


Caerus Oil and Gas

Sample Delivery Group: L1600277
Samples Received: 03/31/2023
Project Number:
Description:

Report To: Brett M. , Jake J. , Blair R.
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



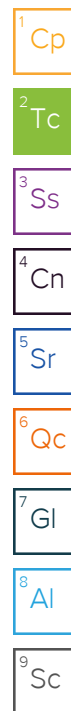
Chris Ward
Project Manager

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.

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SAMPLE SUMMARY

20230330-OUSOURCE(OP4OU-T) L1600277-01 GW

Collected by: Will H.
 Collected date/time: 03/30/23 12:15
 Received date/time: 03/31/23 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG2035326	1	04/06/23 10:12	04/06/23 10:12	ARD	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG2034376	1	04/03/23 15:45	04/03/23 15:45	CAT	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG2034492	1	04/01/23 07:58	04/02/23 22:52	CAT	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG2034217	1	04/03/23 06:32	04/03/23 06:32	DB	Mt. Juliet, TN
Wet Chemistry by Method 9050A	WG2034000	1	04/06/23 07:52	04/06/23 07:52	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2033714	10	03/31/23 21:42	03/31/23 21:42	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2033714	100	03/31/23 21:57	03/31/23 21:57	GEB	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2034077	1	04/04/23 13:59	04/06/23 10:02	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2034077	10	04/04/23 13:59	04/07/23 15:16	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2034430	20	04/03/23 02:41	04/03/23 02:41	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2035741	20	04/05/23 09:10	04/05/23 09:10	KSD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2037078	500	04/06/23 20:03	04/06/23 20:03	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2034610	1	04/04/23 17:00	04/05/23 18:19	MAA	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2034610	5	04/04/23 17:00	04/06/23 10:34	MAA	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 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

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Alkalinity	561		8.45	20.0	1	04/06/2023 10:12	WG2035326
Alkalinity,Bicarbonate	561		8.45	20.0	1	04/06/2023 10:12	WG2035326
Alkalinity,Carbonate	U		8.45	20.0	1	04/06/2023 10:12	WG2035326

Sample Narrative:

L1600277-01 WG2035326: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Nitrate-Nitrite	U		0.0500	0.100	1	04/03/2023 15:45	WG2034376

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Phosphorus>Total	0.907		0.0350	0.100	1	04/02/2023 22:52	WG2034492

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	pH			date / time	
pH	7.15	T8	1	04/03/2023 06:32	WG2034217

Sample Narrative:

L1600277-01 WG2034217: 7.15 at 20.2C

Wet Chemistry by Method 9050A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	umhos/cm		umhos/cm		date / time	
Specific Conductance	21100		10.0	1	04/06/2023 07:52	WG2034000

Sample Narrative:

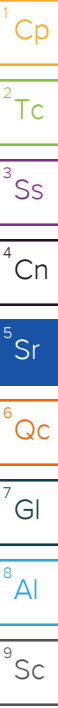
L1600277-01 WG2034000: at 25C

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Bromide	41.4		3.53	10.0	10	03/31/2023 21:42	WG2033714
Chloride	6950		37.9	100	100	03/31/2023 21:57	WG2033714
Fluoride	U		0.640	1.50	10	03/31/2023 21:42	WG2033714
Nitrate as (N)	U		0.480	1.00	10	03/31/2023 21:42	WG2033714
Nitrite as (N)	U		0.420	1.00	10	03/31/2023 21:42	WG2033714
Sulfate	U		5.94	50.0	10	03/31/2023 21:42	WG2033714

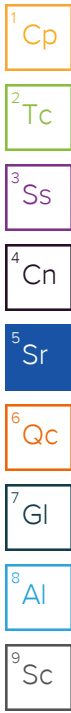
Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Barium	38.6		0.000736	0.00500	1	04/06/2023 10:02	WG2034077
Boron	0.755		0.0200	0.200	1	04/06/2023 10:02	WG2034077
Calcium	52.1		0.0793	1.00	1	04/06/2023 10:02	WG2034077
Iron	78.5		0.0180	0.100	1	04/06/2023 10:02	WG2034077
Magnesium	14.6		0.0853	1.00	1	04/06/2023 10:02	WG2034077
Manganese	0.527		0.000934	0.0100	1	04/06/2023 10:02	WG2034077
Potassium	25.2		0.261	2.00	1	04/06/2023 10:02	WG2034077



Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Selenium	U		0.00735	0.0100	1	04/06/2023 10:02	WG2034077
Sodium	4430		5.04	30.0	10	04/07/2023 15:16	WG2034077
Strontium	8.78		0.000640	0.0100	1	04/06/2023 10:02	WG2034077



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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPH (GC/FID) Low Fraction	90.3		0.628	2.00	20	04/03/2023 02:41	WG2034430
(S) a,a,a-Trifluorotoluene(FID)	99.4			78.0-120		04/03/2023 02:41	WG2034430

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	4.82		0.0471	0.500	500	04/06/2023 20:03	WG2037078
Toluene	13.5		0.139	0.500	500	04/06/2023 20:03	WG2037078
Ethylbenzene	0.744		0.00274	0.0200	20	04/05/2023 09:10	WG2035741
Xylenes, Total	11.7		0.0870	1.50	500	04/06/2023 20:03	WG2037078
Naphthalene	0.103		0.0200	0.100	20	04/05/2023 09:10	WG2035741
(S) Toluene-d8	118			80.0-120		04/05/2023 09:10	WG2035741
(S) Toluene-d8	106			80.0-120		04/06/2023 20:03	WG2037078
(S) 4-Bromofluorobenzene	112			77.0-126		04/05/2023 09:10	WG2035741
(S) 4-Bromofluorobenzene	95.6			77.0-126		04/06/2023 20:03	WG2037078
(S) 1,2-Dichloroethane-d4	92.8			70.0-130		04/05/2023 09:10	WG2035741
(S) 1,2-Dichloroethane-d4	107			70.0-130		04/06/2023 20:03	WG2037078

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
C10-C28 Diesel Range	9.52		0.111	0.500	5	04/06/2023 10:34	WG2034610
C28-C36 Motor Oil Range	1.19		0.0118	0.100	1	04/05/2023 18:19	WG2034610
(S) o-Terphenyl	50.5	J2		52.0-156		04/06/2023 10:34	WG2034610
(S) o-Terphenyl	59.5			52.0-156		04/05/2023 18:19	WG2034610

Sample Narrative:

L1600277-01 WG2034610: Surrogate failure due to matrix interference

Method Blank (MB)

(MB) R3910132-2 04/06/23 07:56

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Alkalinity	U		8.45	20.0
Alkalinity,Bicarbonate	U		8.45	20.0
Alkalinity,Carbonate	U		8.45	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1599148-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1599148-01 04/06/23 08:22 • (DUP) R3910132-3 04/06/23 08:28

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	U	12.4	1	200	J P1	20
Alkalinity,Bicarbonate	U	12.4	1	200	J P1	20
Alkalinity,Carbonate	U	U	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1600277-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1600277-01 04/06/23 10:12 • (DUP) R3910132-4 04/06/23 10:17

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	561	563	1	0.431		20
Alkalinity,Bicarbonate	561	563	1	0.431		20
Alkalinity,Carbonate	U	U	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5



Laboratory Control Sample (LCS)

(LCS) R3910132-1 04/06/23 07:47

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Alkalinity	100	98.5	98.5	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3908754-1 04/03/23 15:35

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Nitrate-Nitrite	U		0.0500	0.100

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1600269-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1600269-01 04/03/23 15:41 • (DUP) R3908754-5 04/03/23 15:43

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Nitrate-Nitrite	U	U	1	0.000		20

L1600672-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1600672-08 04/03/23 16:00 • (DUP) R3908754-7 04/03/23 16:02

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Nitrate-Nitrite	69.6	69.6	20	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3908754-2 04/03/23 15:36

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Nitrate-Nitrite	2.50	2.53	101	90.0-110	

L1600262-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1600262-01 04/03/23 15:38 • (MS) R3908754-3 04/03/23 15:39 • (MSD) R3908754-4 04/03/23 15:40

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Nitrate-Nitrite	2.50	U	2.52	2.58	101	103	1	90.0-110			2.35	20

L1600672-07 Original Sample (OS) • Matrix Spike (MS)

(OS) L1600672-07 04/03/23 15:58 • (MS) R3908754-6 04/03/23 15:59

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Nitrate-Nitrite	50.0	45.0	93.8	97.6	20	90.0-110	

Method Blank (MB)

(MB) R3908573-1 04/02/23 22:18

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Phosphorus,Total	U		0.0350	0.100

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1599225-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1599225-01 04/02/23 22:27 • (DUP) R3908573-5 04/02/23 22:28

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Phosphorus,Total	0.250	0.245	1	2.02		20

L1599695-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1599695-01 04/02/23 22:38 • (DUP) R3908573-6 04/02/23 22:40

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Phosphorus,Total	0.259	0.260	1	0.385		20

Laboratory Control Sample (LCS)

(LCS) R3908573-2 04/02/23 22:19

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Phosphorus,Total	2.47	2.51	102	83.2-116	

L1599134-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1599134-01 04/02/23 22:20 • (MS) R3908573-3 04/02/23 22:22 • (MSD) R3908573-4 04/02/23 22:23

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Phosphorus,Total	2.50	1.46	3.80	3.73	93.6	90.8	1	90.0-110			1.86	20

L1599976-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1599976-03 04/03/23 06:32 • (DUP) R3908439-2 04/03/23 06:32

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.98	9.01	1	0.334		1

Sample Narrative:

OS: 8.98 at 20.5C
DUP: 9.01 at 20.6C

L1599976-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1599976-04 04/03/23 06:32 • (DUP) R3908439-3 04/03/23 06:32

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	9.47	9.48	1	0.106		1

Sample Narrative:

OS: 9.47 at 20.5C
DUP: 9.48 at 20.6C

Laboratory Control Sample (LCS)

(LCS) R3908439-1 04/03/23 06:32

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
pH	10.0	10.0	100	99.0-101	

Sample Narrative:

LCS: 10 at 20C

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3909908-1 04/06/23 07:52

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Specific Conductance	U		10.0	10.0

Sample Narrative:

BLANK: at 25C

L1599381-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1599381-10 04/06/23 07:52 • (DUP) R3909908-3 04/06/23 07:52

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	6020	5990	1	0.500		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1600262-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1600262-01 04/06/23 07:52 • (DUP) R3909908-4 04/06/23 07:52

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	22000	22000	1	0.0454		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3909908-2 04/06/23 07:52

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Specific Conductance	1120	1120	100	85.0-115	

Sample Narrative:

LCS: at 25C

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3908644-1 03/31/23 10:18

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Bromide	U		0.353	1.00
Chloride	U		0.379	1.00
Fluoride	U		0.0640	0.150
Nitrate	U		0.0480	0.100
Nitrite	U		0.0420	0.100
Sulfate	U		0.594	5.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

L1600258-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1600258-01 03/31/23 18:31 • (DUP) R3908644-3 03/31/23 18:46

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	U	U	1	0.000		15
Chloride	7.21	7.27	1	0.731		15
Fluoride	U	0.0809	1	200	JP1	15
Nitrate	2.39	2.44	1	2.16		15
Nitrite	U	U	1	0.000		15
Sulfate	5.69	5.71	1	0.398		15

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3908644-2 03/31/23 10:34

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Bromide	40.0	40.2	100	80.0-120	
Chloride	40.0	39.6	99.0	80.0-120	
Fluoride	8.00	8.16	102	80.0-120	
Nitrate	8.00	7.81	97.7	80.0-120	
Nitrite	8.00	8.26	103	80.0-120	
Sulfate	40.0	39.9	99.8	80.0-120	

L1600273-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1600273-01 03/31/23 20:06 • (MS) R3908644-4 03/31/23 20:54 • (MSD) R3908644-5 03/31/23 21:10

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Bromide	50.0	7.40	57.5	56.7	100	98.7	1	80.0-120			1.30	15
Chloride	50.0	1070	1060	1060	0.000	0.000	1	80.0-120	EV	EV	0.0306	15

L1600273-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1600273-01 03/31/23 20:06 • (MS) R3908644-4 03/31/23 20:54 • (MSD) R3908644-5 03/31/23 21:10

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Fluoride	5.00	U	5.08	5.03	102	101	1	80.0-120			1.07	15
Nitrate	5.00	U	4.81	4.75	96.3	95.1	1	80.0-120			1.25	15
Nitrite	5.00	U	4.84	4.79	96.8	95.7	1	80.0-120			1.15	15
Sulfate	50.0	0.666	49.4	48.8	97.5	96.2	1	80.0-120			1.29	15

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3910161-1 04/06/23 09:09

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Barium	U		0.000736	0.00500
Boron	U		0.0200	0.200
Calcium	0.128	U	0.0793	1.00
Iron	0.0310	U	0.0180	0.100
Magnesium	U		0.0853	1.00
Manganese	U		0.000934	0.0100
Potassium	U		0.261	2.00
Selenium	U		0.00735	0.0100
Sodium	U		0.504	3.00
Strontium	U		0.000640	0.0100

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Laboratory Control Sample (LCS)

(LCS) R3910161-2 04/06/23 09:11

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Barium	1.00	1.03	103	80.0-120	
Boron	1.00	0.967	96.7	80.0-120	
Calcium	10.0	9.58	95.8	80.0-120	
Iron	10.0	9.71	97.1	80.0-120	
Magnesium	10.0	9.88	98.8	80.0-120	
Manganese	1.00	0.941	94.1	80.0-120	
Potassium	10.0	9.57	95.7	80.0-120	
Selenium	1.00	0.968	96.8	80.0-120	
Sodium	10.0	9.76	97.6	80.0-120	
Strontium	1.00	0.958	95.8	80.0-120	

L1600293-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1600293-05 04/06/23 09:14 • (MS) R3910161-4 04/06/23 09:19 • (MSD) R3910161-5 04/06/23 09:22

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Barium	1.00	0.132	1.21	1.20	107	107	1	75.0-125			0.212	20
Boron	1.00	0.0830	1.09	1.09	100	100	1	75.0-125			0.104	20
Calcium	10.0	196	202	200	59.5	38.7	1	75.0-125	U	U	1.03	20
Iron	10.0	0.0427	10.0	9.88	99.6	98.4	1	75.0-125			1.22	20
Magnesium	10.0	10.2	19.8	19.6	95.9	94.1	1	75.0-125			0.937	20
Manganese	1.00	0.00929	0.961	0.970	95.1	96.1	1	75.0-125			0.997	20
Potassium	10.0	1.18	11.0	10.9	98.4	96.9	1	75.0-125			1.36	20

L1600293-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1600293-05 04/06/23 09:14 • (MS) R3910161-4 04/06/23 09:19 • (MSD) R3910161-5 04/06/23 09:22

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Selenium	1.00	U	1.00	0.993	100	99.3	1	75.0-125			1.15	20
Sodium	10.0	39.2	48.2	47.6	89.3	83.1	1	75.0-125			1.29	20
Strontium	1.00	0.657	1.62	1.60	96.5	94.4	1	75.0-125			1.28	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3908600-2 04/02/23 21:24

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) Low Fraction	U		0.0314	0.100
^(S) a,a,a-Trifluorotoluene(FID)	110			78.0-120

Laboratory Control Sample (LCS)

(LCS) R3908600-1 04/02/23 20:26

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.01	91.1	72.0-127	
^(S) a,a,a-Trifluorotoluene(FID)			104	78.0-120	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Method Blank (MB)

(MB) R3909686-2 04/05/23 03:26

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Ethylbenzene	U		0.000137	0.00100
Naphthalene	U		0.00100	0.00500
(S) Toluene-d8	113			80.0-120
(S) 4-Bromofluorobenzene	110			77.0-126
(S) 1,2-Dichloroethane-d4	103			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3909686-1 04/05/23 02:48

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Ethylbenzene	0.00500	0.00485	97.0	79.0-123	
Naphthalene	0.00500	0.00345	69.0	54.0-135	
(S) Toluene-d8			110	80.0-120	
(S) 4-Bromofluorobenzene			114	77.0-126	
(S) 1,2-Dichloroethane-d4			97.6	70.0-130	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3910547-2 04/06/23 10:26

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Toluene	U		0.000278	0.00100
Xylenes, Total	U		0.000174	0.00300
<i>(S) Toluene-d8</i>	103			80.0-120
<i>(S) 4-Bromofluorobenzene</i>	95.0			77.0-126
<i>(S) 1,2-Dichloroethane-d4</i>	110			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3910547-1 04/06/23 09:45

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00513	103	70.0-123	
Toluene	0.00500	0.00478	95.6	79.0-120	
Xylenes, Total	0.0150	0.0134	89.3	79.0-123	
<i>(S) Toluene-d8</i>			100	80.0-120	
<i>(S) 4-Bromofluorobenzene</i>			93.1	77.0-126	
<i>(S) 1,2-Dichloroethane-d4</i>			110	70.0-130	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Method Blank (MB)

(MB) R3909483-1 04/04/23 23:53

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
C10-C28 Diesel Range	0.0270	↓	0.0222	0.100
C28-C36 Motor Oil Range	U		0.0118	0.100
(S) o-Terphenyl	119			52.0-156

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

(LCS) R3909483-2 04/05/23 00:16 • (LCSD) R3909483-3 04/05/23 00:38

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 %
C10-C28 Diesel Range	1.50	1.41	1.47	94.0	98.0	50.0-150			4.17	20
(S) o-Terphenyl				113	114	52.0-156				

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

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.

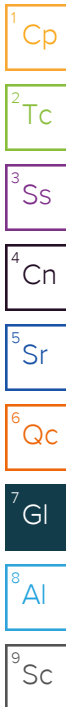
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.



ACCREDITATIONS & LOCATIONS

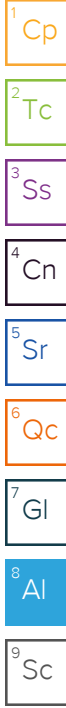
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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 ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	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 ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	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 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ 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.



Company Name/Address: **Caerus Oil and Gas**
 143 Diamond Avenue
 Parachute, CO 81635

Billing Information:
 Accounts Payable
 1001 17th St., Ste. 1600
 Denver, CO 80202

Report to: **Brett Middleton**
 Email To: **JJanicek@caerusoilandgas.com; brollins@caerus**

Project Description: **9095** City/State Collected: **Parachute, CO** Please Circle: **PT** **MP** **CT** **ET**

Phone: **970-285-2653** Client Project # _____ Lab Project # _____

Chain of Custody Page ___ of ___

Pace
 PEOPLE ADVANCING SCIENCE

MT JULIET, TN
 12065 Lebanon Rd Mount Juliet, TN 37122
 Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: <https://info.pacelabs.com/hubfs/pas-standard-terms.pdf>

SDG # **L1000277**
F210

Acctnum: **CAERUSPCO**
 Template: **T215555**
 Prelogin: **P963757**
 PM: **824 - Chris Ward**
 PB: _____

Shipped Via: **FedEX Ground**

Remarks _____ Sample # (lab only) _____

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	ALK-ALKBI, ALKCA 250mlHDPE-NoPres	Br, Cl, F, SO4 250mlHDPE-NoPres	DRONMLVI 40mlAmb-HCl-BT	GRO 40mlAmb HCl	PT 250mlHDPE-H2SO4	RA-226/228 1L-HDPE-Add-HNO3	SPCON 250mlHDPE-NoPres	TDS 1L-HDPE NoPres	TSS 1L-HDPE NoPres	Total Metals 250mlHDPE-HNO3
20230330 - onsource (OP40U-T)	grab	GW	Surface	3/30/23	1215	17	X	X	X	X	X	X	X	X	X	X
		GW				17	X	X	X	X	X	X	X	X	X	X
		GW				17	X	X	X	X	X	X	X	X	X	X
		GW				17	X	X	X	X	X	X	X	X	X	X
		GW				17	X	X	X	X	X	X	X	X	X	X
		GW				17	X	X	X	X	X	X	X	X	X	X
		GW				17	X	X	X	X	X	X	X	X	X	X
		GW				17	X	X	X	X	X	X	X	X	X	X
		GW				17	X	X	X	X	X	X	X	X	X	X
		GW				17	X	X	X	X	X	X	X	X	X	X

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

Remarks: **Metals - Ba, B, Ca, Fe, K, Mg, Mn, Na, Se, Sr**

Samples returned via: UPS FedEx Courier _____ Tracking # **6126 6587 4335**

Relinquished by: (Signature) _____ Date: **3/30/23** Time: **1600** Received by: (Signature) _____ Trip Blank Received: Yes No
 HCL/MeOH TBR

Relinquished by: (Signature) _____ Date: **3/30/23** Time: **1700** Received by: (Signature) _____ Temp: **15.47** °C Bottles Received: **3210=32** If preservation required by Login: Date/Time _____

Relinquished by: (Signature) _____ Date: _____ Time: _____ Received for lab by: (Signature) _____ Date: **3/31/23** Time: **1000** Hold: _____ Condition: **NCF / OK**

Sample Receipt Checklist:
 COC Seal Present/Intact: 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
 RAD Screen <0.5 mR/hr: Y N

Company Name/Address:

Caerus Oil and Gas

143 Diamond Avenue
Parachute, CO 81635

Billing Information:

Accounts Payable
1001 17th St., Ste. 1600
Denver, CO 80202

Pres
Chk

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Report to:
Brett Middleton

Email To:
JJanicek@caerusoilandgas.com; brollins@caerus

Project Description: 9095

City/State
Collected: Parachute, CO

Please Circle:
PT MT CT ET

Phone: 970-285-2653

Client Project #

Lab Project #

Collected by (print):
Will Harmon

Site/Facility ID #

P.O. #

Collected by (signature):
[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

No.
of
Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	V8260BTEXN 40mlAmb-HCl	V8260BTEXN 40mlAmb-HCl-BIK	pH 125mlHDPE-NoPres								
20230330 - DW source (0140-7)	Grab	GW	Surface	3/30/23	1215	17	X	X	X								
		GW				17	X	X	X								
		GW				17	X	X	X								
		GW				17	X	X	X								
		GW				17	X	X	X								
		GW				17	X	X	X								
		GW				17	X	X	X								
		GW				17	X	X	X								
		GW				17	X	X	X								
		GW				17	X	X	X								



MT JULIET, TN
12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: <https://info.pacelabs.com/hubs/pas-standard-terms.pdf>

SDG # L1000277

Table #

Acctnum: CAERUSPCO

Template: T215555

Prelogin: P963757

PM: 824 - Chris Ward

PB:

Shipped Via: FedEX Ground

Remarks Sample # (lab only)

-01

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

Remarks: Metals - Ba,B,Ca,Fe,K,Mg,Mn,Na,Se,Sr

pH _____ Temp _____

Flow _____ Other _____

Sample Receipt Checklist	
COC Seal Present/Intact:	NP <u> </u> N
COC Signed/Accurate:	<u> </u> Y <u> </u> N
Bottles arrive intact:	<u> </u> Y <u> </u> N
Correct bottles used:	<u> </u> Y <u> </u> N
Sufficient volume sent:	<u> </u> Y <u> </u> N
If Applicable	
VOA Zero Headspace:	<u> </u> Y <u> </u> N
Preservation Correct/Checked:	<u> </u> Y <u> </u> N
RAD Screen <0.5 mR/hr:	<u> </u> Y <u> </u> N

Samples returned via:
UPS FedEx Courier

Tracking #

Relinquished by: (Signature) [Signature]

Date: 3/30/23 Time: 1600

Received by: (Signature) [Signature]

Trip Blank Received: Yes/No
HCl / MeOH
TBR

Relinquished by: (Signature) [Signature]

Date: 3/30/23 Time: 1700

Received by: (Signature) [Signature]

Temp: 20.7C Bottles Received: 3210-32 07

If preservation required by Login: Date/Time

Relinquished by: (Signature) [Signature]

Date: _____ Time: _____

Received for lab by: (Signature) [Signature]

Date: 3/31/23 Time: 1000

Hold: Condition: NCF / OK

L1600277

<u>Tracking Numbers</u>	<u>Temperature</u>
6126 6537 4335	3.2 + 0 = 3.2
6126 6537 4368	1.1 + 0 = 1.1