



## **VIA ELECTRONIC MAIL –**

January 7, 2021

Jake Janicek  
EH&S Specialist  
Environmental Health and Safety  
Caerus Oil and Gas LLC  
143 Diamond Avenue  
Parachute, Colorado 81635

**Subject: O19EB Point of Release Sampling  
O19EB Dumpline Release\O19EB  
Mamm Creek Field  
Garfield County, Colorado**

Dear Mr. Janicek:

WSP USA Inc. (WSP), formerly LT Environmental, Inc. (LTE), on behalf of Caerus Oil and Gas LLC (Caerus), collected a point of release (POR) sample at the Shideler 19-16C (O19EB) (Facility ID: 431050) pad location (Site). The sample was collected in response to the condition of approval (COA) issued by the Colorado Oil and Gas Conservation Commission (COGCC) in initial Spill/Release Report Form 19 Document Number 402541392. This sampling was requested after up to four barrels of produced water were reported to have been released from a produced water dumpline at the Site. The Site is located in Caerus's Mamm Creek area of operation in Garfield County, Colorado (Figure 1).

## **SOIL SAMPLING ACTIVITIES**

On December 14, 2020, WSP personnel completed soil sampling activities associated with the produced water dumpline release at the Site. Using a spade shovel, one soil sample was collected at approximately six inches beneath the exposed dumpline where the release occurred. The sample was collected at a depth of 6.5 feet below ground surface (bgs). The soil sampling was conducted by a WSP geologist who inspected the soil for the presence or absence of petroleum hydrocarbon odor/staining. The soil was characterized by visual and olfactory inspection of the sample. The POR soil sample 20201214 – O19EB (POR)@6.5' was collected in clean laboratory prepared containers and submitted to Pace Analytical (Pace) of Mount Juliet, Tennessee for analysis of constituents listed in COGCC Table 910-1. The laboratory analytical report is provided as Enclosure A. The enclosed Site Map illustrates the sample collected from the POR release location (Figure 2).

## **ANALYTICAL RESULTS**

Laboratory analytical results of the soil sample collected directly beneath the dumpline POR indicate compliance with COGCC Table 910-1 Concentration Levels except for sodium adsorption (SAR) and arsenic. The SAR value of soil sample 20201214 – O19EB (POR)@6.5' was 34.1. Although the SAR exceeds the COGCC Table 910-1 Concentration Level the exceedance is below the three-foot vegetative root zone and located within the production piping infrastructure right of way (ROW). The arsenic concentration of soil sample 20201214 – O19EB (POR)@6.5' was 3.93 milligrams per kilogram (mg/kg). Although the sample is in exceedance of the COGCC Table 910-1 Concentration Level for arsenic, the concentration is within concentrations of background soil samples collected at the Site on December 28, 2012. All laboratory analytical results are included as Enclosure A and summarized in Table 1.

WSP USA  
820 MEGAN AVENUE, UNIT B  
RIFLE CO 81650

Tel.: 970-285-9985  
wsp.com



Please contact us at (970) 618-4514 or (720) 490-6758 if you have any questions regarding this report or require additional information.

Kind regards,

A handwritten signature in blue ink, appearing to read 'D. Held'.

Dustin Held  
Consultant, Environmental Geologist

A handwritten signature in blue ink, appearing to read 'Chris McKisson'.

Chris McKisson  
Senior Consultant, Environmental Scientist

Encl.

Figure 1 – Site Location Map

Figure 2 - Site Map

Table 1 – Soil Analytical Results

Enclosure A – Laboratory Analytical Reports

## FIGURES



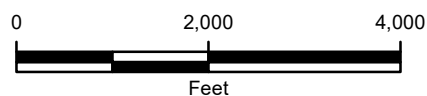
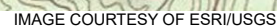


FIGURE 1  
SITE LOCATION MAP  
O19EB DUMPLINE  
SWSE SEC 19-T7S-R92W  
GARFIELD COUNTY, COLORADO  
CAERUS OIL AND GAS LLC







IMAGE COURTESY OF GOOGLE EARTH 2016

## LEGEND

- SOIL SAMPLE
- ▲ BACKGROUND SOIL SAMPLE

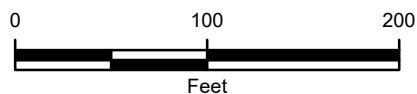


FIGURE 2  
SITE MAP  
O19EB DUMPLINE  
SWSE SEC 19-T7S-R92W  
GARFIELD COUNTY, COLORADO  
CAERUS OIL AND GAS LLC



TABLE

TABLE 1

SOIL ANALYTICAL RESULTS

O19EB DUMPLINE

GARFIELD COUNTY, COLORADO

CAERUS OIL AND GAS LLC

PARAMETER	COGCC CONCENTRATION LEVELS	UNITS	CONFIRMATION SOIL SAMPLE	BACKGROUND SOIL SAMPLES				
			20211214-O19EB(POR)@6.5'	O19EB-BGSE-122812 10-18 IN	O19EB-BGSE-122812 10-18 IN	O19EB-BGS-122812 10-18 IN	O19EB-BGS-122812 10-18 IN	O19EB-BGS-122812 10-18 IN
Sample Date			12/14/2020	12/28/2012	12/28/2012	12/28/2012	12/28/2012	12/28/2012
Sample Depth Range (feet)			6.5	0.833-1.5	0.833-1.5	0.833-1.5	0.833-1.5	0.833-1.5
Sample Type			Confirmation	Background	Background	Background	Background	Background
Arsenic	0.39	mg/kg	3.93	5.1	4.7	4.6	4.7	4.0
Barium	15,000	mg/kg	242	NA	NA	NA	NA	NA
Cadmium	70	mg/kg	ND	NA	NA	NA	NA	NA
Chromium (III)	120,000	mg/kg	10.7	NA	NA	NA	NA	NA
Chromium (VI)	23	mg/kg	ND	NA	NA	NA	NA	NA
Copper	3,100	mg/kg	7.42	NA	NA	NA	NA	NA
Lead	400	mg/kg	8.89	NA	NA	NA	NA	NA
Mercury	23	mg/kg	ND	NA	NA	NA	NA	NA
Nickel	1,600	mg/kg	12.7	NA	NA	NA	NA	NA
Selenium	390	mg/kg	ND	NA	NA	NA	NA	NA
Silver	390	mg/kg	ND	NA	NA	NA	NA	NA
Zinc	23,000	mg/kg	43.6	NA	NA	NA	NA	NA
EC	4.0	mmhos/cm	2.50	NA	NA	NA	NA	NA
pH	6 - 9	SU	8.63	NA	NA	NA	NA	NA
SAR	12	unitless	34.1	NA	NA	NA	NA	NA
TPH-GRO		mg/kg	4.31	NA	NA	NA	NA	NA
TPH-DRO		mg/kg	ND	NA	NA	NA	NA	NA
TPH	500	mg/kg	4.31	NA	NA	NA	NA	NA
Benzene	0.17	mg/kg	0.0348	NA	NA	NA	NA	NA
Toluene	85	mg/kg	0.151	NA	NA	NA	NA	NA
Ethylbenzene	100	mg/kg	0.0109	NA	NA	NA	NA	NA
Total Xylenes	175	mg/kg	0.252	NA	NA	NA	NA	NA
Acenaphthene	1,000	mg/kg	ND	NA	NA	NA	NA	NA
Anthracene	1,000	mg/kg	ND	NA	NA	NA	NA	NA
Benzo(A)anthracene	0.22	mg/kg	ND	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	0.22	mg/kg	ND	NA	NA	NA	NA	NA
Benzo(K)fluoranthene	2.2	mg/kg	ND	NA	NA	NA	NA	NA
Benzo(A)pyrene	0.022	mg/kg	ND	NA	NA	NA	NA	NA
Chrysene	22	mg/kg	ND	NA	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.022	mg/kg	ND	NA	NA	NA	NA	NA
Fluoranthene	1,000	mg/kg	ND	NA	NA	NA	NA	NA
Fluorene	1,000	mg/kg	ND	NA	NA	NA	NA	NA
Indeno(1,2,3,C,D)pyrene	0.22	mg/kg	ND	NA	NA	NA	NA	NA
Naphthalene	23	mg/kg	ND	NA	NA	NA	NA	NA
Pyrene	1,000	mg/kg	ND	NA	NA	NA	NA	NA

NOTES:

ND - less than the stated reporting limit

**BOLD** - indicates result exceeds the COGCC concentration level

COGCC - Colorado Oil and Gas Conservation Commission

EC- electrical conductivity

mg/kg - milligrams per kilogran

mmhos/cm - millinhos per centimete

SAR - sodium adsorption ratio

SU - standard unit

TPH-GRO - total petroleum hydrocarbons-gasoline range organics

TPH-DRO - total petroleum hydrocarbons-diesel range organics

TPH - combination of TPH-GRO and TPH-DRC

NA - analyte not analyzed

ND - analyte not detected

## ENCLOSURE A – LABORATORY ANALYTICAL REPORTS





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Mt. Juliet, TN 37122  
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1-800-767-5859  
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Tax I.D. 62-0814289

Est. 1970

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

## Report Summary

Monday January 07, 2013

Report Number: L613402


Samples Received: 12/29/12

Client Project: 019EB

Description: 019EB Backgrounds

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

Entire Report Reviewed By:

  
Jarred Willis , ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,  
FL - E87487, GA - 923, IN - C-IN-01, KY - 90010, KYUST - 0016,  
NC - ENV375/DW21704/BIO041, ND - R-140, NJ - TN002, NJ NELAP - TN002,  
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,  
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,  
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364

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

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

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



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REPORT OF ANALYSIS

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

January 07, 2013

Date Received : December 29, 2012  
Description : 019EB Backgrounds  
Sample ID : 019EB-BGN-122812 10-18IN  
Collected By : Matt Kaster  
Collection Date : 12/28/12 09:10

ESC Sample # : L613402-01  
  
Site ID : 019EB  
Project # : 019EB

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	BDL	1.0	mg/kg	6010B	01/04/13	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
Note:  
The reported analytical results relate only to the sample submitted.  
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Parachute, CO 81635

January 07, 2013

Date Received : December 29, 2012  
Description : 019EB Backgrounds  
Sample ID : 019EB-BGN-122812 10-18IN  
Collected By : Matt Kaster  
Collection Date : 12/28/12 09:10

ESC Sample # : L613402-02

Site ID : 019EB

Project # : 019EB

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	BDL	1.0	mg/kg	6010B	01/04/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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REPORT OF ANALYSIS

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Parachute, CO 81635

January 07, 2013

Date Received : December 29, 2012  
Description : 019EB Backgrounds  
Sample ID : 019EB-BGN-122812 10-18IN  
Collected By : Matt Kaster  
Collection Date : 12/28/12 09:10

ESC Sample # : L613402-03  
  
Site ID : 019EB  
Project # : 019EB

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	BDL	1.0	mg/kg	6010B	01/04/13	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
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January 07, 2013

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Description : 019EB Backgrounds  
Sample ID : 019EB-BGN-122812 10-18IN  
Collected By : Matt Kaster  
Collection Date : 12/28/12 09:10

ESC Sample # : L613402-04  
Site ID : 019EB  
Project # : 019EB

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	BDL	1.0	mg/kg	6010B	01/04/13	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
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January 07, 2013

Date Received : December 29, 2012  
Description : 019EB Backgrounds  
Sample ID : 019EB-BGN-122812 10-18IN  
Collected By : Matt Kaster  
Collection Date : 12/28/12 09:10

ESC Sample # : L613402-05  
  
Site ID : 019EB  
Project # : 019EB

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	BDL	1.0	mg/kg	6010B	01/04/13	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
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January 07, 2013

Date Received : December 29, 2012  
Description : 019EB Backgrounds  
Sample ID : 019EB-BGNE-122812 10-18IN  
Collected By : Matt Kaster  
Collection Date : 12/28/12 09:15

ESC Sample # : L613402-06  
  
Site ID : 019EB  
Project # : 019EB

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	1.0	1.0	mg/kg	6010B	01/04/13	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
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Description : 019EB Backgrounds  
Sample ID : 019EB-BGNE-122812 10-18IN  
Collected By : Matt Kaster  
Collection Date : 12/28/12 09:15

ESC Sample # : L613402-07  
  
Site ID : 019EB  
Project # : 019EB

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	BDL	1.0	mg/kg	6010B	01/04/13	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
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REPORT OF ANALYSIS

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EnCana Oil & Gas Inc. - CO  
143 Diamond Avenue  
Parachute, CO 81635

January 07, 2013

Date Received : December 29, 2012  
Description : 019EB Backgrounds  
Sample ID : 019EB-BGNE-122812 10-18IN  
Collected By : Matt Kaster  
Collection Date : 12/28/12 09:15

ESC Sample # : L613402-08

Site ID : 019EB

Project # : 019EB

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	BDL	1.0	mg/kg	6010B	01/04/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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Date Received : December 29, 2012  
Description : 019EB Backgrounds  
Sample ID : 019EB-BGNE-122812 10-18IN  
Collected By : Matt Kaster  
Collection Date : 12/28/12 09:15

ESC Sample # : L613402-09  
  
Site ID : 019EB  
Project # : 019EB

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	BDL	1.0	mg/kg	6010B	01/04/13	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
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Date Received : December 29, 2012  
Description : 019EB Backgrounds  
Sample ID : 019EB-BGNE-122812 10-18IN  
Collected By : Matt Kaster  
Collection Date : 12/28/12 09:15

ESC Sample # : L613402-10  
  
Site ID : 019EB  
Project # : 019EB

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	BDL	1.0	mg/kg	6010B	01/04/13	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
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Date Received : December 29, 2012  
Description : 019EB Backgrounds  
Sample ID : 019EB-BGW-122812 10-18IN  
Collected By : Matt Kaster  
Collection Date : 12/28/12 09:20

ESC Sample # : L613402-11  
  
Site ID : 019EB  
Project # : 019EB

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	BDL	1.0	mg/kg	6010B	01/04/13	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
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Date Received : December 29, 2012  
Description : 019EB Backgrounds  
Sample ID : 019EB-BGW-122812 10-18IN  
Collected By : Matt Kaster  
Collection Date : 12/28/12 09:20

ESC Sample # : L613402-12  
Site ID : 019EB  
Project # : 019EB

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	1.2	1.0	mg/kg	6010B	01/04/13	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
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Description : 019EB Backgrounds  
Sample ID : 019EB-BGW-122812 10-18IN  
Collected By : Matt Kaster  
Collection Date : 12/28/12 09:20

ESC Sample # : L613402-13  
Site ID : 019EB  
Project # : 019EB

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	BDL	1.0	mg/kg	6010B	01/04/13	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
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January 07, 2013

Date Received : December 29, 2012  
Description : 019EB Backgrounds  
Sample ID : 019EB-BGW-122812 10-18IN  
Collected By : Matt Kaster  
Collection Date : 12/28/12 09:20

ESC Sample # : L613402-14  
  
Site ID : 019EB  
Project # : 019EB

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	BDL	1.0	mg/kg	6010B	01/04/13	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
Note:  
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Est. 1970

REPORT OF ANALYSIS

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

January 07, 2013

Date Received : December 29, 2012  
Description : 019EB Backgrounds  
Sample ID : 019EB-BGW-122812 10-18IN  
Collected By : Matt Kaster  
Collection Date : 12/28/12 09:20

ESC Sample # : L613402-15  
Site ID : 019EB  
Project # : 019EB

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	BDL	1.0	mg/kg	6010B	01/04/13	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
Note:  
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REPORT OF ANALYSIS

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

January 07, 2013

Date Received : December 29, 2012  
Description : 019EB Backgrounds  
Sample ID : 019EB-BGSE-122812 10-18IN  
Collected By : Matt Kaster  
Collection Date : 12/28/12 09:25

ESC Sample # : L613402-16  
  
Site ID : 019EB  
Project # : 019EB

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	5.1	1.0	mg/kg	6010B	01/05/13	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
Note:  
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EnCana Oil & Gas Inc. - CO  
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Parachute, CO 81635

January 07, 2013

Date Received : December 29, 2012  
Description : 019EB Backgrounds  
Sample ID : 019EB-BGSE-122812 10-18IN  
Collected By : Matt Kaster  
Collection Date : 12/28/12 09:25

ESC Sample # : L613402-17  
Site ID : 019EB  
Project # : 019EB

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	3.3	1.0	mg/kg	6010B	01/05/13	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
Note:  
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Parachute, CO 81635

January 07, 2013

Date Received : December 29, 2012  
Description : 019EB Backgrounds  
Sample ID : 019EB-BGSE-122812 10-18IN  
Collected By : Matt Kaster  
Collection Date : 12/28/12 09:25

ESC Sample # : L613402-18  
  
Site ID : 019EB  
Project # : 019EB

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	3.9	1.0	mg/kg	6010B	01/05/13	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
Note:  
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REPORT OF ANALYSIS

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EnCana Oil & Gas Inc. - CO  
143 Diamond Avenue  
Parachute, CO 81635

January 07, 2013

Date Received : December 29, 2012  
Description : 019EB Backgrounds  
Sample ID : 019EB-BGSE-122812 10-18IN  
Collected By : Matt Kaster  
Collection Date : 12/28/12 09:25

ESC Sample # : L613402-19  
  
Site ID : 019EB  
Project # : 019EB

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	3.9	1.0	mg/kg	6010B	01/05/13	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
Note:  
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Reported: 01/07/13 16:01 Printed: 01/07/13 16:02





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EnCana Oil & Gas Inc. - CO  
143 Diamond Avenue  
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January 07, 2013

Date Received : December 29, 2012  
Description : 019EB Backgrounds  
Sample ID : 019EB-BGSE-122812 10-18IN  
Collected By : Matt Kaster  
Collection Date : 12/28/12 09:25

ESC Sample # : L613402-20  
Site ID : 019EB  
Project # : 019EB

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	4.7	1.0	mg/kg	6010B	01/05/13	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
Note:  
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January 07, 2013

Date Received : December 29, 2012  
Description : 019EB Backgrounds  
Sample ID : 019EB-BGS-122812 10-18IN  
Collected By : Matt Kaster  
Collection Date : 12/28/12 09:30

ESC Sample # : L613402-21  
  
Site ID : 019EB  
Project # : 019EB

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	BDL	5.0	mg/kg	6010B	01/07/13	5

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
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January 07, 2013

Date Received : December 29, 2012  
Description : 019EB Backgrounds  
Sample ID : 019EB-BGS-122812 10-18IN  
Collected By : Matt Kaster  
Collection Date : 12/28/12 09:30

ESC Sample # : L613402-22  
Site ID : 019EB  
Project # : 019EB

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	4.6	1.0	mg/kg	6010B	01/05/13	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
Note:  
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143 Diamond Avenue  
Parachute, CO 81635

January 07, 2013

Date Received : December 29, 2012  
Description : 019EB Backgrounds  
Sample ID : 019EB-BGS-122812 10-18IN  
Collected By : Matt Kaster  
Collection Date : 12/28/12 09:30

ESC Sample # : L613402-23  
Site ID : 019EB  
Project # : 019EB

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	4.7	1.0	mg/kg	6010B	01/05/13	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
Note:  
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Parachute, CO 81635

January 07, 2013

Date Received : December 29, 2012  
Description : 019EB Backgrounds  
Sample ID : 019EB-BGS-122812 10-18IN  
Collected By : Matt Kaster  
Collection Date : 12/28/12 09:30

ESC Sample # : L613402-24  
Site ID : 019EB  
Project # : 019EB

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	4.0	1.0	mg/kg	6010B	01/05/13	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
Note:  
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Parachute, CO 81635

January 07, 2013

Date Received : December 29, 2012  
Description : 019EB Backgrounds  
Sample ID : 019EB-BGS-122812 10-18IN  
Collected By : Matt Kaster  
Collection Date : 12/28/12 09:30

ESC Sample # : L613402-25  
  
Site ID : 019EB  
Project # : 019EB

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	2.8	1.0	mg/kg	6010B	01/05/13	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
Note:  
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Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L613402-21	WG630856	SAMP	Arsenic	R2499957	0

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
0	(ESC) Sample diluted due to matrix interferences that impaired the ability to make an accurate analytical determination. The detection limit is elevated in order to reflect the necessary dilution.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

- Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.



Summary of Remarks For Samples Printed  
01/07/13 at 16:02:13

TSR Signing Reports: 358  
R5 - Desired TAT

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

Sample: L613402-01 Account: ENCANACO Received: 12/29/12 09:30 Due Date: 01/07/13 00:00 RPT Date: 01/07/13 16:01

Sample: L613402-02 Account: ENCANACO Received: 12/29/12 09:30 Due Date: 01/07/13 00:00 RPT Date: 01/07/13 16:01  
Use container from -01

Sample: L613402-03 Account: ENCANACO Received: 12/29/12 09:30 Due Date: 01/07/13 00:00 RPT Date: 01/07/13 16:01  
Use container from -01

Sample: L613402-04 Account: ENCANACO Received: 12/29/12 09:30 Due Date: 01/07/13 00:00 RPT Date: 01/07/13 16:01  
Use container from -01

Sample: L613402-05 Account: ENCANACO Received: 12/29/12 09:30 Due Date: 01/07/13 00:00 RPT Date: 01/07/13 16:01  
Use container from -01

Sample: L613402-06 Account: ENCANACO Received: 12/29/12 09:30 Due Date: 01/07/13 00:00 RPT Date: 01/07/13 16:01

Sample: L613402-07 Account: ENCANACO Received: 12/29/12 09:30 Due Date: 01/07/13 00:00 RPT Date: 01/07/13 16:01  
Use container from -06

Sample: L613402-08 Account: ENCANACO Received: 12/29/12 09:30 Due Date: 01/07/13 00:00 RPT Date: 01/07/13 16:01  
Use container from -06

Sample: L613402-09 Account: ENCANACO Received: 12/29/12 09:30 Due Date: 01/07/13 00:00 RPT Date: 01/07/13 16:01  
Use container from -06

Sample: L613402-10 Account: ENCANACO Received: 12/29/12 09:30 Due Date: 01/07/13 00:00 RPT Date: 01/07/13 16:01  
Use container from -06

Sample: L613402-11 Account: ENCANACO Received: 12/29/12 09:30 Due Date: 01/07/13 00:00 RPT Date: 01/07/13 16:01

Sample: L613402-12 Account: ENCANACO Received: 12/29/12 09:30 Due Date: 01/07/13 00:00 RPT Date: 01/07/13 16:01  
Use container from -11

Sample: L613402-13 Account: ENCANACO Received: 12/29/12 09:30 Due Date: 01/07/13 00:00 RPT Date: 01/07/13 16:01  
Use container from -11

Sample: L613402-14 Account: ENCANACO Received: 12/29/12 09:30 Due Date: 01/07/13 00:00 RPT Date: 01/07/13 16:01  
Use container from -11

Sample: L613402-15 Account: ENCANACO Received: 12/29/12 09:30 Due Date: 01/07/13 00:00 RPT Date: 01/07/13 16:01  
Use container from -11

Sample: L613402-16 Account: ENCANACO Received: 12/29/12 09:30 Due Date: 01/07/13 00:00 RPT Date: 01/07/13 16:01

Sample: L613402-17 Account: ENCANACO Received: 12/29/12 09:30 Due Date: 01/07/13 00:00 RPT Date: 01/07/13 16:01  
Use container from -16

Sample: L613402-18 Account: ENCANACO Received: 12/29/12 09:30 Due Date: 01/07/13 00:00 RPT Date: 01/07/13 16:01  
Use container from -16

Sample: L613402-19 Account: ENCANACO Received: 12/29/12 09:30 Due Date: 01/07/13 00:00 RPT Date: 01/07/13 16:01  
Use container from -16

Sample: L613402-20 Account: ENCANACO Received: 12/29/12 09:30 Due Date: 01/07/13 00:00 RPT Date: 01/07/13 16:01  
Use container from -16

Sample: L613402-21 Account: ENCANACO Received: 12/29/12 09:30 Due Date: 01/07/13 00:00 RPT Date: 01/07/13 16:01

Sample: L613402-22 Account: ENCANACO Received: 12/29/12 09:30 Due Date: 01/07/13 00:00 RPT Date: 01/07/13 16:01  
Use container from -21

Sample: L613402-23 Account: ENCANACO Received: 12/29/12 09:30 Due Date: 01/07/13 00:00 RPT Date: 01/07/13 16:01  
Use container from -21

Sample: L613402-24 Account: ENCANACO Received: 12/29/12 09:30 Due Date: 01/07/13 00:00 RPT Date: 01/07/13 16:01  
Use container from -21

Sample: L613402-25 Account: ENCANACO Received: 12/29/12 09:30 Due Date: 01/07/13 00:00 RPT Date: 01/07/13 16:01  
Use container from -21



**YOUR LAB OF CHOICE**

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

Parachute, CO 81635

Quality Assurance Report  
Level II

L613402

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January 07, 2013

		Laboratory Blank							
Analyte	Result	Units	% Rec		Limit	Batch	Date Analyzed		
Arsenic	< 1	mg/kg				WG630920	01/04/13 10:54		
Arsenic	< 1	mg/kg				WG630856	01/05/13 03:34		
		Duplicate							
Analyte	Units	Result	Duplicate	RPD	Limit	Ref Samp	Batch		
Arsenic	mg/kg	29.0	32.5	11.4	20	L613389-01	WG630920		
Arsenic	mg/kg	8.10	8.40	3.64	20	L613070-13	WG630856		
		Laboratory Control Sample							
Analyte	Units	Known Val	Result		% Rec	Limit	Batch		
Arsenic	mg/kg	237	231.		97.5	83.1-117	WG630920		
Arsenic	mg/kg	237	242.		102.	83.1-117	WG630856		
		Matrix Spike							
Analyte	Units	MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch	
Arsenic	mg/kg	71.1	32.5	50	77.2	75-125	L613389-01	WG630920	
Arsenic	mg/kg	56.7	8.40	50	96.6	75-125	L613070-13	WG630856	
		Matrix Spike Duplicate							
Analyte	Units	MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
Arsenic	mg/kg	83.0	71.1	101.	75-125	15.4	20	L613389-01	WG630920
Arsenic	mg/kg	58.7	56.7	101.	75-125	3.47	20	L613070-13	WG630856

Batch number /Run number / Sample number cross reference

WG630920: R2499039: L613402-01 02 03 04 05 06 07 08 09 10 11 12 13 14 15  
WG630856: R2499957: L613402-16 17 18 19 20 21 22 23 24 25

\* \* 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.

## Caerus Oil and Gas

Sample Delivery Group: L1296688  
Samples Received: 12/15/2020  
Project Number: O19EB  
Description: O19EB Dumpline Release  
Site: O19EB  
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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# SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



20201214-O19EB(POR)@6.5' L1296688-01 Solid

Collected by  
Evan Mason

Collected date/time  
12/14/20 11:45

Received date/time  
12/15/20 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1595580	1	12/22/20 13:43	12/22/20 13:43	KMG	Mt. Juliet, TN
Calculated Results	WG1597906	1	12/28/20 07:35	12/29/20 18:44	KPS	Mt. Juliet, TN
Wet Chemistry by Method 3060A/7196A	WG1596367	1	12/28/20 14:45	12/29/20 18:44	KPS	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1595096	1	12/24/20 14:13	12/24/20 20:34	KPS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1597020	1	12/24/20 10:00	12/24/20 20:00	JRB	Mt. Juliet, TN
Mercury by Method 7471A	WG1598019	1	12/28/20 18:30	12/29/20 01:04	SD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1597906	1	12/28/20 07:35	12/29/20 12:51	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1597905	5	12/28/20 07:37	12/28/20 19:35	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1594983	1	12/16/20 19:24	12/21/20 08:32	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1593404	1	12/16/20 19:24	12/17/20 19:16	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1597481	1	12/25/20 21:01	12/26/20 17:46	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1597526	1	12/26/20 08:53	12/26/20 21:39	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



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

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	34.1		1	12/22/2020 13:43	WG1595580

## Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Trivalent	10.7		2.00	1	12/29/2020 18:44	<a href="#">WG1597906</a>

## Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	12/29/2020 18:44	<a href="#">WG1596367</a>

## Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.63	<a href="#">T8</a>	1	12/24/2020 20:34	<a href="#">WG1595096</a>

## Sample Narrative:

L1296688-01 WG1595096: 8.63 at 20.3C

## Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	2500		10.0	1	12/24/2020 20:00	<a href="#">WG1597020</a>

## Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0400	1	12/29/2020 01:04	<a href="#">WG1598019</a>

## Metals (ICP) by Method 6010B

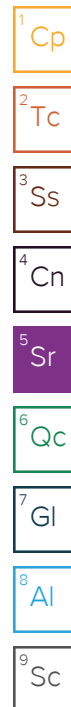
Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	242	<a href="#">Q1</a>	0.500	1	12/29/2020 12:51	<a href="#">WG1597906</a>
Cadmium	ND		0.500	1	12/29/2020 12:51	<a href="#">WG1597906</a>
Chromium	10.3	<a href="#">Q1</a>	1.00	1	12/29/2020 12:51	<a href="#">WG1597906</a>
Copper	7.42		2.00	1	12/29/2020 12:51	<a href="#">WG1597906</a>
Lead	8.89		0.500	1	12/29/2020 12:51	<a href="#">WG1597906</a>
Nickel	12.7	<a href="#">Q1</a>	2.00	1	12/29/2020 12:51	<a href="#">WG1597906</a>
Selenium	ND		2.00	1	12/29/2020 12:51	<a href="#">WG1597906</a>
Silver	ND		1.00	1	12/29/2020 12:51	<a href="#">WG1597906</a>
Zinc	43.6	<a href="#">Q1</a>	5.00	1	12/29/2020 12:51	<a href="#">WG1597906</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.93		1.00	5	12/28/2020 19:35	<a href="#">WG1597905</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	4.31		0.100	1	12/21/2020 08:32	<a href="#">WG1594983</a>







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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	93.3		77.0-120		12/21/2020 08:32	<a href="#">WG1594983</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	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.0348		0.00100	1	12/17/2020 19:16	<a href="#">WG1593404</a>
Toluene	0.151		0.00500	1	12/17/2020 19:16	<a href="#">WG1593404</a>
Ethylbenzene	0.0109		0.00250	1	12/17/2020 19:16	<a href="#">WG1593404</a>
Total Xylenes	0.252		0.00650	1	12/17/2020 19:16	<a href="#">WG1593404</a>
(S) <i>Toluene-d8</i>	104		75.0-131		12/17/2020 19:16	<a href="#">WG1593404</a>
(S) <i>4-Bromofluorobenzene</i>	94.2		67.0-138		12/17/2020 19:16	<a href="#">WG1593404</a>
(S) <i>1,2-Dichloroethane-d4</i>	119		70.0-130		12/17/2020 19:16	<a href="#">WG1593404</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	ND		4.00	1	12/26/2020 17:46	<a href="#">WG1597481</a>
(S) <i>o</i> -Terphenyl	64.8		18.0-148		12/26/2020 17:46	<a href="#">WG1597481</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	12/26/2020 21:39	<a href="#">WG1597526</a>
Acenaphthene	ND		0.00600	1	12/26/2020 21:39	<a href="#">WG1597526</a>
Acenaphthylene	ND		0.00600	1	12/26/2020 21:39	<a href="#">WG1597526</a>
Benzo(a)anthracene	ND		0.00600	1	12/26/2020 21:39	<a href="#">WG1597526</a>
Benzo(a)pyrene	ND		0.00600	1	12/26/2020 21:39	<a href="#">WG1597526</a>
Benzo(b)fluoranthene	ND		0.00600	1	12/26/2020 21:39	<a href="#">WG1597526</a>
Benzo(g,h,i)perylene	ND		0.00600	1	12/26/2020 21:39	<a href="#">WG1597526</a>
Benzo(k)fluoranthene	ND		0.00600	1	12/26/2020 21:39	<a href="#">WG1597526</a>
Chrysene	ND		0.00600	1	12/26/2020 21:39	<a href="#">WG1597526</a>
Dibenz(a,h)anthracene	ND		0.00600	1	12/26/2020 21:39	<a href="#">WG1597526</a>
Fluoranthene	ND		0.00600	1	12/26/2020 21:39	<a href="#">WG1597526</a>
Fluorene	ND		0.00600	1	12/26/2020 21:39	<a href="#">WG1597526</a>
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	12/26/2020 21:39	<a href="#">WG1597526</a>
Naphthalene	ND		0.0200	1	12/26/2020 21:39	<a href="#">WG1597526</a>
Phenanthrene	ND		0.00600	1	12/26/2020 21:39	<a href="#">WG1597526</a>
Pyrene	ND		0.00600	1	12/26/2020 21:39	<a href="#">WG1597526</a>
1-Methylnaphthalene	ND		0.0200	1	12/26/2020 21:39	<a href="#">WG1597526</a>
2-Methylnaphthalene	ND		0.0200	1	12/26/2020 21:39	<a href="#">WG1597526</a>
2-Chloronaphthalene	ND		0.0200	1	12/26/2020 21:39	<a href="#">WG1597526</a>
(S) <i>p</i> -Terphenyl-d14	87.5		23.0-120		12/26/2020 21:39	<a href="#">WG1597526</a>
(S) Nitrobenzene-d5	87.3		14.0-149		12/26/2020 21:39	<a href="#">WG1597526</a>
(S) <i>2</i> -Fluorobiphenyl	77.1		34.0-125		12/26/2020 21:39	<a href="#">WG1597526</a>



Method Blank (MB)

(MB) R3608145-1 12/29/20 18:43

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Chromium,Hexavalent	U		0.640	2.00

L1298031-39 Original Sample (OS) • Duplicate (DUP)

(OS) L1298031-39 12/29/20 18:53 • (DUP) R3608145-3 12/29/20 18:53

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

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3608145-8 12/29/20 19:20

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

Laboratory Control Sample (LCS)

(LCS) R3608145-2 12/29/20 18:43

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Chromium,Hexavalent	24.0	22.8	95.2	80.0-120	

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

(OS) • (MS) R3608145-4 12/29/20 18:54 • (MSD) R3608145-5 12/29/20 18:55

	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	%	%		%			%	%
Chromium,Hexavalent	0.400		967	967	627	625	50	75.0-125	V	V	0.0525	20

Original Sample (OS) • Matrix Spike (MS)

(OS) • (MS) R3608145-6 12/29/20 18:56

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg		mg/kg	%		%	
Chromium,Hexavalent	644		ND	0.000	2500	75.0-125	J6

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1296785-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1296785-01 12/24/20 20:34 • (DUP) R3607221-2 12/24/20 20:34

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	6.88	6.91	1	0.435		1

Sample Narrative:  
OS: 6.88 at 20.3C  
DUP: 6.91 at 20.1C

L1298744-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1298744-03 12/24/20 20:34 • (DUP) R3607221-3 12/24/20 20:34

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.58	7.65	1	0.919		1

Sample Narrative:  
OS: 7.58 at 19C  
DUP: 7.65 at 19C

Laboratory Control Sample (LCS)

(LCS) R3607221-1 12/24/20 20:34

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

Sample Narrative:  
LCS: 10.05 at 18.4C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3607214-1 12/24/20 20:00

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

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

L1298001-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1298001-01 12/24/20 20:00 • (DUP) R3607214-4 12/24/20 20:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	umhos/cm	umhos/cm		%		%
Specific Conductance	2950	2980	1	1.25		20

L1298795-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1298795-01 12/24/20 20:00 • (DUP) R3607214-5 12/24/20 20:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	umhos/cm	umhos/cm		%		%
Specific Conductance	4330	4580	1	5.61		20

Laboratory Control Sample (LCS)

(LCS) R3607214-2 12/24/20 20:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	umhos/cm	umhos/cm	%	%	
Specific Conductance	483	486	101	85.0-115	



Method Blank (MB)

(MB) R3607824-1 12/29/20 00:36

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Mercury	U		0.0180	0.0400

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

Laboratory Control Sample (LCS)

(LCS) R3607824-2 12/29/20 00:38

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Mercury	0.500	0.494	98.8	80.0-120	

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

L1296175-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1296175-01 12/29/20 00:40 • (MS) R3607824-3 12/29/20 00:42 • (MSD) R3607824-4 12/29/20 00:44

	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	%	%		%			%	%
Mercury	0.500	ND	0.512	0.575	102	115	1	75.0-125			11.6	20



Method Blank (MB)

(MB) R3608022-1 12/29/20 12:46

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
Chromium	U		0.133	1.00
Copper	0.420	J	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) R3608022-2 12/29/20 12:49

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	104	104	80.0-120	
Cadmium	100	97.7	97.7	80.0-120	
Chromium	100	98.8	98.8	80.0-120	
Copper	100	99.7	99.7	80.0-120	
Lead	100	96.9	96.9	80.0-120	
Nickel	100	101	101	80.0-120	
Selenium	100	97.4	97.4	80.0-120	
Silver	20.0	20.0	100	80.0-120	
Zinc	100	99.1	99.1	80.0-120	

L1296688-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1296688-01 12/29/20 12:51 • (MS) R3608022-5 12/29/20 12:59 • (MSD) R3608022-6 12/29/20 13:01

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	242	341	357	98.6	115	1	75.0-125			4.74	20
Cadmium	100	ND	104	102	104	101	1	75.0-125			2.21	20
Chromium	100	10.3	112	110	102	99.4	1	75.0-125			2.39	20
Copper	100	7.42	116	113	108	105	1	75.0-125			2.60	20
Lead	100	8.89	116	113	107	105	1	75.0-125			2.14	20
Nickel	100	12.7	125	122	112	110	1	75.0-125			2.12	20
Selenium	100	ND	101	98.8	101	98.8	1	75.0-125			1.83	20
Silver	20.0	ND	21.6	21.0	108	105	1	75.0-125			2.76	20
Zinc	100	43.6	141	138	97.5	94.5	1	75.0-125			2.13	20



Method Blank (MB)

(MB) R3607796-1 12/28/20 19:29

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

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3607796-2 12/28/20 19:32

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Arsenic	100	96.8	96.8	80.0-120	

L1296688-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1296688-01 12/28/20 19:35 • (MS) R3607796-5 12/28/20 19:45 • (MSD) R3607796-6 12/28/20 19:48

	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	%	%		%			%	%
Arsenic	20.0	3.93	104	101	99.8	96.8	5	75.0-125			2.93	20

Method Blank (MB)

(MB) R3606726-2 12/21/20 02:01

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)	111			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3606726-1 12/21/20 01:19

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.56	82.9	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			98.3	77.0-120	

L1296327-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1296327-02 12/21/20 08:11 • (MS) R3606726-3 12/21/20 09:57 • (MSD) R3606726-4 12/21/20 10:18

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	61.9	ND	61.4	58.9	128	122	25	10.0-151			4.16	28
(S) a,a,a-Trifluorotoluene(FID)					105	105		77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc





Method Blank (MB)

(MB) R3605951-3 12/17/20 18:38

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
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	102			75.0-131
(S) 4-Bromofluorobenzene	94.6			67.0-138
(S) 1,2-Dichloroethane-d4	122			70.0-130

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

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

(LCS) R3605951-1 12/17/20 17:22 • (LCSD) R3605951-2 12/17/20 17:41

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 %
Benzene	0.125	0.123	0.123	98.4	98.4	70.0-123			0.000	20
Ethylbenzene	0.125	0.113	0.123	90.4	98.4	74.0-126			8.47	20
Toluene	0.125	0.112	0.117	89.6	93.6	75.0-121			4.37	20
Xylenes, Total	0.375	0.334	0.348	89.1	92.8	72.0-127			4.11	20
(S) Toluene-d8				100	101	75.0-131				
(S) 4-Bromofluorobenzene				93.1	95.6	67.0-138				
(S) 1,2-Dichloroethane-d4				128	126	70.0-130				

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

Method Blank (MB)

(MB) R3607385-1 12/26/20 11:35

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	mg/kg
TPH (GC/FID) High Fraction	U		0.769	4.00
(S) o-Terphenyl	81.4			18.0-148

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3607385-2 12/26/20 11:48

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/kg	mg/kg	%	%	
TPH (GC/FID) High Fraction	50.0	40.4	80.8	50.0-150	
(S) o-Terphenyl			101	18.0-148	

L1298732-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1298732-01 12/28/20 14:05 • (MS) R3607706-1 12/28/20 14:19 • (MSD) R3607706-2 12/28/20 14:32

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
TPH (GC/FID) High Fraction	50.0	5.48	48.8	51.9	86.6	92.8	1	50.0-150			6.16	20
(S) o-Terphenyl					98.2	107		18.0-148				

Method Blank (MB)

(MB) R3607566-2 12/26/20 20:39

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	84.7			14.0-149
(S) 2-Fluorobiphenyl	79.0			34.0-125
(S) p-Terphenyl-d14	102			23.0-120

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Laboratory Control Sample (LCS)

(LCS) R3607566-1 12/26/20 20:19

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0704	88.0	50.0-126	
Acenaphthene	0.0800	0.0719	89.9	50.0-120	
Acenaphthylene	0.0800	0.0753	94.1	50.0-120	
Benzo(a)anthracene	0.0800	0.0771	96.4	45.0-120	
Benzo(a)pyrene	0.0800	0.0548	68.5	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0748	93.5	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0713	89.1	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0729	91.1	49.0-125	
Chrysene	0.0800	0.0756	94.5	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0742	92.8	47.0-125	
Fluoranthene	0.0800	0.0749	93.6	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3607566-1 12/26/20 20:19

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Fluorene	0.0800	0.0758	94.8	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0753	94.1	46.0-125	
Naphthalene	0.0800	0.0666	83.3	50.0-120	
Phenanthrene	0.0800	0.0737	92.1	47.0-120	
Pyrene	0.0800	0.0735	91.9	43.0-123	
1-Methylnaphthalene	0.0800	0.0708	88.5	51.0-121	
2-Methylnaphthalene	0.0800	0.0674	84.3	50.0-120	
2-Chloronaphthalene	0.0800	0.0682	85.3	50.0-120	
(S) Nitrobenzene-d5			103	14.0-149	
(S) 2-Fluorobiphenyl			90.4	34.0-125	
(S) p-Terphenyl-d14			110	23.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1298632-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1298632-01 12/27/20 02:17 • (MS) R3607566-3 12/27/20 02:37 • (MSD) R3607566-4 12/27/20 02:57

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Anthracene	0.0784	ND	0.0653	0.0607	83.3	77.0	1	10.0-145			7.30	30
Acenaphthene	0.0784	ND	0.0646	0.0598	82.4	75.9	1	14.0-127			7.72	27
Acenaphthylene	0.0784	ND	0.0650	0.0609	82.9	77.3	1	21.0-124			6.51	25
Benzo(a)anthracene	0.0784	ND	0.0703	0.0651	89.7	82.6	1	10.0-139			7.68	30
Benzo(a)pyrene	0.0784	ND	0.0674	0.0617	86.0	78.3	1	10.0-141			8.83	31
Benzo(b)fluoranthene	0.0784	ND	0.0719	0.0666	91.7	84.5	1	10.0-140			7.65	36
Benzo(g,h,i)perylene	0.0784	ND	0.0698	0.0640	89.0	81.2	1	10.0-140			8.67	33
Benzo(k)fluoranthene	0.0784	ND	0.0683	0.0622	87.1	78.9	1	10.0-137			9.35	31
Chrysene	0.0784	ND	0.0709	0.0653	90.4	82.9	1	10.0-145			8.22	30
Dibenz(a,h)anthracene	0.0784	ND	0.0704	0.0652	89.8	82.7	1	10.0-132			7.67	31
Fluoranthene	0.0784	ND	0.0695	0.0644	88.6	81.7	1	10.0-153			7.62	33
Fluorene	0.0784	ND	0.0687	0.0633	87.6	80.3	1	11.0-130			8.18	29
Indeno(1,2,3-cd)pyrene	0.0784	ND	0.0727	0.0667	92.7	84.6	1	10.0-137			8.61	32
Naphthalene	0.0784	ND	0.0591	0.0543	75.4	68.9	1	10.0-135			8.47	27
Phenanthrene	0.0784	ND	0.0682	0.0631	87.0	80.1	1	10.0-144			7.77	31
Pyrene	0.0784	ND	0.0706	0.0644	90.1	81.7	1	10.0-148			9.19	35
1-Methylnaphthalene	0.0784	ND	0.0625	0.0583	79.7	74.0	1	10.0-142			6.95	28
2-Methylnaphthalene	0.0784	ND	0.0602	0.0560	76.8	71.1	1	10.0-137			7.23	28
2-Chloronaphthalene	0.0784	ND	0.0603	0.0557	76.9	70.7	1	29.0-120			7.93	24
(S) Nitrobenzene-d5					92.8	85.5		14.0-149				
(S) 2-Fluorobiphenyl					84.5	77.6		34.0-125				
(S) p-Terphenyl-d14					105	97.0		23.0-120				



## 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.
ND	Not detected at the Reporting Limit (or MDL where applicable).
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.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

\* 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 National.

## State Accreditations

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	84004
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1 4</sup>	2006
Louisiana <sup>1</sup>	LA180010	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA

## Third Party Federal Accreditations

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

## Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Caerus Oil & Gas LLC  
143 Diamond Avenue  
Parachute, CO 81635  
970-285-9606

Billing Information:

Same as above

Pres  
Chk

Analysis / Container / Preservative

Chain of Custody Page \_\_\_\_ of \_\_\_\_



12065 Lebanon Rd  
Mount Juliet, TN 37122  
Phone: 615-758-5858  
Phone: 800-767-5859  
Fax: 615-758-5859



L# U12910088

A185

Table #

Acctnum:

Template:

Prelogin:

TSR:

PB:

Shipped Via:

Remarks

Sample # (lab only)

Report to:  
bmiddleton@caerusoilandgas.com

Email To:  
bmiddleton@caerusoilandgas.com

Project  
Description: **019EB Dumpline Release**

City/State  
Collected: **Piceance, CO**

Phone:  
Fax:

Client Project #  
**019EB**

Lab Project #  
**019EB**

Collected by (print):  
Evan Mason

Site/Facility ID #  
**019EB**

P.O. #  
**019EB**

Collected by (signature):

**Rush?** (Lab MUST Be Notified)

Quote #

Immediately  
Packed on Ice N    Y X

☐ Same Day ☐ Five Day  
☐ Next Day ☐ 5 Day (Rad Only)  
☐ Two Day ☐ 10 Day (Rad Only)  
☒ Three Day

Date Results Needed

**Standard TAT**

No.  
of  
Cntrs

TPH - GRO/DRO

BTEX

TABLE 910- PAH's

SAR, EC, pH

TABLE 910- Metals

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs
-----------	-----------	----------	-------	------	------	--------------

20201214-019EB(POR)@6.5'	Grab <input checked="" type="checkbox"/>	SS <input checked="" type="checkbox"/>	6.5'	12/14/2020	1145	2
--------------------------	--	--	------	------------	------	---

X

X

X

X

X

-01

\* Matrix:

SS - Soil AIR - Air F - Filter  
GW - Groundwater B - Bioassay  
WW - WasteWater  
DW - Drinking Water  
OT - Other

Remarks:

Samples returned via:

☒ UPS ☐ FedEx ☐ Courier

Tracking #

1676 2750 5126

pH        Temp       

Flow        Other       

Sample Receipt Checklist

COC Seal Present/Intact:    NP    Y    N  
COC Signed/Accurate:    Y    N  
Bottles arrive intact:    Y    N  
Correct bottles used:    Y    N  
Sufficient volume sent:    Y    N  
If Applicable  
VOA Zero Headspace:    Y    N  
Preservation Correct/Checked:    Y    N

Relinquished by: (Signature)

Date:

12/14/20

Time:

1300

Received by: (Signature)

Trip Blank Received: Yes ☒ No ☐  
HCL / MeOH  
TBR

Relinquished by: (Signature)

Date:

12/14/20

Time:

Received by: (Signature)

Temp: 16.0 °C  
1.24 = 1.3  
Bottles Received: 2

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Date: 12-15-20 Time: 0930

Hold:

Condition:  
NCF / OK