Fork of Parachute Creek and ultimately the Colorado River, located 9.8 miles south-southeast of the Location.

### Excavation Results

Laboratory results of spill investigation soil samples indicate compliance with COGCC Table 915-1 with the exception of arsenic and pH. Arsenic exceedances range from 18.8 milligrams per kilogram (mg/kg) at pothole location PH04 to 25.7 mg/kg at PH03. Exceedances of pH range from 8.60 in PH02 to 8.74 in PH04. All other analytes are compliant with COGCC Table 915-1.

## Analysis and Recommendations

Laboratory results of spill investigation soil samples indicate concentrations of arsenic and pH values exceeding COGCC Table 915-1 within the historical spill areas. However, background data suggests that these exceedances are within naturally occurring levels at the Location. Background samples collected from the nearby H26 (COGCC Location ID 415372) indicate arsenic concentrations ranging up to 24 mg/kg. Based on Footnote 11 of COGCC Table 915-1, the maximum allowable concentration of arsenic is 1.25 times the background concentration of 24 mg/kg, which equals 30 mg/kg. Background samples collected from the nearby D23 (COGCC Location ID 335672) indicate a pH value of 8.81. Based on these results, Confluence recommends that Caerus request closure of COGCC Remediation Project Number 18190 and a no further action (NFA) determination.



Confluence is grateful for the opportunity to support you with this project. If you have any questions about the methods, results or recommendations presented here, please do not hesitate to contact me.

Regards,



Chris McKisson  
Senior Project Manager  
(720) 490-6758  
[chris.mckisson@confluence-cc.com](mailto:chris.mckisson@confluence-cc.com)

### Attachments

- Topographic Map
- Site Diagram – Sample Locations
- Laboratory Results Summary Table
- Laboratory Analytical Reports





## Topographic Map

Caerus Piceance LLC

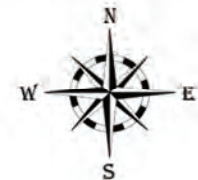
K25A

(N. PARACHUTE-65S96W /25NESW)

COGCC Location ID: 335649

Garfield County

NESW Sec. 25 T5S-R96W



Topographic map sourced from 2020 Earth Point using data provided by United States Geological Survey

Created by: Adam Roll - 03/19/2021.

K25A





## Site Diagram Sample Locations

Caerus Piceance LLC

K25A

(N.PARACHUTE-65S96W /25NESW)

COGCC Location ID: 335649

Garfield County

NESW Sec. 25 T5S-R96W



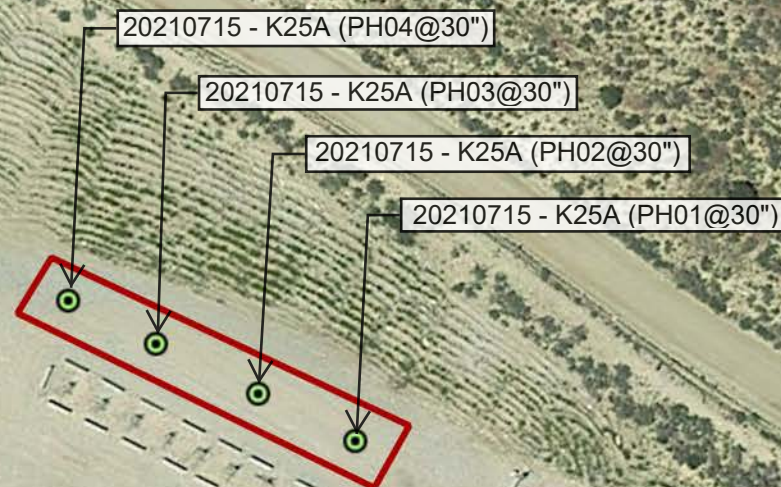
### Legend

 Soil Sample – 07/15/2021

 Spill Investigation Area

Illustration discrepancies may be present in this diagram due to the inherent limitations of data accuracy for both project data and the underlying aerial imagery. The position of illustrated data may have been manually adjusted to align with the aerial imagery in a manner more representative of field conditions for presentation purposes only.

Map created by: Andrew Smith on 08/02/2021.





Soil Screening and Remediation Limits				Organic Compounds (mg/kg [ppm])																			
COGCC Table 915-1 Groundwater Protection -->				500	NA	NA	NA	0.0026	0.69	0.78	9.9	0.0081	0.0087	0.55	5.8	0.011	0.24	0.3	2.9	9	0.096	8.9	0.54
COGCC Table 915-1 Residential -->				500	NA	NA	NA	1.2	490	5.8	58	30	27	360	1800	1.1	0.11	1.1	11	110	0.11	240	240
Location	Sample Date	Solid/Soil Source (Equipment) [Vault/Sump, Separator, Tank Battery, Dump Line, Pit, Cuttings, Background, etc.]	Sample ID	TPH (total volatile and extractable petroleum hydrocarbons) (GRO+DRO+ORO)	TPH-GRO (C6-C10) Low Fraction	TPH-DRO (C10-C28) High Fraction	TPH-ORO (C28-C36) High Fraction	Benzene	Toluene	Ethylbenzene	Xylenes - total (sum of o-, m-, p- isomers)	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Acenaphthene	Anthracene	Benzo(A)anthracene	Benzo(A)pyrene	Benzo(B)fluoranthene	Benzo(K)fluoranthene	Chrysene	Dibenzo(A,H)anthracene	Fluoranthene	Fluorene
K25A	7/15/2021	Shale Shaker	20210715 - K25A (PH01@30")	248.86	0.260	75.6	173	<0.00100	<0.00500	<0.00250	0.000975	<0.00500	<0.00500	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600
K25A	7/15/2021	Shale Shaker	20210715 - K25A (PH02@30")	218.469	0.269	56.2	162	<0.00100	<0.00500	<0.00250	<0.00650	<0.00500	<0.00500	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600
K25A	7/15/2021	Shale Shaker	20210715 - K25A (PH03@30")	456.137	0.137	132	324	<0.00100	<0.00500	<0.00250	<0.00650	<0.00500	<0.00500	<0.00600	<0.00600	<0.00600	0.00178	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600
K25A	7/15/2021	Shale Shaker	20210715 - K25A (PH04@30")	283.941	0.341	81.6	202	<0.00100	<0.00500	<0.00250	<0.00650	<0.00500	<0.00500	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600
H26	11/10/2010	Background	H26-SBC-111010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
H26	11/10/2010	Background	H26-SB-111010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
H26	11/10/2010	Background	H26-WB-111010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
H26	11/10/2010	Background	H26-SEB-111010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
H26	11/10/2010	Background	H26-EB-111010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
D23	6/29/2010	Background	D23-NW BACK-062910	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
D23	6/29/2010	Background	D23-SW BACK-062910	<15	<1.1	<15	NA	<0.0057	<0.011	<0.011	<0.023	NA	NA	<0.038	<0.038	<0.038	0.0305	0.0632	<0.038	0.0303	0.0308	<0.038	<0.038


Soil Screening and Remediation Limits									Soil Suitability for Reclamation				Metals (mg/kg [ppm])									
COGCC Table 915-1 Groundwater Protection -->				0.98	0.006	0.019	0.0038	1.3	4	6	6-8.3	2	0.29	82	0.38	0.00067	46	14	26	0.26	0.8	370
COGCC Table 915-1 Residential -->				1.1	18	24	2	180	4	6	6-8.3	2	0.68	15000	71	0.3	3100	400	1500	390	390	23000
Location	Sample Date	Solid/Soil Source (Equipment [Vault/Sump, Separator, Tank Battery, Dump Line, Pit, Cuttings, Background, etc.]	Sample ID	Indeno(1,2,3,C,D)pyrene	1- Methylnaphthalene	2- Methylnaphthalene	Naphthalene	Pyrene	EC (Specific Conductance) (millimhos/centimeter) (by saturated paste method)	SAR (Sodium Adsorption Ratio) (calculation) (by saturated paste method)	pH (pH Units) (by saturated paste method)	Boron - Hot Water Soluble (mg/L)	Arsenic	Barium	Cadmium (mg/kg)	Chromium (VI)	Copper	Lead	Nickel	Selenium	Silver	Zinc
K25A	7/15/2021	Shale Shaker	20210715 - K25A (PH01@30")	<0.00600	0.0222	0.0671	0.0183	0.00648	0.401	0.772	8.15	0.653	22.8	2660	<0.500	<1.00	28.9	18.9	20.4	1.52	<1.00	55.3
K25A	7/15/2021	Shale Shaker	20210715 - K25A (PH02@30")	<0.00600	0.00591	0.0177	0.00433	<0.00600	0.324	0.442	8.60	0.526	20.2	2100	<0.500	<1.00	24.3	16.1	16.7	0.836	<1.00	48.4
K25A	7/15/2021	Shale Shaker	20210715 - K25A (PH03@30")	<0.00600	0.0115	0.0228	0.0237	0.00404	1.240	0.891	8.26	1.34	25.7	3620	<0.500	<1.00	25.5	17.0	18.3	2.16	<1.00	53.7
K25A	7/15/2021	Shale Shaker	20210715 - K25A (PH04@30")	<0.00600	0.00602	0.0149	0.00450	<0.00600	0.539	2.15	8.74	1.10	18.8	2160	<0.500	<1.00	27.3	16.8	17.6	1.45	<1.00	53.3
H26	11/10/2010	Background	H26-SBC-111010	NA	NA	NA	NA	NA	NA	NA	NA	NA	24	NA	NA	NA	NA	NA	NA	NA	NA	NA
H26	11/10/2010	Background	H26-SB-111010	NA	NA	NA	NA	NA	NA	NA	NA	NA	27	NA	NA	NA	NA	NA	NA	NA	NA	NA
H26	11/10/2010	Background	H26-WB-111010	NA	NA	NA	NA	NA	NA	NA	NA	NA	19	NA	NA	NA	NA	NA	NA	NA	NA	NA
H26	11/10/2010	Background	H26-SEB-111010	NA	NA	NA	NA	NA	NA	NA	NA	NA	19	NA	NA	NA	NA	NA	NA	NA	NA	NA
H26	11/10/2010	Background	H26-EB-111010	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.7	NA	NA	NA	NA	NA	NA	NA	NA	NA
D23	6/29/2010	Background	D23-NW BACK-062910	NA	NA	NA	NA	NA	NA	NA	NA	NA	15.7	NA	NA	NA	NA	NA	NA	NA	NA	NA
D23	6/29/2010	Background	D23-SW BACK-062910	0.0435	0.0742	0.196	0.0785	0.0352	6.080	3.27	8.81	NA	24.0	NA	<0.89	<2.3	26.5	15.0	19.4	<4.5	<2.7	58.0

July 29, 2021

## Caerus Oil and Gas

Sample Delivery Group: L1379902  
Samples Received: 07/17/2021  
Project Number:  
Description: K25A Historical  
Site: COG-57  
Report To: Brett Middleton  
143 Diamond Avenue  
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward  
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

**Pace Analytical National**

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 [www.pacenational.com](http://www.pacenational.com)



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<sup>1</sup> Cp
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<sup>4</sup> Cn
<sup>5</sup> Sr
<sup>6</sup> Qc
<sup>7</sup> Gl
<sup>8</sup> Al
<sup>9</sup> Sc

# SAMPLE SUMMARY

20210715-K25A (PH01 @ 30") L1379902-01 Solid

Collected by  
Andrew Smith

Collected date/time  
07/15/21 13:35

Received date/time  
07/17/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1707577	1	07/24/21 19:24	07/24/21 19:24	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1708460	1	07/20/21 17:55	07/21/21 20:37	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1709843	1	07/22/21 09:32	07/22/21 12:27	KAB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1708827	1	07/22/21 11:02	07/22/21 18:06	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1709222	1	07/28/21 03:31	07/29/21 06:25	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1707906	1	07/22/21 16:32	07/24/21 20:28	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1709226	5	07/28/21 03:36	07/28/21 17:50	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1709617	1	07/20/21 15:33	07/22/21 08:39	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1709141	1	07/20/21 15:33	07/21/21 11:45	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1711367	10	07/25/21 08:14	07/26/21 14:41	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1711507	1	07/26/21 09:26	07/26/21 19:20	AAT	Mt. Juliet, TN



20210715-K25A (PH02 @ 30") L1379902-02 Solid

Collected by  
Andrew Smith

Collected date/time  
07/15/21 13:40

Received date/time  
07/17/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1707577	1	07/24/21 19:27	07/24/21 19:27	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1708460	1	07/20/21 17:55	07/21/21 20:42	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1709843	1	07/22/21 09:32	07/22/21 12:27	KAB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1708827	1	07/22/21 11:02	07/22/21 18:06	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1709222	1	07/28/21 03:31	07/29/21 06:28	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1707906	1	07/22/21 16:32	07/24/21 20:30	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1709226	5	07/28/21 03:36	07/28/21 17:53	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1708925	1	07/20/21 15:33	07/21/21 15:45	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1709141	1	07/20/21 15:33	07/21/21 12:04	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1711367	10	07/25/21 08:14	07/26/21 14:55	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1711507	1	07/26/21 09:26	07/26/21 18:53	AAT	Mt. Juliet, TN

20210715-K25A (PH03 @ 30") L1379902-03 Solid

Collected by  
Andrew Smith

Collected date/time  
07/15/21 13:45

Received date/time  
07/17/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1707577	1	07/24/21 19:29	07/24/21 19:29	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1708460	1	07/20/21 17:55	07/21/21 20:47	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1709843	1	07/22/21 09:32	07/22/21 12:27	KAB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1708827	1	07/22/21 11:02	07/22/21 18:06	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1709222	1	07/28/21 03:31	07/29/21 06:31	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1707906	1	07/22/21 16:32	07/24/21 20:33	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1709226	5	07/28/21 03:36	07/28/21 17:57	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1708925	1	07/20/21 15:33	07/21/21 16:07	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1709141	1	07/20/21 15:33	07/21/21 12:24	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1711367	10	07/25/21 08:14	07/26/21 15:22	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1711507	1	07/26/21 09:26	07/26/21 19:06	AAT	Mt. Juliet, TN

20210715-K25A (PH04 @ 30") L1379902-04 Solid

Collected by  
Andrew Smith

Collected date/time  
07/15/21 13:50

Received date/time  
07/17/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1707577	1	07/24/21 19:37	07/24/21 19:37	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1708460	1	07/20/21 17:55	07/21/21 20:57	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1709843	1	07/22/21 09:32	07/22/21 12:27	KAB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1708827	1	07/22/21 11:02	07/22/21 18:06	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1709222	1	07/28/21 03:31	07/29/21 06:34	CCE	Mt. Juliet, TN



# SAMPLE SUMMARY

20210715-K25A (PH04 @ 30") L1379902-04 Solid

Collected by  
Andrew Smith

Collected date/time  
07/15/21 13:50

Received date/time  
07/17/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1707906	1	07/22/21 16:32	07/24/21 20:36	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1709226	5	07/28/21 03:36	07/28/21 18:00	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1709165	1	07/20/21 15:33	07/22/21 00:43	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1709141	1	07/20/21 15:33	07/21/21 12:43	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1711367	10	07/25/21 08:14	07/26/21 15:36	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1711507	1	07/26/21 09:26	07/26/21 18:40	AAT	Mt. Juliet, TN

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

# CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Chris Ward  
Project Manager

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc



Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	0.772		1	07/24/2021 19:24	WG1707577

1  
Cp

2  
Tc

Wet Chemistry by Method 7199

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Hexavalent Chromium	U		0.255	1.00	1	07/21/2021 20:37	<a href="#">WG1708460</a>

3  
Ss

4  
Cn

Wet Chemistry by Method 9045D

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	su				
pH	8.15	<a href="#">T8</a>	1	07/22/2021 12:27	<a href="#">WG1709843</a>

5  
Sr

6  
Qc

Sample Narrative:

L1379902-01 WG1709843: 8.15 at 23.7C

7  
Gl

8  
Al

Wet Chemistry by Method 9050AMod

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	umhos/cm		umhos/cm			
Specific Conductance	401		10.0	1	07/22/2021 18:06	<a href="#">WG1708827</a>

9  
Sc

Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Barium	2660		0.0852	0.500	1	07/29/2021 06:25	<a href="#">WG1709222</a>
Cadmium	U		0.0471	0.500	1	07/29/2021 06:25	<a href="#">WG1709222</a>
Copper	28.9		0.400	2.00	1	07/29/2021 06:25	<a href="#">WG1709222</a>
Lead	18.9		0.208	0.500	1	07/29/2021 06:25	<a href="#">WG1709222</a>
Nickel	20.4		0.132	2.00	1	07/29/2021 06:25	<a href="#">WG1709222</a>
Selenium	1.52	<a href="#">J</a>	0.764	2.00	1	07/29/2021 06:25	<a href="#">WG1709222</a>
Silver	U		0.127	1.00	1	07/29/2021 06:25	<a href="#">WG1709222</a>
Zinc	55.3		0.832	5.00	1	07/29/2021 06:25	<a href="#">WG1709222</a>

Metals (ICP) by Method 6010B-NE493 Ch 2

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/l		mg/l	mg/l			
Hot Water Sol. Boron	0.653		0.0167	0.200	1	07/24/2021 20:28	<a href="#">WG1707906</a>

Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Arsenic	22.8		0.100	1.00	5	07/28/2021 17:50	<a href="#">WG1709226</a>

Volatile Organic Compounds (GC) by Method 8015D/GRO

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
TPH (GC/FID) Low Fraction	0.260		0.0217	0.100	1	07/22/2021 08:39	<a href="#">WG1709617</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	93.5			77.0-120		07/22/2021 08:39	<a href="#">WG1709617</a>

## Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	07/21/2021 11:45	<a href="#">WG1709141</a>
Toluene	U		0.00130	0.00500	1	07/21/2021 11:45	<a href="#">WG1709141</a>
Ethylbenzene	U		0.000737	0.00250	1	07/21/2021 11:45	<a href="#">WG1709141</a>
Xylenes, Total	0.000975	J	0.000880	0.00650	1	07/21/2021 11:45	<a href="#">WG1709141</a>
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	07/21/2021 11:45	<a href="#">WG1709141</a>
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	07/21/2021 11:45	<a href="#">WG1709141</a>
(S) Toluene-d8	108			75.0-131		07/21/2021 11:45	<a href="#">WG1709141</a>
(S) 4-Bromofluorobenzene	92.7			67.0-138		07/21/2021 11:45	<a href="#">WG1709141</a>
(S) 1,2-Dichloroethane-d4	110			70.0-130		07/21/2021 11:45	<a href="#">WG1709141</a>

## Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	75.6		16.1	40.0	10	07/26/2021 14:41	<a href="#">WG1711367</a>
C28-C36 Motor Oil Range	173		2.74	40.0	10	07/26/2021 14:41	<a href="#">WG1711367</a>
(S) o-Terphenyl	54.3			18.0-148		07/26/2021 14:41	<a href="#">WG1711367</a>

## Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	07/26/2021 19:20	<a href="#">WG1711507</a>
Acenaphthene	U		0.00209	0.00600	1	07/26/2021 19:20	<a href="#">WG1711507</a>
Acenaphthylene	U		0.00216	0.00600	1	07/26/2021 19:20	<a href="#">WG1711507</a>
Benzo(a)anthracene	U		0.00173	0.00600	1	07/26/2021 19:20	<a href="#">WG1711507</a>
Benzo(a)pyrene	U		0.00179	0.00600	1	07/26/2021 19:20	<a href="#">WG1711507</a>
Benzo(b)fluoranthene	U		0.00153	0.00600	1	07/26/2021 19:20	<a href="#">WG1711507</a>
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	07/26/2021 19:20	<a href="#">WG1711507</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	07/26/2021 19:20	<a href="#">WG1711507</a>
Chrysene	U		0.00232	0.00600	1	07/26/2021 19:20	<a href="#">WG1711507</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	07/26/2021 19:20	<a href="#">WG1711507</a>
Fluoranthene	U		0.00227	0.00600	1	07/26/2021 19:20	<a href="#">WG1711507</a>
Fluorene	U		0.00205	0.00600	1	07/26/2021 19:20	<a href="#">WG1711507</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	07/26/2021 19:20	<a href="#">WG1711507</a>
Naphthalene	0.0183	J	0.00408	0.0200	1	07/26/2021 19:20	<a href="#">WG1711507</a>
Phenanthrene	0.00708		0.00231	0.00600	1	07/26/2021 19:20	<a href="#">WG1711507</a>
Pyrene	0.00648		0.00200	0.00600	1	07/26/2021 19:20	<a href="#">WG1711507</a>
1-Methylnaphthalene	0.0222		0.00449	0.0200	1	07/26/2021 19:20	<a href="#">WG1711507</a>
2-Methylnaphthalene	0.0671		0.00427	0.0200	1	07/26/2021 19:20	<a href="#">WG1711507</a>
2-Chloronaphthalene	U		0.00466	0.0200	1	07/26/2021 19:20	<a href="#">WG1711507</a>
(S) p-Terphenyl-d14	69.7			23.0-120		07/26/2021 19:20	<a href="#">WG1711507</a>
(S) Nitrobenzene-d5	100			14.0-149		07/26/2021 19:20	<a href="#">WG1711507</a>
(S) 2-Fluorobiphenyl	68.0			34.0-125		07/26/2021 19:20	<a href="#">WG1711507</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.442		1	07/24/2021 19:27	WG1707577

## Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	07/21/2021 20:42	<a href="#">WG1708460</a>

## Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.60	<a href="#">T8</a>	1	07/22/2021 12:27	<a href="#">WG1709843</a>

## Sample Narrative:

L1379902-02 WG1709843: 8.6 at 23.2C

## Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	324		10.0	1	07/22/2021 18:06	<a href="#">WG1708827</a>

## Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	2100		0.0852	0.500	1	07/29/2021 06:28	<a href="#">WG1709222</a>
Cadmium	U		0.0471	0.500	1	07/29/2021 06:28	<a href="#">WG1709222</a>
Copper	24.3		0.400	2.00	1	07/29/2021 06:28	<a href="#">WG1709222</a>
Lead	16.1		0.208	0.500	1	07/29/2021 06:28	<a href="#">WG1709222</a>
Nickel	16.7		0.132	2.00	1	07/29/2021 06:28	<a href="#">WG1709222</a>
Selenium	0.836	<a href="#">J</a>	0.764	2.00	1	07/29/2021 06:28	<a href="#">WG1709222</a>
Silver	U		0.127	1.00	1	07/29/2021 06:28	<a href="#">WG1709222</a>
Zinc	48.4		0.832	5.00	1	07/29/2021 06:28	<a href="#">WG1709222</a>

## Metals (ICP) by Method 6010B-NE493 Ch 2

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.526		0.0167	0.200	1	07/24/2021 20:30	<a href="#">WG1707906</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	20.2		0.100	1.00	5	07/28/2021 17:53	<a href="#">WG1709226</a>

## Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.269		0.0217	0.100	1	07/21/2021 15:45	<a href="#">WG1708925</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	88.5			77.0-120		07/21/2021 15:45	<a href="#">WG1708925</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

## Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	07/21/2021 12:04	<a href="#">WG1709141</a>
Toluene	U		0.00130	0.00500	1	07/21/2021 12:04	<a href="#">WG1709141</a>
Ethylbenzene	U		0.000737	0.00250	1	07/21/2021 12:04	<a href="#">WG1709141</a>
Xylenes, Total	U		0.000880	0.00650	1	07/21/2021 12:04	<a href="#">WG1709141</a>
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	07/21/2021 12:04	<a href="#">WG1709141</a>
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	07/21/2021 12:04	<a href="#">WG1709141</a>
(S) Toluene-d8	108			75.0-131		07/21/2021 12:04	<a href="#">WG1709141</a>
(S) 4-Bromofluorobenzene	93.5			67.0-138		07/21/2021 12:04	<a href="#">WG1709141</a>
(S) 1,2-Dichloroethane-d4	110			70.0-130		07/21/2021 12:04	<a href="#">WG1709141</a>

## Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	56.2		16.1	40.0	10	07/26/2021 14:55	<a href="#">WG1711367</a>
C28-C36 Motor Oil Range	162		2.74	40.0	10	07/26/2021 14:55	<a href="#">WG1711367</a>
(S) o-Terphenyl	59.7			18.0-148		07/26/2021 14:55	<a href="#">WG1711367</a>

## Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	07/26/2021 18:53	<a href="#">WG1711507</a>
Acenaphthene	U		0.00209	0.00600	1	07/26/2021 18:53	<a href="#">WG1711507</a>
Acenaphthylene	U		0.00216	0.00600	1	07/26/2021 18:53	<a href="#">WG1711507</a>
Benzo(a)anthracene	U		0.00173	0.00600	1	07/26/2021 18:53	<a href="#">WG1711507</a>
Benzo(a)pyrene	U		0.00179	0.00600	1	07/26/2021 18:53	<a href="#">WG1711507</a>
Benzo(b)fluoranthene	U		0.00153	0.00600	1	07/26/2021 18:53	<a href="#">WG1711507</a>
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	07/26/2021 18:53	<a href="#">WG1711507</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	07/26/2021 18:53	<a href="#">WG1711507</a>
Chrysene	U		0.00232	0.00600	1	07/26/2021 18:53	<a href="#">WG1711507</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	07/26/2021 18:53	<a href="#">WG1711507</a>
Fluoranthene	U		0.00227	0.00600	1	07/26/2021 18:53	<a href="#">WG1711507</a>
Fluorene	U		0.00205	0.00600	1	07/26/2021 18:53	<a href="#">WG1711507</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	07/26/2021 18:53	<a href="#">WG1711507</a>
Naphthalene	0.00433	U	0.00408	0.0200	1	07/26/2021 18:53	<a href="#">WG1711507</a>
Phenanthrene	U		0.00231	0.00600	1	07/26/2021 18:53	<a href="#">WG1711507</a>
Pyrene	U		0.00200	0.00600	1	07/26/2021 18:53	<a href="#">WG1711507</a>
1-Methylnaphthalene	0.00591	U	0.00449	0.0200	1	07/26/2021 18:53	<a href="#">WG1711507</a>
2-Methylnaphthalene	0.0177	U	0.00427	0.0200	1	07/26/2021 18:53	<a href="#">WG1711507</a>
2-Chloronaphthalene	U		0.00466	0.0200	1	07/26/2021 18:53	<a href="#">WG1711507</a>
(S) p-Terphenyl-d14	72.0			23.0-120		07/26/2021 18:53	<a href="#">WG1711507</a>
(S) Nitrobenzene-d5	87.5			14.0-149		07/26/2021 18:53	<a href="#">WG1711507</a>
(S) 2-Fluorobiphenyl	72.0			34.0-125		07/26/2021 18:53	<a href="#">WG1711507</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	0.891		1	07/24/2021 19:29	WG1707577

Wet Chemistry by Method 7199

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Hexavalent Chromium	U		0.255	1.00	1	07/21/2021 20:47	<a href="#">WG1708460</a>

Wet Chemistry by Method 9045D

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	su				
pH	8.26	<a href="#">T8</a>	1	07/22/2021 12:27	<a href="#">WG1709843</a>

Sample Narrative:

L1379902-03 WG1709843: 8.26 at 23.5C

Wet Chemistry by Method 9050AMod

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	umhos/cm		umhos/cm			
Specific Conductance	1240		10.0	1	07/22/2021 18:06	<a href="#">WG1708827</a>

Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Barium	3620		0.0852	0.500	1	07/29/2021 06:31	<a href="#">WG1709222</a>
Cadmium	U		0.0471	0.500	1	07/29/2021 06:31	<a href="#">WG1709222</a>
Copper	25.5		0.400	2.00	1	07/29/2021 06:31	<a href="#">WG1709222</a>
Lead	17.0		0.208	0.500	1	07/29/2021 06:31	<a href="#">WG1709222</a>
Nickel	18.3		0.132	2.00	1	07/29/2021 06:31	<a href="#">WG1709222</a>
Selenium	2.16		0.764	2.00	1	07/29/2021 06:31	<a href="#">WG1709222</a>
Silver	U		0.127	1.00	1	07/29/2021 06:31	<a href="#">WG1709222</a>
Zinc	53.7		0.832	5.00	1	07/29/2021 06:31	<a href="#">WG1709222</a>

Metals (ICP) by Method 6010B-NE493 Ch 2

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/l		mg/l	mg/l			
Hot Water Sol. Boron	1.34		0.0167	0.200	1	07/24/2021 20:33	<a href="#">WG1707906</a>

Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Arsenic	25.7		0.100	1.00	5	07/28/2021 17:57	<a href="#">WG1709226</a>

Volatile Organic Compounds (GC) by Method 8015D/GRO

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
TPH (GC/FID) Low Fraction	0.137		0.0217	0.100	1	07/21/2021 16:07	<a href="#">WG1708925</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	88.6			77.0-120		07/21/2021 16:07	<a href="#">WG1708925</a>

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



## Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	07/21/2021 12:24	<a href="#">WG1709141</a>
Toluene	U		0.00130	0.00500	1	07/21/2021 12:24	<a href="#">WG1709141</a>
Ethylbenzene	U		0.000737	0.00250	1	07/21/2021 12:24	<a href="#">WG1709141</a>
Xylenes, Total	U		0.000880	0.00650	1	07/21/2021 12:24	<a href="#">WG1709141</a>
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	07/21/2021 12:24	<a href="#">WG1709141</a>
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	07/21/2021 12:24	<a href="#">WG1709141</a>
(S) Toluene-d8	109			75.0-131		07/21/2021 12:24	<a href="#">WG1709141</a>
(S) 4-Bromofluorobenzene	96.3			67.0-138		07/21/2021 12:24	<a href="#">WG1709141</a>
(S) 1,2-Dichloroethane-d4	110			70.0-130		07/21/2021 12:24	<a href="#">WG1709141</a>

## Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	132		16.1	40.0	10	07/26/2021 15:22	<a href="#">WG1711367</a>
C28-C36 Motor Oil Range	324		2.74	40.0	10	07/26/2021 15:22	<a href="#">WG1711367</a>
(S) o-Terphenyl	70.1			18.0-148		07/26/2021 15:22	<a href="#">WG1711367</a>

## Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	07/26/2021 19:06	<a href="#">WG1711507</a>
Acenaphthene	U		0.00209	0.00600	1	07/26/2021 19:06	<a href="#">WG1711507</a>
Acenaphthylene	U		0.00216	0.00600	1	07/26/2021 19:06	<a href="#">WG1711507</a>
Benzo(a)anthracene	U		0.00173	0.00600	1	07/26/2021 19:06	<a href="#">WG1711507</a>
Benzo(a)pyrene	U		0.00179	0.00600	1	07/26/2021 19:06	<a href="#">WG1711507</a>
Benzo(b)fluoranthene	0.00178	U	0.00153	0.00600	1	07/26/2021 19:06	<a href="#">WG1711507</a>
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	07/26/2021 19:06	<a href="#">WG1711507</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	07/26/2021 19:06	<a href="#">WG1711507</a>
Chrysene	U		0.00232	0.00600	1	07/26/2021 19:06	<a href="#">WG1711507</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	07/26/2021 19:06	<a href="#">WG1711507</a>
Fluoranthene	U		0.00227	0.00600	1	07/26/2021 19:06	<a href="#">WG1711507</a>
Fluorene	U		0.00205	0.00600	1	07/26/2021 19:06	<a href="#">WG1711507</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	07/26/2021 19:06	<a href="#">WG1711507</a>
Naphthalene	0.0237		0.00408	0.0200	1	07/26/2021 19:06	<a href="#">WG1711507</a>
Phenanthrene	0.00594	U	0.00231	0.00600	1	07/26/2021 19:06	<a href="#">WG1711507</a>
Pyrene	0.00404	U	0.00200	0.00600	1	07/26/2021 19:06	<a href="#">WG1711507</a>
1-Methylnaphthalene	0.0115	U	0.00449	0.0200	1	07/26/2021 19:06	<a href="#">WG1711507</a>
2-Methylnaphthalene	0.0228		0.00427	0.0200	1	07/26/2021 19:06	<a href="#">WG1711507</a>
2-Chloronaphthalene	U		0.00466	0.0200	1	07/26/2021 19:06	<a href="#">WG1711507</a>
(S) p-Terphenyl-d14	75.5			23.0-120		07/26/2021 19:06	<a href="#">WG1711507</a>
(S) Nitrobenzene-d5	118			14.0-149		07/26/2021 19:06	<a href="#">WG1711507</a>
(S) 2-Fluorobiphenyl	76.4			34.0-125		07/26/2021 19:06	<a href="#">WG1711507</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	2.15		1	07/24/2021 19:37	WG1707577

Wet Chemistry by Method 7199

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
Hexavalent Chromium	U		0.255	1.00	1	07/21/2021 20:57	<a href="#">WG1708460</a>

Wet Chemistry by Method 9045D

	Result su	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
pH	8.74	<a href="#">T8</a>	1	07/22/2021 12:27	<a href="#">WG1709843</a>

Sample Narrative:

L1379902-04 WG1709843: 8.74 at 23.5C

Wet Chemistry by Method 9050AMod

	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Analyte						
Specific Conductance	539		10.0	1	07/22/2021 18:06	<a href="#">WG1708827</a>

Metals (ICP) by Method 6010B

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
Barium	2160		0.0852	0.500	1	07/29/2021 06:34	<a href="#">WG1709222</a>
Cadmium	U		0.0471	0.500	1	07/29/2021 06:34	<a href="#">WG1709222</a>
Copper	27.3		0.400	2.00	1	07/29/2021 06:34	<a href="#">WG1709222</a>
Lead	16.8		0.208	0.500	1	07/29/2021 06:34	<a href="#">WG1709222</a>
Nickel	17.6		0.132	2.00	1	07/29/2021 06:34	<a href="#">WG1709222</a>
Selenium	1.45	<a href="#">J</a>	0.764	2.00	1	07/29/2021 06:34	<a href="#">WG1709222</a>
Silver	U		0.127	1.00	1	07/29/2021 06:34	<a href="#">WG1709222</a>
Zinc	53.3		0.832	5.00	1	07/29/2021 06:34	<a href="#">WG1709222</a>

Metals (ICP) by Method 6010B-NE493 Ch 2

	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Analyte							
Hot Water Sol. Boron	1.10		0.0167	0.200	1	07/24/2021 20:36	<a href="#">WG1707906</a>

Metals (ICPMS) by Method 6020

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
Arsenic	18.8		0.100	1.00	5	07/28/2021 18:00	<a href="#">WG1709226</a>

Volatile Organic Compounds (GC) by Method 8015D/GRO

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
TPH (GC/FID) Low Fraction	0.341		0.0217	0.100	1	07/22/2021 00:43	<a href="#">WG1709165</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	90.0			77.0-120		07/22/2021 00:43	<a href="#">WG1709165</a>

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

## Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	07/21/2021 12:43	<a href="#">WG1709141</a>
Toluene	U		0.00130	0.00500	1	07/21/2021 12:43	<a href="#">WG1709141</a>
Ethylbenzene	U		0.000737	0.00250	1	07/21/2021 12:43	<a href="#">WG1709141</a>
Xylenes, Total	U		0.000880	0.00650	1	07/21/2021 12:43	<a href="#">WG1709141</a>
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	07/21/2021 12:43	<a href="#">WG1709141</a>
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	07/21/2021 12:43	<a href="#">WG1709141</a>
(S) Toluene-d8	107			75.0-131		07/21/2021 12:43	<a href="#">WG1709141</a>
(S) 4-Bromofluorobenzene	95.9			67.0-138		07/21/2021 12:43	<a href="#">WG1709141</a>
(S) 1,2-Dichloroethane-d4	111			70.0-130		07/21/2021 12:43	<a href="#">WG1709141</a>

## Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	81.6		16.1	40.0	10	07/26/2021 15:36	<a href="#">WG1711367</a>
C28-C36 Motor Oil Range	202		2.74	40.0	10	07/26/2021 15:36	<a href="#">WG1711367</a>
(S) o-Terphenyl	60.8			18.0-148		07/26/2021 15:36	<a href="#">WG1711367</a>

## Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	07/26/2021 18:40	<a href="#">WG1711507</a>
Acenaphthene	U		0.00209	0.00600	1	07/26/2021 18:40	<a href="#">WG1711507</a>
Acenaphthylene	U		0.00216	0.00600	1	07/26/2021 18:40	<a href="#">WG1711507</a>
Benzo(a)anthracene	U		0.00173	0.00600	1	07/26/2021 18:40	<a href="#">WG1711507</a>
Benzo(a)pyrene	U		0.00179	0.00600	1	07/26/2021 18:40	<a href="#">WG1711507</a>
Benzo(b)fluoranthene	U		0.00153	0.00600	1	07/26/2021 18:40	<a href="#">WG1711507</a>
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	07/26/2021 18:40	<a href="#">WG1711507</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	07/26/2021 18:40	<a href="#">WG1711507</a>
Chrysene	U		0.00232	0.00600	1	07/26/2021 18:40	<a href="#">WG1711507</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	07/26/2021 18:40	<a href="#">WG1711507</a>
Fluoranthene	U		0.00227	0.00600	1	07/26/2021 18:40	<a href="#">WG1711507</a>
Fluorene	U		0.00205	0.00600	1	07/26/2021 18:40	<a href="#">WG1711507</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	07/26/2021 18:40	<a href="#">WG1711507</a>
Naphthalene	0.00450	U	0.00408	0.0200	1	07/26/2021 18:40	<a href="#">WG1711507</a>
Phenanthrene	U		0.00231	0.00600	1	07/26/2021 18:40	<a href="#">WG1711507</a>
Pyrene	U		0.00200	0.00600	1	07/26/2021 18:40	<a href="#">WG1711507</a>
1-Methylnaphthalene	0.00602	U	0.00449	0.0200	1	07/26/2021 18:40	<a href="#">WG1711507</a>
2-Methylnaphthalene	0.0149	U	0.00427	0.0200	1	07/26/2021 18:40	<a href="#">WG1711507</a>
2-Chloronaphthalene	U		0.00466	0.0200	1	07/26/2021 18:40	<a href="#">WG1711507</a>
(S) p-Terphenyl-d14	72.6			23.0-120		07/26/2021 18:40	<a href="#">WG1711507</a>
(S) Nitrobenzene-d5	110			14.0-149		07/26/2021 18:40	<a href="#">WG1711507</a>
(S) 2-Fluorobiphenyl	73.3			34.0-125		07/26/2021 18:40	<a href="#">WG1711507</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3682707-1 07/21/21 18:16

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Hexavalent Chromium	U		0.255	1.00

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3682707-3 07/21/21 18:32

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	6.27		1	15.1		20

L1379902-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1379902-03 07/21/21 20:47 • (DUP) R3682707-8 07/21/21 20:52

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	U	U	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3682707-2 07/21/21 18:22

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.81	98.1	80.0-120	

L1378941-08 Original Sample (OS) • Matrix Spike (MS)

(OS) L1378941-08 07/21/21 18:58 • (MS) R3682707-6 07/21/21 19:24

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	641	U	316	49.4	50	75.0-125	J6

L1378941-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1378941-08 07/21/21 18:58 • (MS) R3682707-4 07/21/21 19:03 • (MSD) R3682707-5 07/21/21 19:19

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	U	U	U	0.000	0.000	1	75.0-125	J6	J6	0.000	20

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

L1379902-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1379902-02 07/22/21 12:27 • (DUP) R3682728-2 07/22/21 12:27

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.60	8.61	1	0.116		1

Sample Narrative:

OS: 8.6 at 23.2C

DUP: 8.61 at 24C

L1380970-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1380970-06 07/22/21 12:27 • (DUP) R3682728-3 07/22/21 12:27

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	7.56	7.59	1	0.396		1

Sample Narrative:

OS: 7.56 at 22.9C

DUP: 7.59 at 24C

Laboratory Control Sample (LCS)

(LCS) R3682728-1 07/22/21 12:27

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	su	su	%	%	
pH	10.0	10.1	101	99.0-101	

Sample Narrative:

LCS: 10.06 at 22.8C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3682910-1 07/22/21 18:06

Analyte	MB Result umhos/cm	MB Qualifier	MB MDL umhos/cm	MB RDL umhos/cm
Specific Conductance	U		10.0	10.0

L1379902-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1379902-03 07/22/21 18:06 • (DUP) R3682910-3 07/22/21 18:06

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1240	1250	1	0.402		20

Laboratory Control Sample (LCS)

(LCS) R3682910-2 07/22/21 18:06

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	899	907	101	85.0-115	

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc



Method Blank (MB)

(MB) R3685166-1 07/29/21 05:48

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Barium	U		0.0852	0.500
Cadmium	U		0.0471	0.500
Copper	U		0.400	2.00
Lead	U		0.208	0.500
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00
Silver	U		0.127	1.00
Zinc	U		0.832	5.00

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Laboratory Control Sample (LCS)

(LCS) R3685166-2 07/29/21 05:51

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	97.3	97.3	80.0-120	
Cadmium	100	93.8	93.8	80.0-120	
Copper	100	94.7	94.7	80.0-120	
Lead	100	95.6	95.6	80.0-120	
Nickel	100	96.1	96.1	80.0-120	
Selenium	100	94.0	94.0	80.0-120	
Silver	20.0	18.9	94.6	80.0-120	
Zinc	100	92.5	92.5	80.0-120	

L1379873-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1379873-03 07/29/21 05:54 • (MS) R3685166-5 07/29/21 06:01 • (MSD) R3685166-6 07/29/21 06:04

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	120	220	227	99.9	106	1	75.0-125			2.95	20
Cadmium	100	0.149	96.5	88.1	96.4	87.9	1	75.0-125			9.16	20
Copper	100	7.21	106	97.2	99.0	90.0	1	75.0-125			8.91	20
Lead	100	6.70	106	97.7	99.5	91.0	1	75.0-125			8.39	20
Nickel	100	6.34	106	97.0	99.5	90.7	1	75.0-125			8.69	20
Selenium	100	U	95.7	88.1	95.7	88.1	1	75.0-125			8.32	20
Silver	20.0	U	19.0	17.4	95.2	87.1	1	75.0-125			8.92	20
Zinc	100	24.1	121	112	97.0	87.7	1	75.0-125			8.01	20

Method Blank (MB)

(MB) R3683616-1 07/24/21 19:47

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hot Water Sol. Boron	U		0.0167	0.200

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3683616-2 07/24/21 19:50 • (LCSD) R3683616-3 07/24/21 19:53

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	0.950	0.949	95.0	94.9	80.0-120			0.141	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3685032-1 07/28/21 16:55

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00

Laboratory Control Sample (LCS)

(LCS) R3685032-2 07/28/21 16:58

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	97.1	97.1	80.0-120	

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) • (MS) R3685032-5 07/28/21 17:12 • (MSD) R3685032-6 07/28/21 17:15

Analyte	Spike Amount mg/kg	Original Result	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100		94.9	91.3	93.7	90.2	5	75.0-125			3.81	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3682394-2 07/21/21 08:57

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	92.2			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3682394-1 07/21/21 08:01

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.73	104	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			105	77.0-120	

L1376779-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1376779-05 07/21/21 14:17 • (MS) R3682394-3 07/21/21 20:09 • (MSD) R3682394-4 07/21/21 20:31

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	4.57	U	1.80	2.65	39.4	56.0	1	10.0-151		J3	38.2	28
(S) a,a,a-Trifluorotoluene(FID)					92.4	96.1		77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3683335-2 07/21/21 23:09

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	93.5			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3683335-1 07/21/21 22:26

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.27	114	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			117	77.0-120	

L1379956-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1379956-01 07/22/21 01:28 • (MS) R3683335-3 07/22/21 08:04 • (MSD) R3683335-4 07/22/21 08:26

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	155	U	88.7	93.5	66.2	69.8	25	10.0-151			5.27	28
(S) a,a,a-Trifluorotoluene(FID)					106	107		77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3682800-3 07/22/21 05:47

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	106			77.0-120

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3682800-1 07/22/21 04:10 • (LCSD) R3682800-2 07/22/21 04:32

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	5.07	5.08	92.2	92.4	72.0-127			0.197	20
(S) a,a,a-Trifluorotoluene(FID)				96.1	96.0	77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3684534-2 07/21/21 10:43

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	106			75.0-131
(S) 4-Bromofluorobenzene	97.0			67.0-138
(S) 1,2-Dichloroethane-d4	110			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3684534-1 07/21/21 09:46

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.113	90.4	70.0-123	
Ethylbenzene	0.125	0.118	94.4	74.0-126	
Toluene	0.125	0.118	94.4	75.0-121	
1,2,4-Trimethylbenzene	0.125	0.116	92.8	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.121	96.8	73.0-127	
Xylenes, Total	0.375	0.339	90.4	72.0-127	
(S) Toluene-d8			103	75.0-131	
(S) 4-Bromofluorobenzene			99.1	67.0-138	
(S) 1,2-Dichloroethane-d4			111	70.0-130	

L1379960-12 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1379960-12 07/21/21 17:26 • (MS) R3684534-3 07/21/21 17:45 • (MSD) R3684534-4 07/21/21 18:04

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	1.10	2.35	12.9	13.0	1050	1070	8	10.0-149	J5	J5	0.772	37
Ethylbenzene	1.10	0.00880	0.559	1.00	55.0	99.1	8	10.0-160		J3	56.6	38
Toluene	1.10	U	0.575	1.05	57.5	105	8	10.0-156		J3	58.5	38
1,2,4-Trimethylbenzene	1.10	U	0.593	1.01	59.3	101	8	10.0-160		J3	52.0	36
1,3,5-Trimethylbenzene	1.10	U	0.580	1.03	58.0	103	8	10.0-160		J3	55.9	38
Xylenes, Total	3.30	0.0232	1.67	2.91	54.9	96.2	8	10.0-160		J3	54.1	38
(S) Toluene-d8					104	107		75.0-131				
(S) 4-Bromofluorobenzene					97.8	94.4		67.0-138				
(S) 1,2-Dichloroethane-d4					109	110		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3683868-2 07/26/21 11:47

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	53.3			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3683868-1 07/26/21 06:44

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	32.2	64.4	50.0-150	
(S) o-Terphenyl			57.2	18.0-148	

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc



Method Blank (MB)

(MB) R3684170-2 07/26/21 14:54

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	95.4			14.0-149
(S) 2-Fluorobiphenyl	76.5			34.0-125
(S) p-Terphenyl-d14	74.7			23.0-120

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3684170-1 07/26/21 14:41

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0811	101	50.0-126	
Acenaphthene	0.0800	0.0566	70.8	50.0-120	
Acenaphthylene	0.0800	0.0859	107	50.0-120	
Benzo(a)anthracene	0.0800	0.0700	87.5	45.0-120	
Benzo(a)pyrene	0.0800	0.0569	71.1	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0637	79.6	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0596	74.5	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0629	78.6	49.0-125	
Chrysene	0.0800	0.0661	82.6	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0639	79.9	47.0-125	
Fluoranthene	0.0800	0.0802	100	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3684170-1 07/26/21 14:41

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0849	106	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0621	77.6	46.0-125	
Naphthalene	0.0800	0.0656	82.0	50.0-120	
Phenanthrene	0.0800	0.0733	91.6	47.0-120	
Pyrene	0.0800	0.0571	71.4	43.0-123	
1-Methylnaphthalene	0.0800	0.0817	102	51.0-121	
2-Methylnaphthalene	0.0800	0.0773	96.6	50.0-120	
2-Chloronaphthalene	0.0800	0.0706	88.3	50.0-120	
(S) Nitrobenzene-d5			135	14.0-149	
(S) 2-Fluorobiphenyl			88.5	34.0-125	
(S) p-Terphenyl-d14			83.7	23.0-120	

L1379969-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1379969-03 07/26/21 15:07 • (MS) R3684170-3 07/26/21 15:20 • (MSD) R3684170-4 07/26/21 15:34

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0784	U	0.0511	0.0591	65.2	74.2	1	10.0-145			14.5	30
Acenaphthene	0.0784	U	0.0369	0.0427	47.1	53.6	1	14.0-127			14.6	27
Acenaphthylene	0.0784	U	0.0545	0.0637	69.5	80.0	1	21.0-124			15.6	25
Benzo(a)anthracene	0.0784	U	0.0447	0.0527	57.0	66.2	1	10.0-139			16.4	30
Benzo(a)pyrene	0.0784	U	0.0377	0.0428	48.1	53.8	1	10.0-141			12.7	31
Benzo(b)fluoranthene	0.0784	U	0.0395	0.0472	50.4	59.3	1	10.0-140			17.8	36
Benzo(g,h,i)perylene	0.0784	U	0.0388	0.0456	49.5	57.3	1	10.0-140			16.1	33
Benzo(k)fluoranthene	0.0784	U	0.0394	0.0462	50.3	58.0	1	10.0-137			15.9	31
Chrysene	0.0784	U	0.0451	0.0518	57.5	65.1	1	10.0-145			13.8	30
Dibenz(a,h)anthracene	0.0784	U	0.0417	0.0476	53.2	59.8	1	10.0-132			13.2	31
Fluoranthene	0.0784	U	0.0511	0.0593	65.2	74.5	1	10.0-153			14.9	33
Fluorene	0.0784	U	0.0538	0.0623	68.6	78.3	1	11.0-130			14.6	29
Indeno(1,2,3-cd)pyrene	0.0784	U	0.0393	0.0455	50.1	57.2	1	10.0-137			14.6	32
Naphthalene	0.0784	U	0.0464	0.0483	59.2	60.7	1	10.0-135			4.01	27
Phenanthrene	0.0784	U	0.0494	0.0583	63.0	73.2	1	10.0-144			16.5	31
Pyrene	0.0784	0.00238	0.0379	0.0446	45.3	53.0	1	10.0-148			16.2	35
1-Methylnaphthalene	0.0784	U	0.0515	0.0547	65.7	68.7	1	10.0-142			6.03	28
2-Methylnaphthalene	0.0784	U	0.0513	0.0511	65.4	64.2	1	10.0-137			0.391	28
2-Chloronaphthalene	0.0784	U	0.0488	0.0548	62.2	68.8	1	29.0-120			11.6	24
(S) Nitrobenzene-d5					90.9	97.6		14.0-149				
(S) 2-Fluorobiphenyl					67.3	73.4		34.0-125				
(S) p-Terphenyl-d14					61.9	69.2		23.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

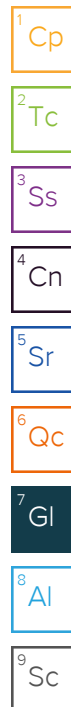
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

### Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

### Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.



# ACCREDITATIONS & LOCATIONS

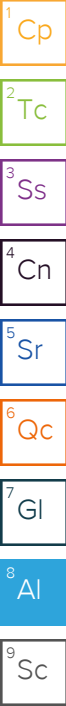
## Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky <sup>1 6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1 4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA -- ISO 17025 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

\* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

\* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.









07/20/10

## Technical Report for

**EnCana**

**D23 Pit Closure**

**Accutest Job Number: D14852**

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

**Report to:**

**EnCana**

**christopher.hines@encana.com**

**ATTN: Chris Hines**

**Total number of pages in report: 74**



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)

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Test results relate only to samples analyzed.

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Sample Summary

EnCana

D23 Pit Closure

Job No: D14852

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D14852-1	06/29/10	14:15 BR	07/01/10	SO	Soil	D23-NW BACK-062910
D14852-2	06/29/10	14:30 BR	07/01/10	SO	Soil	D23-SW BACK-062910
D14852-2A	06/29/10	14:30 BR	07/01/10	SO	Soil	D23-SW BACK-062910

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

## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** EnCana**Job No** D14852**Site:** D23 Pit Closure**Report Dat** 7/20/2010 1:01:34 PM

On 07/01/2010, 2 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 D14852 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

**Matrix** SO**Batch ID:** V3V300

- All samples were analyzed within the recommended method holding time.
- Sample(s) D14852-2MS, D14852-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

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

**Matrix** SO**Batch ID:** 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

**Matrix** SO**Batch ID:** 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

**Matrix** SO**Batch ID:** OP2112

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

## Metals By Method SW846 6010B

**Matrix** AQ

**Batch ID:** 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.

**Matrix** SO

**Batch ID:** MP2264

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D14886-1MS, D14886-1MSD, D14886-1SDL 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 Selenium, Silver, Chromium, Nickel, and Zinc are outside control limits for sample MP2264-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

## Metals By Method SW846 6020

**Matrix** SO

**Batch ID:** MP2265

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D14886-1MS, D14886-1MSD, D14886-1SDL were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Arsenic are outside control limits for sample MP2265-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

## Metals By Method SW846 7471A

**Matrix** SO

**Batch ID:** 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

**Matrix** SO

**Batch ID:** M:GN32327

- The data for ASTM E1498-76M meets quality control requirements.
- The following sample was run outside of holding time for method ASTM E1498-76M: D14852-2.
- D14852-2 for Redox Potential Vs H2: Analysis performed at Accutest Laboratories, Marlborough, MA.

## Wet Chemistry By Method LADNR29B

**Matrix** SO

**Batch ID:** R3138

- The data for LADNR29B meets quality control requirements.
- D14852-2A for Sodium Adsorption Ratio: Calculated as:  $(\text{Na meq/L}) / \sqrt{[(\text{Ca meq/L}) + (\text{Mg meq/L})/2]}$

## Wet Chemistry By Method SM19 2540B M

**Matrix** SO

**Batch ID:** GN5243

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



**Wet Chemistry By Method SW846 3060/7196A M****Matrix** SO**Batch ID:** R3173

- The data for SW846 3060/7196A M meets quality control requirements.
- D14852-2 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

**Wet Chemistry By Method SW846 3060A/7196A****Matrix** SO**Batch ID:** M:GP11780

- The data for SW846 3060A/7196A meets quality control requirements.
- D14852-2 for Chromium, Hexavalent: Analysis performed at Accutest Laboratories, Marlborough, MA.

**Wet Chemistry By Method SW846 9045C****Matrix** SO**Batch ID:** GN5177

- The following sample was run outside of holding time for method SW846 9045C: D14852-2.

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** D14852**Site:** ENCACOP: D23 Pit Closure**Report Date** 7/12/2010 10:58:55 AM

1 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 D14852. 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(D14852).



## Sample Results

## Report of Analysis

Report of Analysis

<b>Client Sample ID:</b>	D23-NW BACK-062910	
<b>Lab Sample ID:</b>	D14852-1	<b>Date Sampled:</b> 06/29/10
<b>Matrix:</b>	SO - Soil	<b>Date Received:</b> 07/01/10
		<b>Percent Solids:</b> 86.8
<b>Project:</b>	D23 Pit Closure	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	15.7	0.38	mg/kg	5	07/08/10	07/08/10 GJ	SW846 6020 <sup>1</sup>	SW846 3050B <sup>2</sup>

(1) Instrument QC Batch: MA809  
(2) Prep QC Batch: MP2265

RL = Reporting Limit

## Report of Analysis

**Client Sample ID:** D23-SW BACK-062910  
**Lab Sample ID:** D14852-2  
**Matrix:** SO - Soil  
**Method:** SW846 8260B  
**Project:** D23 Pit Closure

**Date Sampled:** 06/29/10  
**Date Received:** 07/01/10  
**Percent Solids:** 87.1

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V05782.D	1	07/10/10	KV	n/a	n/a	V3V300
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	5.7	1.7	ug/kg	
108-88-3	Toluene	ND	11	5.7	ug/kg	
100-41-4	Ethylbenzene	ND	11	2.3	ug/kg	
	m,p-Xylene	ND	23	4.0	ug/kg	
95-47-6	o-Xylene	ND	11	4.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	89%		70-130%
460-00-4	4-Bromofluorobenzene	83%		70-130%
17060-07-0	1,2-Dichloroethane-D4	90%		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>	D23-SW BACK-062910		
<b>Lab Sample ID:</b>	D14852-2	<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>	87.1
<b>Project:</b>	D23 Pit Closure		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G01308.D	5	07/07/10	TMB	07/02/10	OP2111	E3G33
Run #2							

	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	38	36	ug/kg	
208-96-8	Acenaphthylene	ND	190	39	ug/kg	
120-12-7	Anthracene	ND	38	25	ug/kg	
56-55-3	Benzo(a)anthracene	ND	38	38	ug/kg	
50-32-8	Benzo(a)pyrene	30.5	38	24	ug/kg	J
205-99-2	Benzo(b)fluoranthene	63.2	38	28	ug/kg	
191-24-2	Benzo(g,h,i)perylene	33.6	38	24	ug/kg	J
207-08-9	Benzo(k)fluoranthene	ND	38	24	ug/kg	
218-01-9	Chrysene	30.3	38	19	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	30.8	38	28	ug/kg	J
206-44-0	Fluoranthene	ND	38	24	ug/kg	
86-73-7	Fluorene	ND	38	38	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	43.5	38	25	ug/kg	
90-12-0	1-Methylnaphthalene	74.2	38	34	ug/kg	
91-57-6	2-Methylnaphthalene	196	190	58	ug/kg	
91-20-3	Naphthalene	78.5	190	42	ug/kg	J
85-01-8	Phenanthrene	59.4	38	30	ug/kg	
129-00-0	Pyrene	35.2	38	26	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	69%		10-193%
321-60-8	2-Fluorobiphenyl	77%		20-138%
1718-51-0	Terphenyl-d14	105%		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

**Client Sample ID:** D23-SW BACK-062910**Lab Sample ID:** D14852-2**Date Sampled:** 06/29/10**Matrix:** SO - Soil**Date Received:** 07/01/10**Method:** SW846 8015B**Percent Solids:** 87.1**Project:** D23 Pit Closure

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GA7525.D	1	07/07/10	DG	n/a	n/a	GGA445
Run #2							

**Initial Weight**

Run #1 1.0 g

Run #2

CAS No.	Compound	Result	RL	MDL	Units	Q
---------	----------	--------	----	-----	-------	---

TPH-GRO (C6-C10)

ND

1.1

1.1

mg/kg

CAS No. Surrogate Recoveries

Run# 1

Run# 2

Limits

120-82-1

1,2,4-Trichlorobenzene

88%

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

**Client Sample ID:** D23-SW BACK-062910**Lab Sample ID:** D14852-2**Date Sampled:** 06/29/10**Matrix:** SO - Soil**Date Received:** 07/01/10**Method:** SW846-8015B SW846 3550B**Percent Solids:** 87.1**Project:** D23 Pit Closure

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD2500.D	1	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)	ND	15	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
84-15-1	o-Terphenyl	104%		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

**Client Sample ID:** D23-SW BACK-062910**Lab Sample ID:** D14852-2**Matrix:** SO - Soil**Project:** D23 Pit Closure**Date Sampled:** 06/29/10**Date Received:** 07/01/10**Percent Solids:** 87.1**Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	24.0	0.36	mg/kg	5	07/08/10	07/08/10 GJ	SW846 6020 <sup>2</sup>	SW846 3050B <sup>7</sup>
Barium	404	1.8	mg/kg	1	07/08/10	07/09/10 JM	SW846 6010B <sup>4</sup>	SW846 3050B <sup>6</sup>
Cadmium	< 0.89	0.89	mg/kg	1	07/08/10	07/09/10 SH	SW846 6010B <sup>3</sup>	SW846 3050B <sup>6</sup>
Chromium	25.1	0.89	mg/kg	1	07/08/10	07/09/10 SH	SW846 6010B <sup>3</sup>	SW846 3050B <sup>6</sup>
Copper	26.5	0.45	mg/kg	1	07/08/10	07/09/10 SH	SW846 6010B <sup>3</sup>	SW846 3050B <sup>6</sup>
Lead	15.0	4.5	mg/kg	1	07/08/10	07/09/10 SH	SW846 6010B <sup>3</sup>	SW846 3050B <sup>6</sup>
Mercury	< 0.11	0.11	mg/kg	1	07/06/10	07/06/10 RN	SW846 7471A <sup>1</sup>	SW846 7471A <sup>5</sup>
Nickel	19.4	2.7	mg/kg	1	07/08/10	07/09/10 SH	SW846 6010B <sup>3</sup>	SW846 3050B <sup>6</sup>
Selenium	< 4.5	4.5	mg/kg	1	07/08/10	07/09/10 SH	SW846 6010B <sup>3</sup>	SW846 3050B <sup>6</sup>
Silver	< 2.7	2.7	mg/kg	1	07/08/10	07/09/10 SH	SW846 6010B <sup>3</sup>	SW846 3050B <sup>6</sup>
Zinc	58.0	2.7	mg/kg	1	07/08/10	07/09/10 SH	SW846 6010B <sup>3</sup>	SW846 3050B <sup>6</sup>

(1) Instrument QC Batch: MA799

(2) Instrument QC Batch: MA809

(3) Instrument QC Batch: MA810

(4) Instrument QC Batch: MA814

(5) Prep QC Batch: MP2250

(6) Prep QC Batch: MP2264

(7) Prep QC Batch: MP2265

RL = Reporting Limit

Report of Analysis

<b>Client Sample ID:</b>	D23-SW BACK-062910	<b>Date Sampled:</b>	06/29/10
<b>Lab Sample ID:</b>	D14852-2	<b>Date Received:</b>	07/01/10
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	87.1
<b>Project:</b>	D23 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>	25.1	3.2	mg/kg	1	07/09/10 01:52	SH	SW846 3060/7196A M
Redox Potential Vs H2 <sup>a</sup>	391		mv	1	07/06/10	AMA	ASTM E1498-76M
Solids, Percent	87.1		%	1	07/07/10	SWT	SM19 2540B M
Specific Conductivity	6080	1.0	umhos/cm	1	07/07/10	JD	DEPT.OF AG, BOOK N9
pH	8.81		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>	D23-SW BACK-062910	<b>Date Sampled:</b>	06/29/10
<b>Lab Sample ID:</b>	D14852-2A	<b>Date Received:</b>	07/01/10
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	87.1
<b>Project:</b>	D23 Pit Closure		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	284	2.0	mg/l	1	07/07/10	07/08/10 SH	SW846 6010B <sup>1</sup>	EPA 200.7 <sup>2</sup>
Magnesium	565	1.0	mg/l	1	07/07/10	07/08/10 SH	SW846 6010B <sup>1</sup>	EPA 200.7 <sup>2</sup>
Sodium	414	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>	D23-SW BACK-062910	<b>Date Sampled:</b>	06/29/10
<b>Lab Sample ID:</b>	D14852-2A	<b>Date Received:</b>	07/01/10
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	87.1
<b>Project:</b>	D23 Pit Closure		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio <sup>a</sup>	3.27		ratio	1	07/08/10 02:40	SH	LADNR29B

(a) Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+ (Mg meq/L)/2]

RL = Reporting Limit





## Misc. Forms

### Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody

## CHAIN OF CUSTODY

**10165 Harwin, Suite 150 - Houston, TX 77036 - 713-271-4700 fax: 713-271-4770**

D14852

[illegible]

## D14852: Chain of Custody

Page 1 of 3

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

CONTAMINANT OF CONCERN	CONCENTRATIONS <sup>1</sup>	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>2</sup>	8260B
Toluene	85 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	8270C
Benzo(A)pyrene	0.022 mg/kg <sup>2</sup>	8270C
Chrysene	22 mg/kg <sup>2</sup>	8270C
Benzo(A,H)anthracene	0.022 mg/kg <sup>2</sup>	8270C
Fluorene	1,000 mg/kg <sup>2</sup>	8270C
Indeno(1,2,3-CD)pyrene	1,000 mg/kg <sup>2</sup>	8270C
Naphthalene	0.22 mg/kg <sup>2</sup>	8270C
Pyrene	23 mg/kg <sup>2</sup>	8270C
<i>Inorganics in Soils</i>		
Electrical Conductivity (EC)	<4 cmhos/cm or 2x background	9050
Sodium Adsorption Ratio (SAR)	<12 <sup>3</sup>	LAQNR20B
pH	6-9	8046C
<i>Metals in Soils</i>		
Arsenic	0.39 mg/kg <sup>4</sup>	6010B
Barium	15,000 mg/kg <sup>5</sup>	6010B
Cadmium	70 mg/kg <sup>4</sup>	6010B
Chromium (III)	120,000 mg/kg <sup>5</sup>	6010B
Chromium (VI)	23 mg/kg <sup>4</sup>	6010B
Copper	3,100 mg/kg <sup>5</sup>	6010B
Lead (inorganic)	400 mg/kg <sup>4</sup>	6010B
Mercury	23 mg/kg <sup>4</sup>	6010B
Nickel (soluble salts)	1,600 mg/kg <sup>4</sup>	6010B
Selenium	350 mg/kg <sup>4</sup>	6010B
Silver	390 mg/kg <sup>4</sup>	6010B
Zinc	23,000 mg/kg <sup>4</sup>	6010B
<i>Liquid Hydrocarbons in Soils and Ground Water</i>		
Liquid hydrocarbons including condensate and oil	Below detection level	Visual

1 Consideration shall be given to background levels in native soils and ground water.

2 Concentrations taken from COGCC Table 1 Colorado Soil Evaluation Values (December 2007).

3 COGCC Table 1 Colorado Soil Evaluation Values (December 2007).

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 the 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 900-23 As of April 1, 2009.

5 WQCC intends that control requirements for this chemical be implemented to attain a level of ambient water quality that is at least equal to the first number in the range. The second number in the 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 900-23 As of April 1, 2009.

6 The table value for these inorganic constituents is taken from the CDPHE-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.



## Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D14852

Client: ENCANA OIL&GAS

Immediate Client Services Action Required: No

Date / Time Received: 7/1/2010 3:00:00 PM

No. Coolers: 1

Client Service Action Required at Login: No

Project: D23 PIT CLOSURE

Airbill #'s: co

Cooler Security	Y	or	N		Y	or	N
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"/>

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

Quality Control Preservation	Y	or	N	N/A
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 properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Sample Integrity - Documentation	Y	or	N
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"/>

Sample Integrity - Condition	Y	or	N
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

Sample Integrity - Instructions	Y	or	N	N/A
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

Accutest Laboratories  
V:(303) 425-6021

4036 Youngfield Street  
F: (303) 425-6854

Wheat Ridge, CO  
www.accutest.com

**D14852: Chain of Custody**  
**Page 3 of 3**



## GC/MS Volatiles

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### QC Data Summaries

---

Includes the following where applicable:

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

## Method Blank Summary

Page 1 of 1

**Job Number:** D14852  
**Account:** ENCACOP EnCana  
**Project:** D23 Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V300-MB	3V05779.D	1	07/10/10	KV	n/a	n/a	V3V300

The QC reported here applies to the following samples:

Method: SW846 8260B

D14852-2

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	90% 70-130%
460-00-4	4-Bromofluorobenzene	83% 70-130%
17060-07-0	1,2-Dichloroethane-D4	85% 70-130%

## Blank Spike Summary

Page 1 of 1

**Job Number:** D14852  
**Account:** ENCACOP EnCana  
**Project:** D23 Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V300-BS1	3V05781.D	1	07/10/10	KV	n/a	n/a	V3V300

The QC reported here applies to the following samples:

Method: SW846 8260B

D14852-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	47.6	95	68-130
100-41-4	Ethylbenzene	50	54.1	108	70-130
108-88-3	Toluene	50	53.6	107	70-130
	m,p-Xylene	50	47.9	96	53-130
95-47-6	o-Xylene	50	48.3	97	61-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	90%	70-130%
460-00-4	4-Bromofluorobenzene	87%	70-130%
17060-07-0	1,2-Dichloroethane-D4	80%	70-130%



# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D14852  
**Account:** ENCACOP EnCana  
**Project:** D23 Pit Closure

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D14852-2MS	3V05783.D	1	07/10/10	KV	n/a	n/a	V3V300
D14852-2MSD	3V05784.D	1	07/10/10	KV	n/a	n/a	V3V300
D14852-2	3V05782.D	1	07/10/10	KV	n/a	n/a	V3V300

The QC reported here applies to the following samples:

Method: SW846 8260B

D14852-2

CAS No.	Compound	D14852-2 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		287	274	95	280	98	2	55-140/30
100-41-4	Ethylbenzene	ND		287	304	106	312	109	3	56-139/30
108-88-3	Toluene	ND		287	301	105	308	107	2	57-144/30
	m,p-Xylene	ND		287	268	93	277	97	3	47-130/30
95-47-6	o-Xylene	ND		287	271	94	276	96	2	51-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D14852-2	Limits
2037-26-5	Toluene-D8	89%	89%	89%	70-130%
460-00-4	4-Bromofluorobenzene	85%	86%	83%	70-130%
17060-07-0	1,2-Dichloroethane-D4	84%	84%	90%	70-130%



## 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

Page 1 of 1

**Job Number:** D14852  
**Account:** ENCACOP EnCana  
**Project:** D23 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

D14852-2

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

Page 1 of 1

**Job Number:** D14852  
**Account:** ENCACOP EnCana  
**Project:** D23 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

D14852-2

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

Page 1 of 1

**Job Number:** D14852  
**Account:** ENCACOP EnCana  
**Project:** D23 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

D14852-2

CAS No.	Compound	D14817-3 ug/kg	Q	Spike 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

### 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: D14852  
Account: ENCACOP EnCana  
Project: D23 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

D14852-2

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%

7.1.1  
7



Blank Spike Summary

Job Number: D14852  
Account: ENCACOP EnCana  
Project: D23 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

D14852-2

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%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D14852  
Account: ENCACOP EnCana  
Project: D23 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

D14852-2

CAS No.	Compound	D14907-2 mg/kg	Q	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

### 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: D14852  
Account: ENCACOP EnCana  
Project: D23 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

D14852-2

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%

8.1.1  
8

Blank Spike Summary

Job Number: D14852  
Account: ENCACOP EnCana  
Project: D23 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

D14852-2

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%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D14852  
Account: ENCACOP EnCana  
Project: D23 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

D14852-2

CAS No.	Compound	D14764-1 mg/kg	Q	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

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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: D14852  
Account: ENCACOP - EnCana  
Project: D23 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: D14852-2

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: D14852  
Account: ENCACOP - EnCana  
Project: D23 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: D14852-2

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: D14852  
 Account: ENCACOP - EnCana  
 Project: D23 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: D14852-2

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: D14852  
Account: ENCACOP - EnCana  
Project: D23 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: D14852-2

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: D14852  
Account: ENCACOP - EnCana  
Project: D23 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: D14852-2A

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D14852  
Account: ENCACOP - EnCana  
Project: D23 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: D14852  
Account: ENCACOP - EnCana  
Project: D23 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: D14852-2A

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D14852  
Account: ENCACOP - EnCana  
Project: D23 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: D14852  
Account: ENCACOP - EnCana  
Project: D23 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: D14852-2A

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D14852  
Account: ENCACOP - EnCana  
Project: D23 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: D14852  
Account: ENCACOP - EnCana  
Project: D23 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: D14852-2A

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D14852  
Account: ENCACOP - EnCana  
Project: D23 Pit Closure

QC Batch ID: MP2263  
Matrix Type: AQUEOUS

Methods: SW846 6010B  
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D14852  
Account: ENCACOP - EnCana  
Project: D23 Pit Closure

QC Batch ID: MP2264  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date: 07/08/10

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.7	2		
Antimony	3.0	.17	.5		
Arsenic	2.5	.28	.72		
Barium	2.0	.014	.05	1.6	<2.0
Beryllium	1.0	.14	.21		
Boron	5.0	.35	.91		
Cadmium	1.0	.022	.12	0.060	<1.0
Calcium	40	1.7	2.7		
Chromium	1.0	.027	.18	0.050	<1.0
Cobalt	0.50	.048	.058		
Copper	0.50	.16	.38	-0.14	<0.50
Iron	7.0	.77	.91		
Lead	5.0	.13	.24	0.030	<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	-0.060	<3.0
Phosphorus	10	1.5	3.5		
Potassium	200	38	130		
Selenium	5.0	.28	.54	-0.43	<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	0.10	<3.0

Associated samples MP2264: D14852-2

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D14852  
Account: ENCACOP - EnCana  
Project: D23 Pit Closure

QC Batch ID: MP2264  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D14852  
Account: ENCACOP - EnCana  
Project: D23 Pit Closure

QC Batch ID: MP2264  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date: 07/08/10

Metal	D14886-1 Original MS		SpikeLot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium	10100	12100	269	744.1(a)	75-125
Beryllium					
Boron					
Cadmium	0.0	62.0	67.2	92.3	75-125
Calcium					
Chromium	20.3	84.2	67.2	95.1	75-125
Cobalt					
Copper	30.0	100	67.2	104.2	75-125
Iron	anr				
Lead	8.6	128	134	88.8	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	12.9	74.3	67.2	91.4	75-125
Phosphorus					
Potassium					
Selenium	1.9	120	134	87.9	75-125
Silicon					
Silver	0.27	26.7	26.9	98.3	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	37.9	95.6	67.2	85.9	75-125

Associated samples MP2264: D14852-2

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D14852  
Account: ENCACOP - EnCana  
Project: D23 Pit Closure

QC Batch ID: MP2264  
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: D14852  
Account: ENCACOP - EnCana  
Project: D23 Pit Closure

QC Batch ID: MP2264  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date: 07/08/10

Metal	D14886-1 Original	MSD	Spikelot MPICPAL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium	10100	12500	269	892.9(a)	3.3	20
Beryllium						
Boron						
Cadmium	0.0	62.2	67.2	92.6	0.3	20
Calcium						
Chromium	20.3	84.2	67.2	95.1	0.0	20
Cobalt						
Copper	30.0	100	67.2	104.2	0.0	20
Iron	anr					
Lead	8.6	128	134	88.8	0.0	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	12.9	74.3	67.2	91.4	0.0	20
Phosphorus						
Potassium						
Selenium	1.9	121	134	88.6	0.8	20
Silicon						
Silver	0.27	26.5	26.9	97.6	0.8	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	37.9	96.2	67.2	86.8	0.6	20

Associated samples MP2264: D14852-2

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D14852  
Account: ENCACOP - EnCana  
Project: D23 Pit Closure

QC Batch ID: MP2264  
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: D14852  
 Account: ENCACOP - EnCana  
 Project: D23 Pit Closure

QC Batch ID: MP2264  
 Matrix Type: SOLID

Methods: SW846 6010B  
 Units: mg/kg

Prep Date: 07/08/10

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	207	200	103.5	80-120
Beryllium				
Boron				
Cadmium	47.4	50	94.8	80-120
Calcium				
Chromium	50.3	50	100.6	80-120
Cobalt				
Copper	52.0	50	104.0	80-120
Iron	anr			
Lead	92.7	100	92.7	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	48.2	50	96.4	80-120
Phosphorus				
Potassium				
Selenium	89.1	100	89.1	80-120
Silicon				
Silver	20.1	20	100.5	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	45.5	50	91.0	80-120

Associated samples MP2264: D14852-2

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D14852  
Account: ENCACOP - EnCana  
Project: D23 Pit Closure

QC Batch ID: MP2264  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D14852  
Account: ENCACOP - EnCana  
Project: D23 Pit Closure

QC Batch ID: MP2264  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: ug/l

Prep Date: 07/08/10

Metal	D14886-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	100000000075800		0.4	0-10
Beryllium				
Boron				
Cadmium	0.00	0.00	NC	0-10
Calcium				
Chromium	151	173	14.2*(a)	0-10
Cobalt				
Copper	223	226	1.2	0-10
Iron	anr			
Lead	63.8	62.5	2.0	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	95.7	112	17.0*(a)	0-10
Phosphorus				
Potassium				
Selenium	14.3	32.0	123.8(b)	0-10
Silicon				
Silver	2.00	5.00	150.0(b)	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	282	350	24.1*(a)	0-10

Associated samples MP2264: D14852-2

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D14852  
Account: ENCACOP - EnCana  
Project: D23 Pit Closure

QC Batch ID: MP2264  
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).

9.3.4

9

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D14852  
Account: ENCACOP - EnCana  
Project: D23 Pit Closure

QC Batch ID: MP2265  
Matrix Type: SOLID

Methods: SW846 6020  
Units: mg/kg

Prep Date: 07/08/10

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.14	.89		
Antimony	0.20	.001	.045		
Arsenic	0.40	.049	.26	-0.20	<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 MP2265: D14852-1, D14852-2

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: D14852  
Account: ENCACOP - EnCana  
Project: D23 Pit Closure

QC Batch ID: MP2265  
Matrix Type: SOLID

Methods: SW846 6020  
Units: mg/kg

Prep Date: 07/08/10

Metal	D14886-1 Original MS	Spikelot MPICPALL % Rec	QC Limits
Aluminum			
Antimony			
Arsenic	2.9	128	134
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 MP2265: D14852-1, D14852-2

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: D14852  
Account: ENCACOP - EnCana  
Project: D23 Pit Closure

QC Batch ID: MP2265  
Matrix Type: SOLID

Methods: SW846 6020  
Units: mg/kg

Prep Date: 07/08/10

Metal	D14886-1 Original	MSD	Spikelot MPICPAL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	2.9	127	134	92.3	0.8	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 MP2265: D14852-1, D14852-2

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



SERIAL DILUTION RESULTS SUMMARY

Login Number: D14852  
Account: ENCACOP - EnCana  
Project: D23 Pit Closure

QC Batch ID: MP2265  
Matrix Type: SOLID

Methods: SW846 6020  
Units: ug/l

Prep Date: 07/08/10

Metal	D14886-1			QC	
	Original	SDL 5:25	%DIF	Limits	
Aluminum					
Antimony					
Arsenic	21.3	25.7	20.5 (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 MP2265: D14852-1, D14852-2

Results < IDL are shown as zero for calculation purposes

(\*) Outside of QC limits

(anr) Analyte not requested

(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).



## General Chemistry

### QC Data Summaries

---

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: D14852  
Account: ENCACOP - EnCana  
Project: D23 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: D14852-2  
Batch GP2303: D14852-2  
(\*) Outside of QC limits



## Misc. Forms

### Custody Documents and Other Forms

(Accutest Labs of New England, Inc.)

---

Includes the following where applicable:

- Chain of Custody



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

Project No.:

Client Information			Subcontract Laboratory Information										Analytical Information					
Name <b>Accutest Mountain States (AMS)</b>			Name <b>Accutest - New England</b>										XCRA	EH				
Address <b>4036 Youngfield St.</b>			Address <b>495 Technology Center West, BLDG O</b>															
City <b>Wheat Ridge,</b>	State <b>CO</b>	Zip <b>80033</b>	City <b>Marlborough</b>	State <b>MA</b>	Zip <b>01752</b>													
Send Report to: <b>Tiffany Pham</b>			Contact: <b>Sample Management</b>															
Any questions contact: <b>Amanda Kissell</b>																		
Phone/Fax #: <b>(303) 425-6021; (303)425-6854</b>			Phone: <b>(508) 481-6200</b>															
Field ID / Point of Collection		Collection			Matrix	# of bottles	Preservation					X	X				Comments	
		Date	Time				CL	NaOH	HNO3	H2SO4	None							
D14852 -2		6/29/10	2:30 PM		Soil	1												
Turnaround Information		Data Deliverable Information										Comments / Remarks						
<input checked="" type="checkbox"/> 10 Business Day Standard <input type="checkbox"/> Other _____ (Days)		Approved By: _____ _____ _____		<input type="checkbox"/> Commercial "A" <input type="checkbox"/> Commercial "B" <input type="checkbox"/> Commercial "BN" <input type="checkbox"/> Reduced Tier 1 <input type="checkbox"/> Full Tier 1		<input type="checkbox"/> PDF <input type="checkbox"/> Compact Disk Deliverable <input type="checkbox"/> Electronic Delivery: _____ <input type="checkbox"/> State Forms <input type="checkbox"/> Other (Specify) _____		<b>Please use Colorado regulations and RLs.</b>										
10 Day Turnaround Hardcopy, RUSH is FAX Data unless previously approved.																		
Sample Custody must be documented below each time samples change possession, including courier delivery.																		
Relinquished by:		Date & Time:		Received By:		Date & Time:		Seal #:		Headspace:								
1		7/2/10		1 FedEx		1				Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>								
2		7/3/10 10:20		2		2		Preserved where applicable: <input type="checkbox"/>		15A								
3				3		3		Temperature °C 3-7		On Ice <input checked="" type="checkbox"/>								

**Accutest Labs of New England, Inc.**



## Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D14852

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:

### Cooler Security

Y or N

Y or N

- |                           |                                     |                          |                       |                                     |                          |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 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"/> |

### Cooler Temperature

Y or N

- |                              |                                     |                          |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | Infrared gun                        |                          |
| 3. Cooler media:             | Ice (bag)                           |                          |

### Quality Control Preservation

Y or N

N/A

- |                                 |                                     |                          |                                     |
|---------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| 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 properly:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |                                     |
| 4. VOCs headspace free:         | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

### Sample Integrity - Documentation

Y or N

- |  |                                     |                          |
|--|-------------------------------------|--------------------------|
| 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"/> |

### Sample Integrity - Condition

Y or N

- |                                  |                                     |                          |
|----------------------------------|-------------------------------------|--------------------------|
| 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                              |                          |

### Sample Integrity - Instructions

Y or N N/A

- |   |                                     |                                     |                                     |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 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

Accutest Laboratories  
V:508.481.6200

495 Technology Center West, Bldg One  
F: 508.481.7753

Marlborough, MA  
www.accutest.com

D14852: Chain of Custody

Page 2 of 2





## General Chemistry

### QC Data Summaries

(Accutest Labs of New England, Inc.)

---

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: D14852  
Account: ALMS - Accutest Mountain States  
Project: ENCACOP: D23 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: D14852-2  
(\*) Outside of QC limits

DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D14852  
Account: ALMS - Accutest Mountain States  
Project: ENCACOP: D23 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: D14852-2  
Batch GP11780: D14852-2  
(\*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D14852  
Account: ALMS - Accutest Mountain States  
Project: ENCACOP: D23 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: D14852-2  
(\*) Outside of QC limits  
(N) Matrix Spike Rec. outside of QC limits



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

Tax I.D. 62-0814289

Est. 1970

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

### Report Summary

Monday November 22, 2010

Report Number: L488478

Samples Received: 11/11/10

Client Project: H26

Description: H26

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

Entire Report Reviewed By:

Jayred Willis , ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487  
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140  
NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233  
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,  
TX - T104704245, OK-9915

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

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

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REPORT OF ANALYSIS

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

November 22, 2010

Date Received : November 11, 2010  
Description : H26

Sample ID : H26-SBC-111010

Collected By : Jake Harris  
Collection Date : 11/10/10 13:00

ESC Sample # : L488478-01

Site ID :

Project # : H26

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	24.	1.0	mg/kg	6010B	11/22/10	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 11/22/10 15:08 Printed: 11/22/10 15:08



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November 22, 2010

Date Received : November 11, 2010  
Description : H26

Sample ID : H26-SB-111010

Collected By : Jake Harris  
Collection Date : 11/10/10 12:50

ESC Sample # : L488478-02

Site ID :

Project # : H26

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	27.	1.0	mg/kg	6010B	11/22/10	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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Parachute, CO 81635

November 22, 2010

Date Received : November 11, 2010  
Description : H26

Sample ID : H26-WB-111010

Collected By : Jake Harris  
Collection Date : 11/10/10 12:40

ESC Sample # : L488478-03

Site ID :

Project # : H26

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	19.	1.0	mg/kg	6010B	11/22/10	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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November 22, 2010

Date Received : November 11, 2010  
Description : H26

Sample ID : H26-SEB-111010

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

ESC Sample # : L488478-04

Site ID :

Project # : H26

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	19.	1.0	mg/kg	6010B	11/22/10	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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Reported: 11/22/10 15:08 Printed: 11/22/10 15:08



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REPORT OF ANALYSIS

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November 22, 2010

Date Received : November 11, 2010  
Description : H26

Sample ID : H26-EB-111010

Collected By : Jake Harris  
Collection Date : 11/10/10 13:20

ESC Sample # : L488478-05

Site ID :

Project # : H26

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	7.7	1.0	mg/kg	6010B	11/22/10	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 11/22/10 15:08 Printed: 11/22/10 15:08

Summary of Remarks For Samples Printed  
11/22/10 at 15:08:54

TSR Signing Reports: 358  
R5 - Desired TAT

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

Sample: L488478-01 Account: ENCANACO Received: 11/11/10 09:00 Due Date: 11/18/10 00:00 RPT Date: 11/22/10 15:08  
Sample: L488478-02 Account: ENCANACO Received: 11/11/10 09:00 Due Date: 11/18/10 00:00 RPT Date: 11/22/10 15:08  
Sample: L488478-03 Account: ENCANACO Received: 11/11/10 09:00 Due Date: 11/18/10 00:00 RPT Date: 11/22/10 15:08  
Sample: L488478-04 Account: ENCANACO Received: 11/11/10 09:00 Due Date: 11/18/10 00:00 RPT Date: 11/22/10 15:08  
Sample: L488478-05 Account: ENCANACO Received: 11/11/10 09:00 Due Date: 11/18/10 00:00 RPT Date: 11/22/10 15:08



**YOUR LAB OF CHOICE**

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Quality Assurance Report  
Level II

L488478

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November 22, 2010

Analyte	Result	Laboratory Blank				Limit	Batch	Date Analyzed			
		Units		%	Rec						
Arsenic	< 1	mg/kg					WG508479	11/21/10	20:08		
Analyte	Units	Duplicate				Limit	Ref Samp	Batch			
		Result	Duplicate	RPD							
Arsenic	mg/kg	3.40	2.84	19.4	20		L488531-11	WG508479			
Analyte	Units	Laboratory Control Sample				% Rec	Limit	Batch			
		Known Val	Result								
Arsenic	mg/kg	192	183.	95.3			78.6-120.8	WG508479			
Analyte	Units	Matrix Spike				% Rec	Limit	Ref Samp	Batch		
		MS Res	Ref Res	TV							
Arsenic	mg/kg	47.6	2.84	50	89.5	75-125		L488531-11	WG508479		
Analyte	Units	Matrix Spike Duplicate				Limit	RPD	Limit	Ref Samp	Batch	
		MSD	Ref	%Rec							
Arsenic	mg/kg	50.1	47.6	94.5	75-125	5.12	20		L488531-11	WG508479	

Batch number /Run number / Sample number cross reference

WG508479: R1483851 R1483852: L488478-01 02 03 04 05

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



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

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

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

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